Haggardstown LRD

Dundalk, Co. Louth

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Main Statement

Volume II

CHAPTER 9

Land & Soils

May 2025

McCutcheon Halley
CHARTERED PLANNING CONSULTANTS

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9 Land & Soils

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9.1 Introduction

This chapter of the EIAR was prepared to assess the potential significant effects of the Proposed Development on the receiving land, soils, and geology on lands located at Haggardstown, Dundalk, Co. Louth (hereafter referred to as the 'site' and 'Proposed Development') 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 site.
- Potential effects the Proposed Development may have on land, soils and geology including geological heritage assessments including "worst case" scenario assessment.
- Potential constraints that these features may place on the Proposed Development.
- Required mitigation measures which may be necessary to prevent or minimise any adverse effects related to the Proposed Development.
- Evaluate the significance of any residual effects.

It should be read in conjunction with Chapter 4 Population & Human Health, Chapter 10 Water & Hydrology, Chapter 13 Air Quality, Chapter 5 Landscape & Visual Impact, Chapter 8 Material Assets: Waste and Chapter 11 Biodiversity of the EIAR and other information provided by the Applicant pertaining to the design proposals for the Proposed Development and submitted with the planning application.

9.2 Expertise & Qualifications

This Chapter was prepared by Gareth Caroll of Enviroguide Consulting (a DNV Company). Gareth Carroll holds a BA in Mathematics and a BEng in Civil, Structural and Environmental Engineering from Trinity College Dublin. Gareth Carroll, a Chartered Environmentalist with the Institute of Environmental Sciences (CEnv) and over 12 years' experience as an Environmental Consultant, has carried out environmental assessments for a range of project types and geological and hydrogeological site settings and been involved in the preparation of EIARs for the following projects:

- Large-Scale Residential Development at Wayside, Enniskerry Road and Glenamuck Road, Kiltiernan, Dublin 18.
- Large-Scale Residential Development at White Car Park Site (Site A) at Blanchardstown Town Centre, Coolmine, Dublin 15.
- Large-Scale Residential Development at the Former Ford Distribution Site, fronting onto Centre Park Road, Ballintemple, Co. Cork.

9.3 Proposed Development

The proposed development is described in Chapter 2. The development generally comprises of 502 no. residential units, comprising 1, 2, 3 and 4 bed units in a mix of maisonettes, terraced and semi-

detached units, with 1 no. detached bungalow unit; Creche building and all associated site and development works including landscaping and amenity areas, infrastructure and services, and new entrance from Blackrock Road, with additional pedestrian/cycle access from Bóthar Maol.

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9.3.1 Aspects Relevant to this Chapter

The Proposed Development will include the following components which are of particular relevance with respect to land, soils and geology.

9.3.1.1 Construction and Demolition Phase

The construction phase of the Proposed Development will include:

- Foundations will consist of concrete strip and pad foundations with no requirement for piling.
- As documented in the Construction Management Plan (CEMP) (Donnachadh O'Brien and Associates Consulting Engineers (DOBA), 2025), the proposed development will require excavation for the following non-exhaustive list of activities with associated approximate volumes of the materials to be excavated.
    - Topsoil - 53,000m^3.
    - Subsoils from reduced level excavations - 32,500m^3.
    - Subsoils for main drainage and attenuation - 10,000m^3.
    - Rock for main drainage and attenuation - 5,000m^3.
    - Subsoils for site services - 10,000m^3.
- Where possible, it is intended to reuse all suitable excavated topsoil and subsoil to achieve formation levels and for landscaping and engineering use. As documented in the OCEMP (DOBA, 2025), the following quantities are assumed to be reused in the development:
    - Topsoil - 28,000m^3.
    - Subsoils from reduced level excavations - 6,500m^3.
    - Rock for main drainage - 5,000m^3.
- Surplus soil, and soil not suitable for re-use will be removed offsite in accordance with all statutory legislation. As documented in the OCEMP (DOBA, 2025), the following quantities are assumed to be removed offsite for reuse or to an appropriate licenced landfill:
    - Topsoil - 25,000m^3.
    - Subsoils from reduced level excavations - 26,000m^3.
    - Subsoils for main drainage and attenuation - 10,000m^3.
    - Subsoils for site services - 10,000m^3.
- Temporary stockpiling of excavated material pending re-use onsite or export offsite.
- Importation of aggregates for the construction of roads and other infrastructures as outlined in the OCEMP (DOBA, 2025):
    - Dwelling sub-structure – 20,000m^3
    - Driveways – 10,000m^3
    - Roadways – 12,000m^3
    - Main drainage – 15,000m^3
    - Site services trenches / under paths – 10,000m^3

9.3.1.2 Operational Phase

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The operational stage of the Proposed Development consists of the typical activities in a residential development and with the exception of localised gardening there will be no bulk excavation of soils or bedrock or infilling of waste.

The land use at the site will change from unmanaged, agricultural fields to residential land use with associated vehicular and pedestrian access, car parking and landscaping.

There will be no requirement for bulk storage of petroleum hydrocarbon-based fuels during the operational stage of the Proposed Development as the main operating system for heating will be natural gas based.

9.4 Methodology

9.4.1 Relevant Legislation & Guidance

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

- Environmental Protection Agency, May 2022. Guidelines on the information to be contained in Environmental Effect Assessment Reports (EPA, 2022)
- Institute of Geologists of Ireland Guidelines, 2002. Geology in Environmental Effect Statements, A Guide (IGI, 2002).
- Institute of Geologists of Ireland Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Effect 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).
- Louth County Council, 2021. Louth County Development Plan 2021- 2027.

9.4.2 Phased Approach

A phased approach was adopted for this EIAR in accordance with the 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 effect 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 effect determination. This element of the assessment also included developing the Conceptual Site Model (CSM) for the Site and receiving environment.

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 affected 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.

The study area for the Land, Soils, and Geology Chapter of the EIAR is defined to ensure a comprehensive assessment of baseline conditions. This area extends beyond the immediate boundaries of the site of the Proposed Development to include a broader region. The site refers specifically to the land where the Proposed Development will take place. In contrast, the study area encompasses a wider region, extending at least 2.0 km from the site, as recommended by the Institute of Geologists of Ireland (IGI) 2013 Guidelines. This broader area is necessary to identify and evaluate all potential receptors that could be affected by the Proposed Development, either directly or indirectly. The distinction between the application site and the study area is crucial. The site of the Proposed Development is the focal point of the Proposed Development, while the study area includes additional regions that might experience secondary effects. For instance, potential receptors within the study area include surrounding land that might undergo changes in land use or quality, soil quality and composition that could be altered by construction activities, and underlying geological features that might be affected.

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The justification for this wider study area lies in the need to capture all potential effects comprehensively. While the primary focus is on the application site, the broader study area ensures that any indirect or secondary effects on land, soil, and geology are also considered. This approach provides a detailed and accurate picture of how the Proposed Development might affect these aspects of the environment, helping stakeholders make informed decisions and ensuring that all potential environmental effects are thoroughly assessed.

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 site of the Proposed Development relevant to land, soil and geology was undertaken by Enviroguide Consulting on the 14th of February 2025.

The Element 1 stage of the assessment was completed by Enviroguide and included the review of the following sources of information:

- Environmental Protection Agency (EPA) webmapping 2025 (EPA, 2025).
- Geological Survey of Ireland (GSI) Datasets Public Viewer and Groundwater webmapping, 2025 (GSI, 2025).
- Google Earth Mapping and Imagery, 2025 (Google Earth, 2025).
- Ordnance Survey Ireland (OSI) webmapping, 2025 (OSI, 2025).
- National Parks and Wildlife Services (NPWS) webmapping, 2024 (NPWS, 2025).
- Teagasc webmapping, 2024 (Teagasc, 2025).
- Information provided by the Applicant (i.e., Marina Quarter Ltd.) and design team pertaining to the design proposals for the Proposed Development.

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 effects associated with the Proposed Development. The results of the site investigations, detailed in Section 9.4.5, were used to identify and assess the land, soils and geology at the site.

Element 3: Evaluation of Mitigation Measures, Residual Effects and Final Effect Assessment were based on the outcome of the information gathered in Element 1 and Element 2 of the assessment. Mitigation measures to address all identified adverse effects that were identified in Element 1 and Element 2 of the assessment were considered in relation to the construction phase and operational phase of the Proposed Development. These mitigation measures were then considered in the effect assessment to identify any residual effects.

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

9.4.3 Description of Importance of the 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 9-1.

Table 9-1 Criteria for Rating Site Importance of Geological Features

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

Importance	Criteria	Typical Example
	Degree or extent of soil contamination is moderate on a local scale. Volume of peat and/or soft organic soil underlying route is moderate on a local scale.	**Moderately drained and/or moderate fertility soils.** **Small existing quarry or pit.** **Sub-economic extractable mineral resource.**
Low	**Attribute has a low quality, significance, or value on a local scale.** **Degree or extent of soil contamination is minor on a local scale.** **Volume of peat and/or soft organic soil underlying route is small on a local scale.**	**Large historical and/or recent site for construction and demolition wastes.** **Small historical and/or recent landfill site for construction and demolition wastes.** **Poorly drained and/or low fertility soils.** **Uneconomically extractable mineral resource.**

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9.4.4 Description and Assessment of Potential Effect

Effects will vary in quality from negative, to neutral or positive. The effects of effects will vary in significance on the receiving environment. Effects will also vary in duration. The terminology and methodology used for assessing the 'effect' significance and the corresponding 'effect' throughout this chapter is based upon the 2022 EPA guidelines on the information to be contained in EIARs, as outlined in Chapter 1 of this EIAR.

9.4.5 Site Surveys/Investigations

Site investigations (including trial pitting, borehole drilling, the installation of groundwater monitoring wells, groundwater level monitoring and infiltration tests) were undertaken by Geotechnical Environmental Services Ltd. (GES) in June 2018 and by IGSL Ltd. (IGSL) in March 2023. The GES site investigation report (Geotechnical Environmental Services Ltd., 2018. Ground Investigation Factual and Interpretive Report) and the IGS site investigation report (IGSL Ltd., 2023. Ground Investigation and Geotechnical Interpretive Report) are included in Volume 3 of this EIAR.

9.4.6 Consultation

Pre-planning consultation was held with Louth County Council as part of the LRD process, including both a S.247 Meeting and a Section 32B meeting . The findings of the Large-Scale Residential Development (LRD) Opinion Report (Louth County Council, 2025) in respect to land, soil and geology have been reviewed and considered in this chapter of the EIAR.

9.5 Difficulties Encountered

There were no difficulties were encountered in the preparation of this chapter of the EIAR.

9.6 Baseline Environment

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9.6.1 Site Location and Description

The site of the Proposed Development is located on lands to the south of Bóthar Maol and west of the R172 Blackrock Road at Haggardstown, Dundalk, Co. Louth. This is the principal site for the Proposed Development and measures c17.6 ha (the overall application site measures c. 18.54 ha including Blackrock Road and Tandy's Lane). The site is currently accessed via the existing entrance off Bóthar Maol to the north of the site.

The redline boundary for the Proposed Development extends along the R172 Blackrock Road and Finnabair Crescent to facilitate the construction of mains water and wastewater connections to existing Uisce Éireann (UE) infrastructure.

The site of the Proposed Development is irregular in shape and comprises primarily two (2No.), largely unmanaged, agricultural fields. There is a hedgerow running down the (approximate) centreline of the site. The site is demarked with hedgerows, treelines, and stone walls. There is a small disused pump house in the northeast corner of the site. There are also two drainage conveyance channels located beyond the eastern and northern boundaries of the site adjacent to the R172 road. The eastern drainage channel connects two wetland areas, to the point where the channel crosses under the R172 road.

During the site walkover undertaken by Enviroguide Consulting on the 14th of February 2025, evidence of disturbed ground was identified across the site. It is understood that these works were undertaken under the previously granted Strategic Housing Development (SHD) permission and included the development of haul roads and the excavation of foundations for 5 no. residential properties in the southern portion of the site.

The area surrounding the site is characterised by a mix of land uses. The site is bound south by agricultural lands, to the west by Dundalk Golf Club, to the north by private properties and Bóthar Maol and to the east by private residential properties with a portion of the site bounding the R172 Blackrock Road. The Inner Dundalk Bay transitional waterbody (EU Code: IE_NB_040_0100) is located approximately 0.03km east of the site at its closest point.

The lands located within the site boundary are zones as 'A2 New Residential Phase 1' and 'H1 Open Space' in the Louth County Development Plan (2021 – 2027).

The site location is presented in Figure 9-1 and the existing site layout is presented in Figure 9-2.

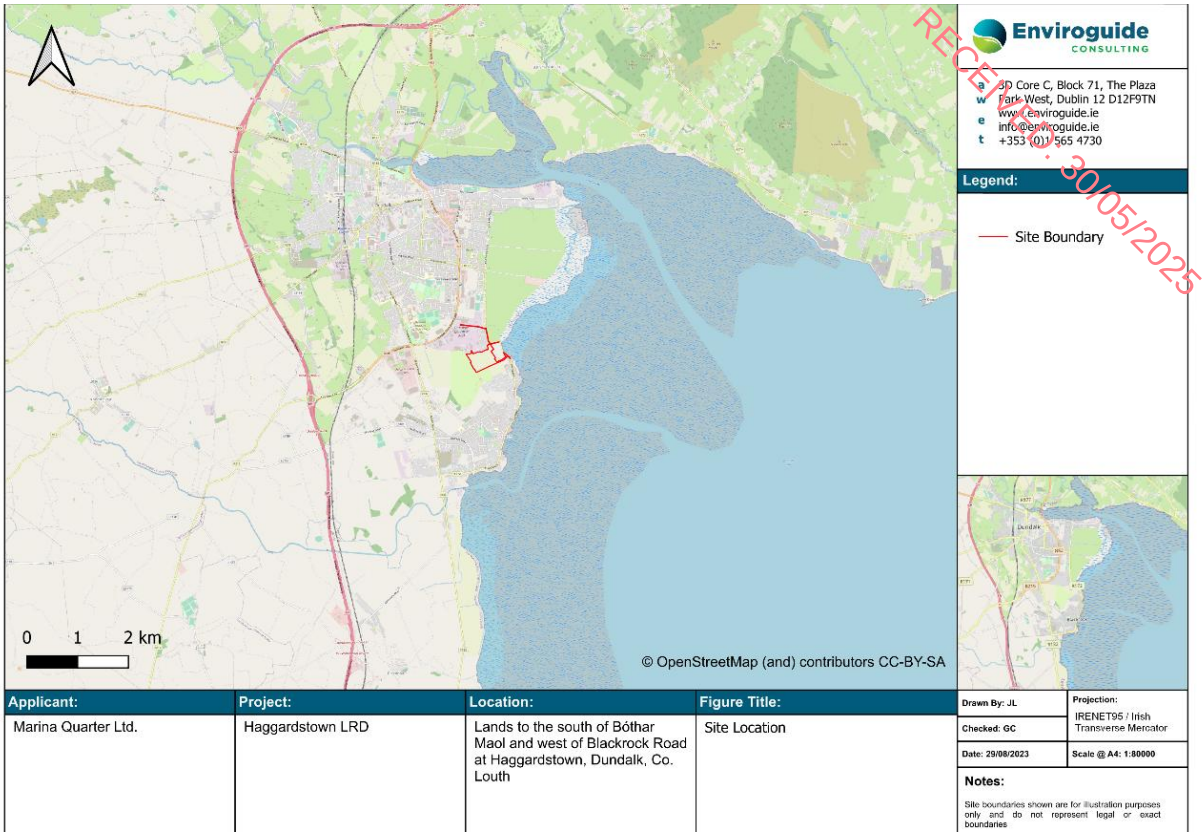

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Figure 9-1: Site Location Map

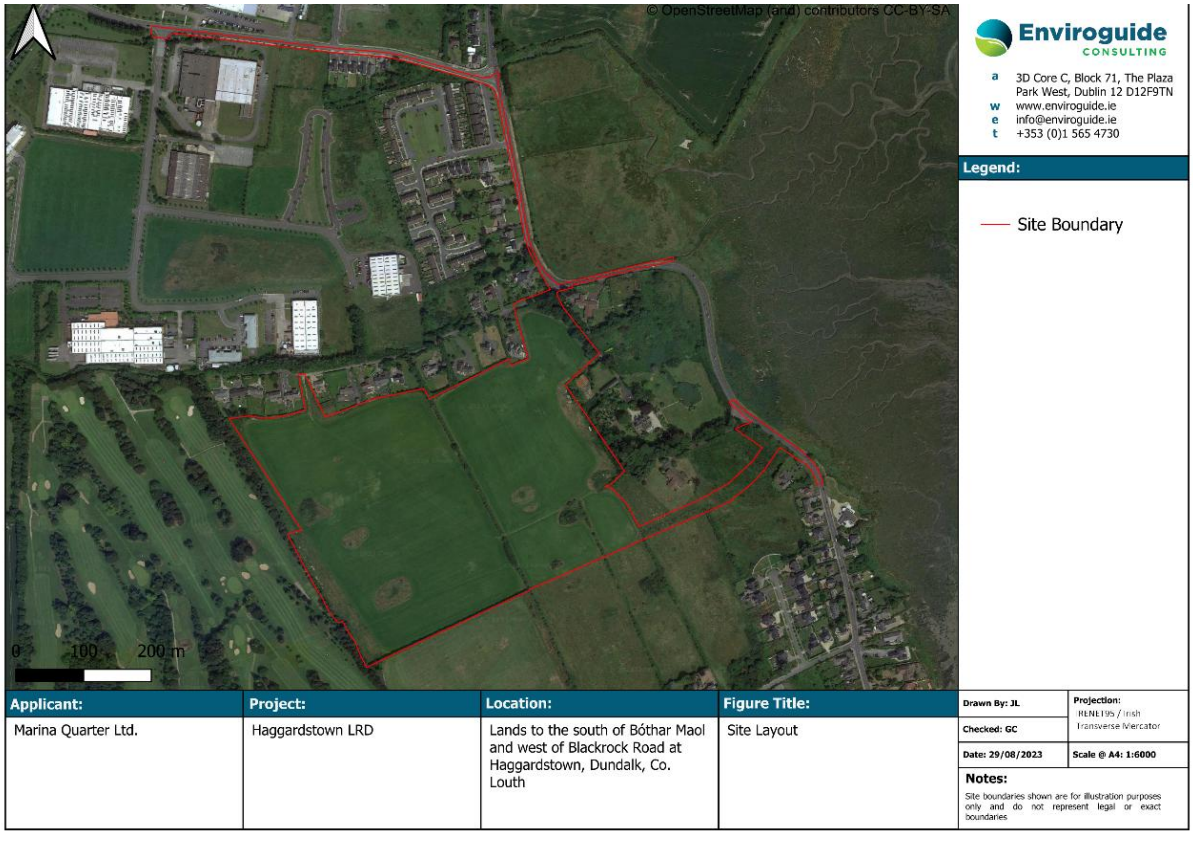

Figure 9-2: Current Land Use

9.6.2 Historical Land Use

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Historical mapping and aerial photography available from the Ordnance Survey of Ireland website (OSI, 2025) and Google Earth (Google Earth, 2025) were reviewed and key observations on-site and off-site are summarised in Table 9-2.

Table 9-2 Historical Land Use

Date	Information Source	Site Description
1836	OSI map 6inch First Edition	On-site: The majority of the site is comprised of undeveloped grasslands with hedgerows. A dwelling labelled as 'Seaview Cottage' is located on the now R172 road to the north of the site. An unnamed road is present in the location of the current R172 running parrel to the northern boundary. A pipe is mapped crossing the road south of the 'Seaview Cottage'. Off-site: The surrounding lands mainly comprise of undeveloped grasslands. An unnamed building is present adjacent to the central east of the site. There is a pond mapped to the east of the building.
1909 (Published)	OSI 25 Inch	On-site: The site remains undeveloped; however, the field boundaries have been altered. There is a 'pump' mapped in the northwest corner of the site. Gorse is mapped to the southeast of the site extending out to Dundalk Estuary. A stream is mapped crossing the site boundary to south of the 'Seaview Cottage', with a flow arrow to the east. Off-site: The buildings to the east of site boundary have expanded and are now labelled as 'Mountain View'. A windpump and sheep-wash are mapped within the Mountain View grounds. A rock outcrop is mapped to the south of the site.
1940 (Published)	OSI 6 Inch Last Edition Black	On-site: No significant changes. Rises are mapped to the southeast of the site where it meets the Dundalk estuary. Off-site: The Dundalk golf course is located to the west of the site. A greyhound racing track is mapped to the north of the 'Seaview Cottages'. There is an increase in the number of dwellings in the surrounding area.

Date	Information Source	Site Description
1995	OSI Aerial Photography	On-site: The aerial photography shows the lands are farmed and there are outcrops present. The northwest of the site road (Finnabair Crescent) has been upgraded as part of the Finnabair Industrial Park development. Off-site: There are a line of houses present along the northern boundary of the site. The Finnabair Industrial Park is present to the north of the site. The Dundalk golf course has been further developed.
1999-2003	OSI Aerial Photography	On-site: No significant changes Off-site No significant changes
2004- 2006	OSI Aerial Photography	On-site: A road is identified connecting the R172 Blackrock Road with the Finnabair Industrial Park. Off-site No significant changes
2006- 2023	OSI Aerial Photography	On-site: No significant changes Off-site No significant changes
Present	Google Earth (2025)	On-site: Some minimal ground disturbance works identified across the site. Off-site: No significant changes.

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9.6.3 Topography

The site topography is relatively steeply sloping from west to east. There are a number of topographic knolls which are present in both the western and eastern portions of the site. They form prominent local peaks.

As documented in the Infrastructure Design Report (DOBA, 2025 submitted with the planning application under separate cover), the existing levels at the site extend from approximately 22.00 meters above Ordnance Datum (mOD) along the western boundary to 8.00 mOD along the eastern boundary and reducing again to 3.30 mOD at the interface with the R172 Blackrock Road.

A topographical survey detailing the existing levels at the site is presented in Figure 9-3.

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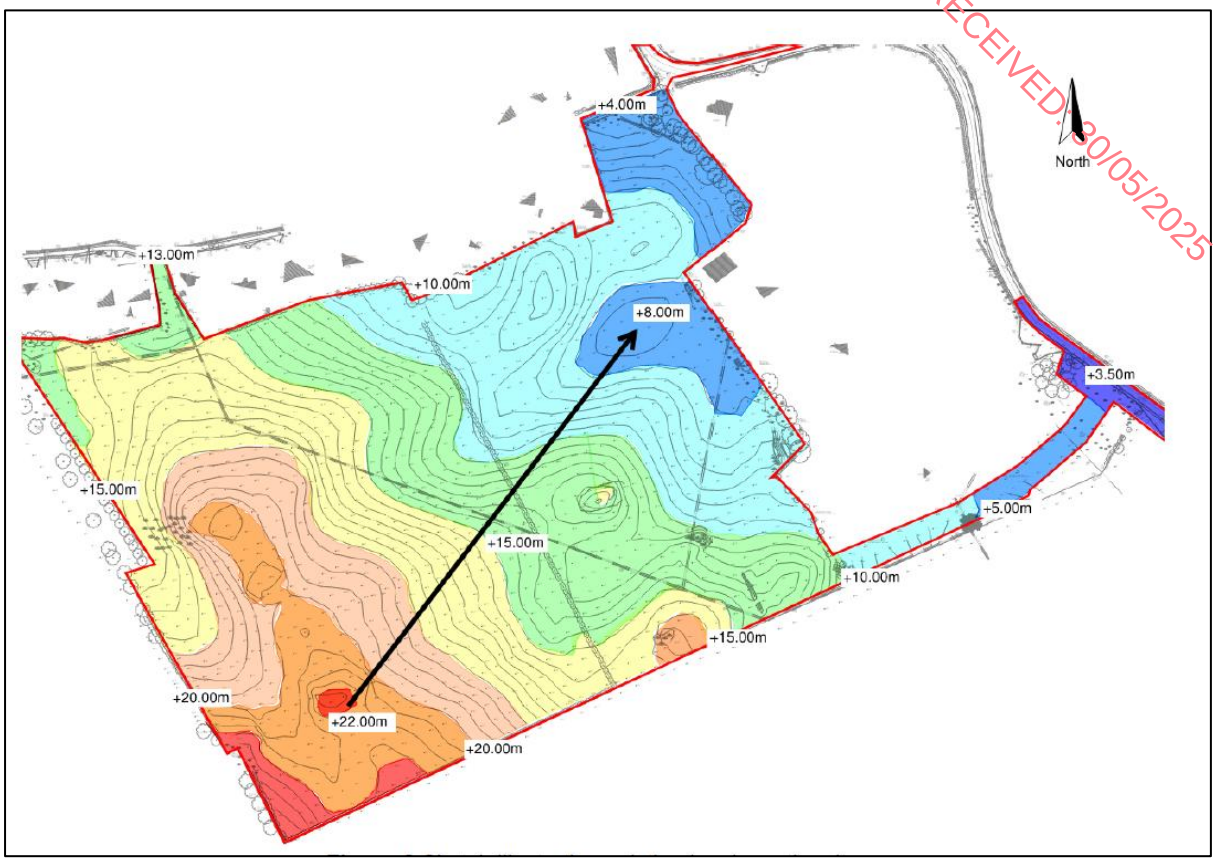

Figure 9-3: Existing Levels Onsite (DOBA, 2025)

9.6.4 Licensed Site

A review of the EPA database for EPA Licensed Sites (EPA, 2025) indicated that there is one licensed facility located within a 2km radius.

Xerox (Europe) Limited (License number: P0508-02) is located approximately 1.4km west of site. The facility has an Integrated Pollution Control license (IPC) within the surface coating sector, the major activity for the facility is manufacturing or use of coating materials.

9.6.5 Soils

The soils beneath the site are mapped by the GSI (GSI, 2025) as follows:

- The soils beneath the main site area are mapped as Acid Brown Earths, Brown Podzolics within the category of deep well drained mineral (mainly acidic) (IFS soil code: TLPSsS). The parent material is 'till derived from Lower Palaeozoic rocks'.
- Lithosols, Regosols within the category of shallow well drained mineral (mainly acidic) soils are mapped in small pockets across the main site area. The parent material for this soil is 'bedrock at surface – non calcareous'.

- The soils beneath the portion of the site extending along the R172 Blackrock Road and Finnabair Crescent are mapped as Surface Water Gleys, Groundwater Gleys. The parent material for these is 'Irish Sea tills'.
- The soils beneath the portion of the site where the eastern site boundary extends toward the Dundalk estuary (i.e., at the entrance to the Proposed Development) are mapped as 'Beach Sand and Gravels'.
- The subsoil permeability beneath the site is not mapped (GSI, 2025).

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The GSI (GSI, 2025) mapped soils at the site are presented in Figure 9-4.

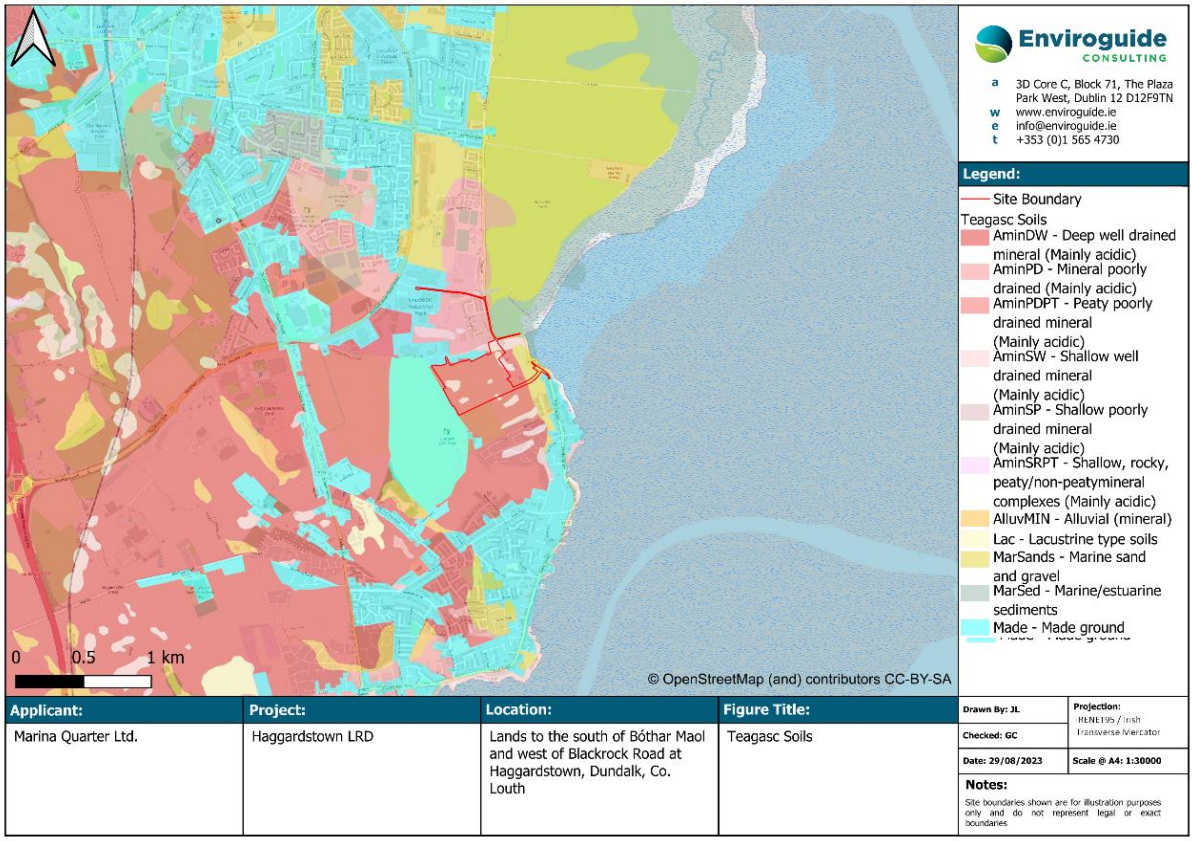

Figure 9-4: Teagasc Soils

9.6.6 Quaternary Soils

The quaternary soils beneath the site are mapped by the GSI (GSI, 2025) as follows:

- The quaternary soils beneath the main site area are mapped as till derived from 'Lower Palaeozoic sandstones and shales' (TLPSsS).
- The quaternary soils beneath the portion of the site where the eastern site boundary extends toward the Dundalk estuary (i.e., at the entrance to the Proposed Development) are mapped as 'marine gravel and sands (often raised)' (MGs).
- The quaternary soils beneath the portion of the site extending along the R172 Blackrock Road and Finnabair Crescent are mapped as 'Irish Sea Till derived from Lower Palaeozoic sandstones and shales' (IrSTLPSsS).

- There are no quaternary geomorphological features mapped within a 2.0km radius of the site.

The quaternary soils map is shown in Figure 9-5.

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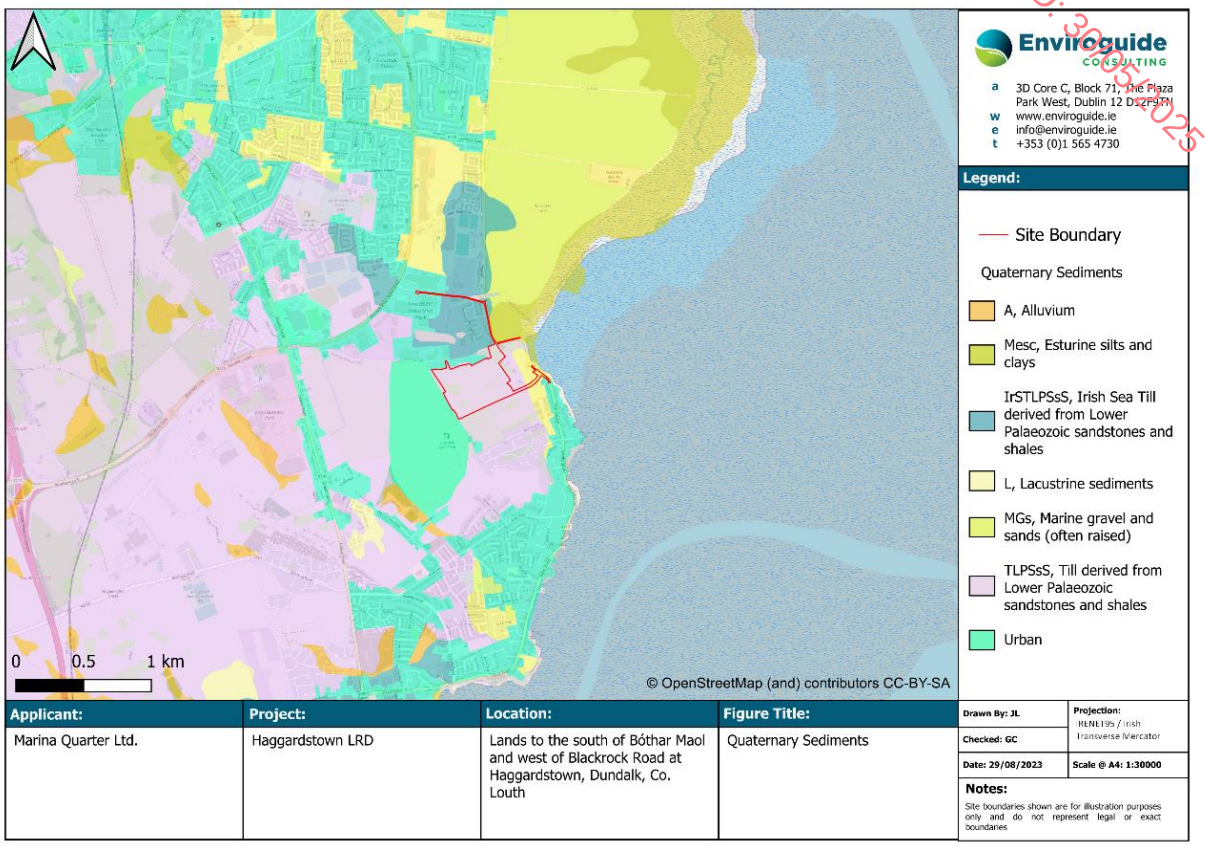

Figure 9-5: Quaternary Soils

9.6.7 Bedrock Geology

Based on the GSI database (GSI, 2025) the bedrock beneath the site is mapped as the Clontail Formation (CLTL) which is comprised of calcareous red-mica greywacke. The lithological description for the bedrock is described as green-grey, medium to thickly bedded, coarse and very fine grained tae greywackes, with dark grey thinly bedded, poorly graded quartzose fine sandstone to siltstone units. Both lithologies contain distinctive brown-red coloured biotite.

The GSI map bedrock outcrops within the site boundary. The GSI bedrock geology map with outcrops is presented in Figure 9-6.

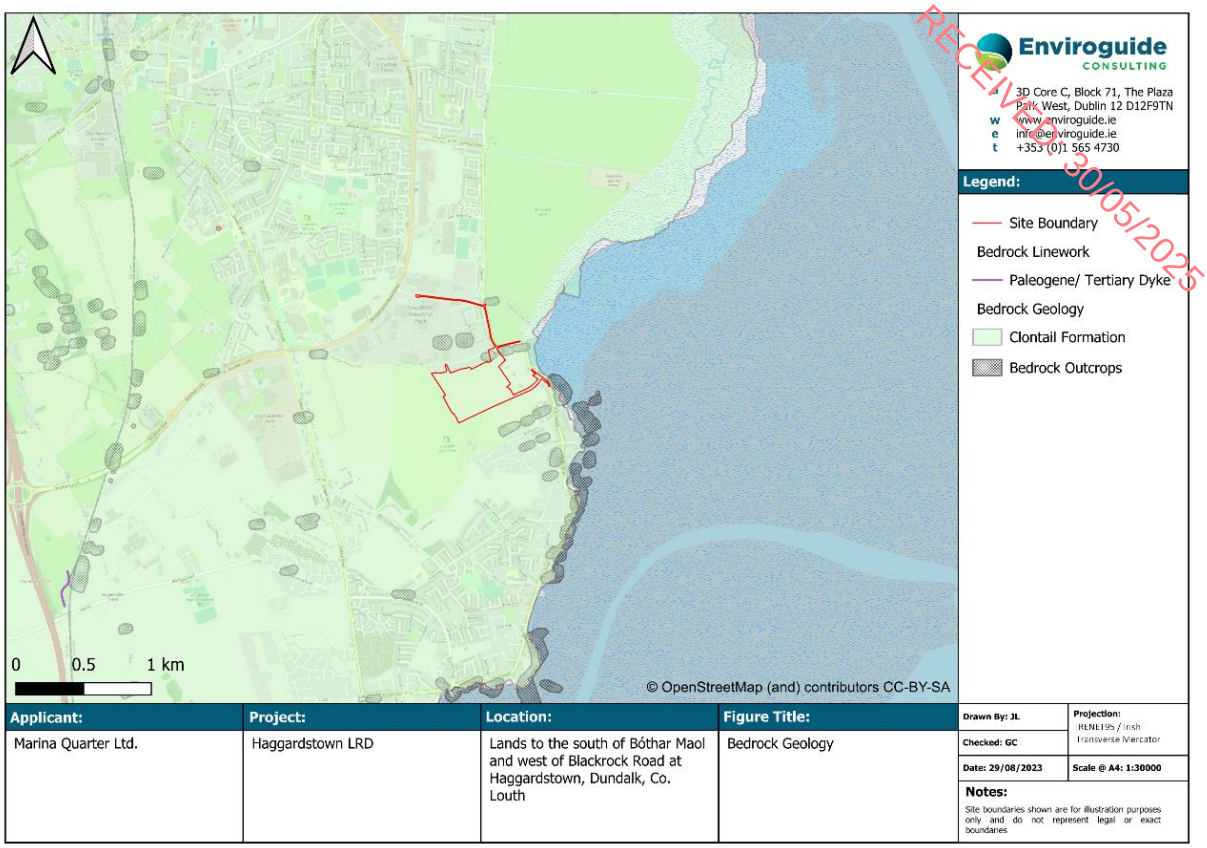

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Figure 9-6: Bedrock Geology

9.6.8 Site Investigation Results

An initial ground investigation was undertaken by Core Environmental Consulting in 2018 (CES, 2018; included in Appendix 9-1 of this EIAR). The ground investigation included the following site works:

- Five (5No.) boreholes to a maximum depth of 5.4 meters below ground level (mbGL) with installations.
- Twenty (20No.) trial pits to a maximum depth of 3.1mbGL.
- Geotechnical, geochemical and environmental laboratory testing.

Additional ground investigation was undertaken by IGSL in March 2023 (IGSL, 2023; included in Appendix 9-2 of this EIAR) , including :

- Twelve (12No.) soakaway tests.
- Two (2No.) trial pits to a maximum depth of 1.4mbGL.
- Rotary core boreholes to a maximum depth of 10.5mbGL.
- A geophysical survey.

9.6.8.1 Lithology

The ground conditions encountered during the site investigations are summarised as follows:

- Topsoil.
- Stiff friable light grey, brown slightly sandy slightly gravelly silty CLAY.

- Light grey, brown silty sandy fine to coarse GRAVEL (localised).
- Firm to stiff medium to high strength friable light grey, brown slightly sandy slightly gravelly silty CLAY with cobble and boulder content.
- Highly weathered destructed GREYWACKE: Recovered as grey, brown angular fine to coarse GRAVEL sized fragments in a silty clay matrix.
- Made ground comprised of CLAY containing glass and ceramic remnants was encountered in trial pit TP19 to a depth of 1.1mbGL. TP19 is located in the east of the site.
- Bedrock was encountered between 1.7mbGL and 3.6mbGL / 8.2 meters above Ordnance Datum (maOD) and 17.6 maOD across the site. Based on the available data, bedrock appears to be dipping to towards the southeast.

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The site investigation locations are shown in Figure 9-7.

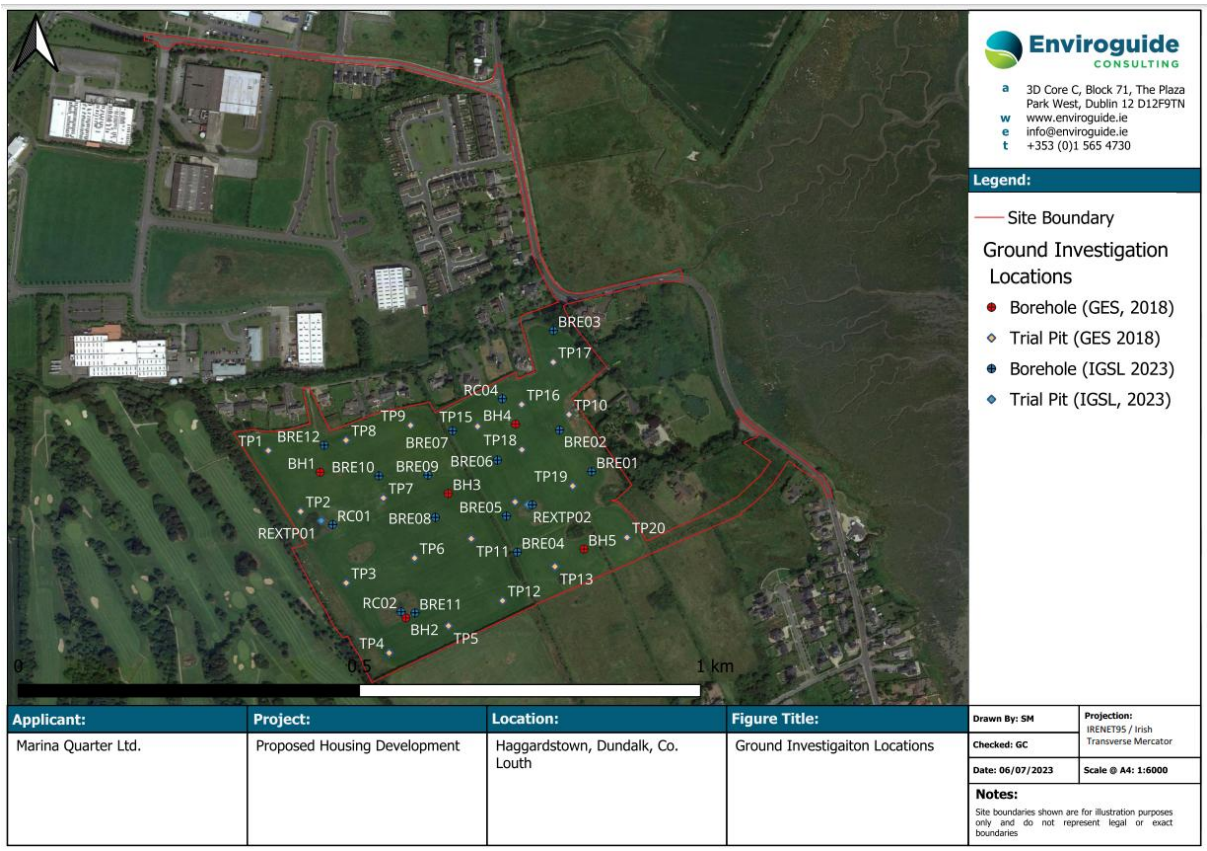

Figure 9-7: Ground Investigation Locations (GES, 2018 and IGSL, 2023)

9.6.8.2 Geo-chemical Analysis

A combined preliminary (PRA) and generic quantitative risk assessment (GQRA) for the site was undertaken by Core Environmental Consulting (refer to Appendix 5 of CES, 2018 included in Appendix 9-1 of this EIAR). It is noted that while the results of the assessment are seven years old at the time of preparing this chapter of the EIAR, the results are considered reliable given there have been no likely significant changes in site conditions or new contamination sources introduced since the assessment was completed.

As part of the assessment, 10 number samples were taken across the site from depths between 0.5 and 1.5mbGL. The samples were sent to Element Materials Technology Ltd. laboratory for chemical analysis. The results were screened against appropriate guidance values for assessment of risks to human health from contaminated lands. There were no exceeded noted above the human health criteria.

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

- All BTEX is less than the Limit of Detection (LOD).
- All PAH results were below the LOD.
- Low levels of TPH (49 mg/kg) were reported in BH1 at 1.0mbGL. The reported concentration of TPH at remaining sample locations were below the LOD.
- All VOCs results were below the LOD.

In addition to soil analysis, ground gas monitoring was undertaken at three number wells. Based on the result of the ground gas monitoring, it was concluded by Core Environmental Consulting that the site presented a 'very low risk' for ground gas.

9.6.8.3 Geophysical Survey

A geophysical survey was completed using seismic refraction by Minerex Geophysics Limited in 2018 (refer to Appendix 4 of CES, 2018 included in Appendix 9-1 of this EIAR). The objective of survey was to determine the depth to good rock across the site. The elevation of the top of good rock generally follows the ground elevation, falling from west to east. Figure 9-8 below shows the height of 'good' rock relative to Ordnance Datum across the site.

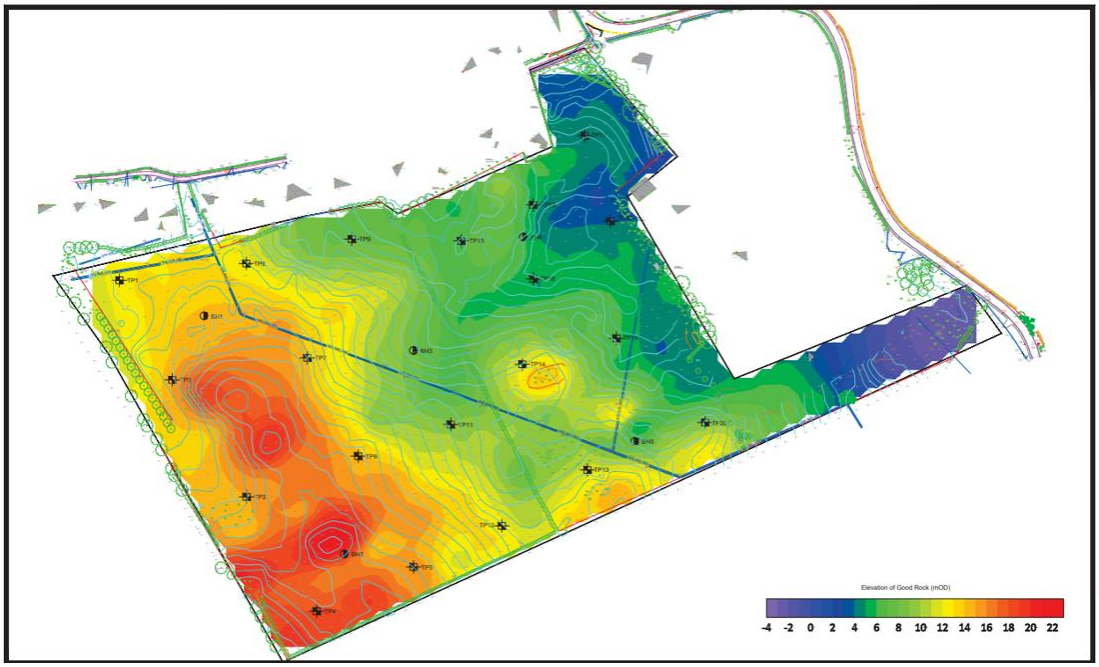

Figure 9-8: Geophysical Contour Map Identifying the Top of 'Good' Rock in mOD (GES, 2018)

9.6.8.4 Rock Reusability

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As part of the IGSL ground investigation (IGSL, 2023; included in Appendix 9-2 of this EIAR), the rock reusability was investigated from two (2No.) trial pit excavations by assessing parameters against the compliance criteria in SR21:2014+A1;2016, TII (2022) Table 6/1 of the Series 600 Earthworks (6F) NRA/TII Specification for Roadworks.

The results of the assessment show that the upper bedrock should not be used as structural fill beneath ground bearing floors slabs or foundations as it does not meet required in Annex E of SR21 for physical and durability characteristics. IGSL note there is an option of using the deeper more component rock and crushing for re-use as Class 2F2 capping for roads or pavements (IGSL, 2023; included in Appendix 9-2 of this EIAR).

9.6.9 Geochemical Domain

The GSI along with the EPA have developed geochemically appropriate levels (GALs) for soil recovery facilities across Ireland specifically in relation to metals and metalloids in uncontaminated soil and stone (GSI, 2025). There are a total of seven defined domains across the country. The geochemical domains map indicates that the site is located within Domain 5, the subsoil composition is described as Lower Palaeozoic sandstones, shales, and igneous rocks.

A summary of the maximum expected metals concentrations for Domain 5 are presented below in Table 9-3.

Table 9-3 Geochemically Appropriate Levels form Domain 5

Element	Units	Value
Arsenic	mg/kg	41.5
Cadmium	mg/kg	1.42
Chromium	mg/kg	73.2
Copper	mg/kg	77.6
Mercury	mg/kg	0.302
Nickel	mg/kg	65.7
Lead	mg/kg	109.0
Zinc	mg/kg	224

9.6.10 Radon

The majority of the site is mapped by the EPA (EPA, 2025) as being in an area where about 1 in 10 homes are likely to have high radon levels. Where the bedrock outcrops are present, the area of the site is mapped as 'about 1 in 5 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 there are areas within the site boundary where up to 20% of house are mapped as being within a high radon area, parts of the site are considered to be within a High Radon Area, it is noted that high radon levels can be found in any home, in any part of the country.

9.6.11 Geohazards

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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 indicated that the site is located within an area of 'low' or 'low (inferred) on the landslide susceptibility classification map (GSI, 2025).

The GSI (GSI, 2025) records for karst features indicates that there are no karst features within the Site boundary or within a 2.0km radius of the site.

9.6.12 Geological Heritage

A review of the GSI Geological Heritage Database (GSI, 2025) indicates one geological heritage site located within a 2km radius of site which is summarised in Table 9-4 and presented in Figure 9-9.

Table 9-4 Sites of Geological Importance within a 2.0km radius of the Proposed Development

Site Name	Site Code	Location	Geological Importance
Dundalk Bay	LH018	Adjacent to the East	Dundalk bay is a wide coastal embayment, incorporating wide expanses of coastal flats. The geological feature is listed as extensive flats, associated beach dune and slack features; beaches salt marshes and headlands.

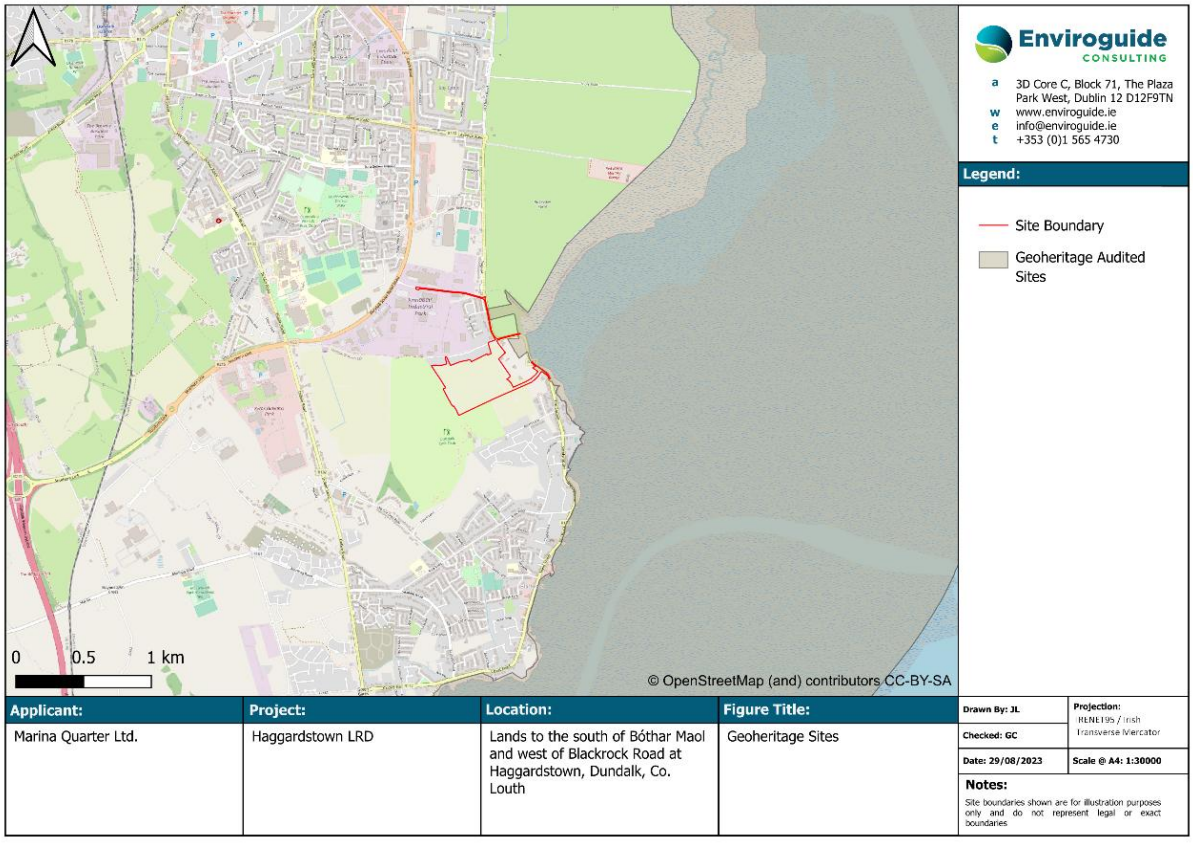

Figure 9-9: Geological Heritage Sites

9.6.13 Economic Geology

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The lands within the main site area have no mapped granular aggregate potential (GSI, 2025). However, the Irish Sea tills beneath the portion of the site extending along the R172 Blackrock Road and Finnabair Crescent and the marine gravels and sand beneath the portion of the site where the eastern site boundary extends toward the Dundalk estuary are mapped as having a 'high' aggregate potential (GSI, 2025) (refer to Figure 9-10).

The crushed rock potential for the majority of the site is mapped as 'very high potential'. The rock reusability potential was investigated as part of the IGSL ground investigation (IGSL, 2023; included in Appendix 9-1 of this EIAR) as is discussed in Section 9.5.8.4 above.

There are couple of historical pits and quarries mapped by the GSI (GSI, 2025) located within a 2.0km radius of the site which are listed in Table 9-6.

Table 9-5 Pits & Quarries within a 2km radius of the Site

Name/Type	Status	Distance from site (km)	Location from Site
Quarry	Historic	0.73	Northwest
Quarry	Historic	1.43	Southeast

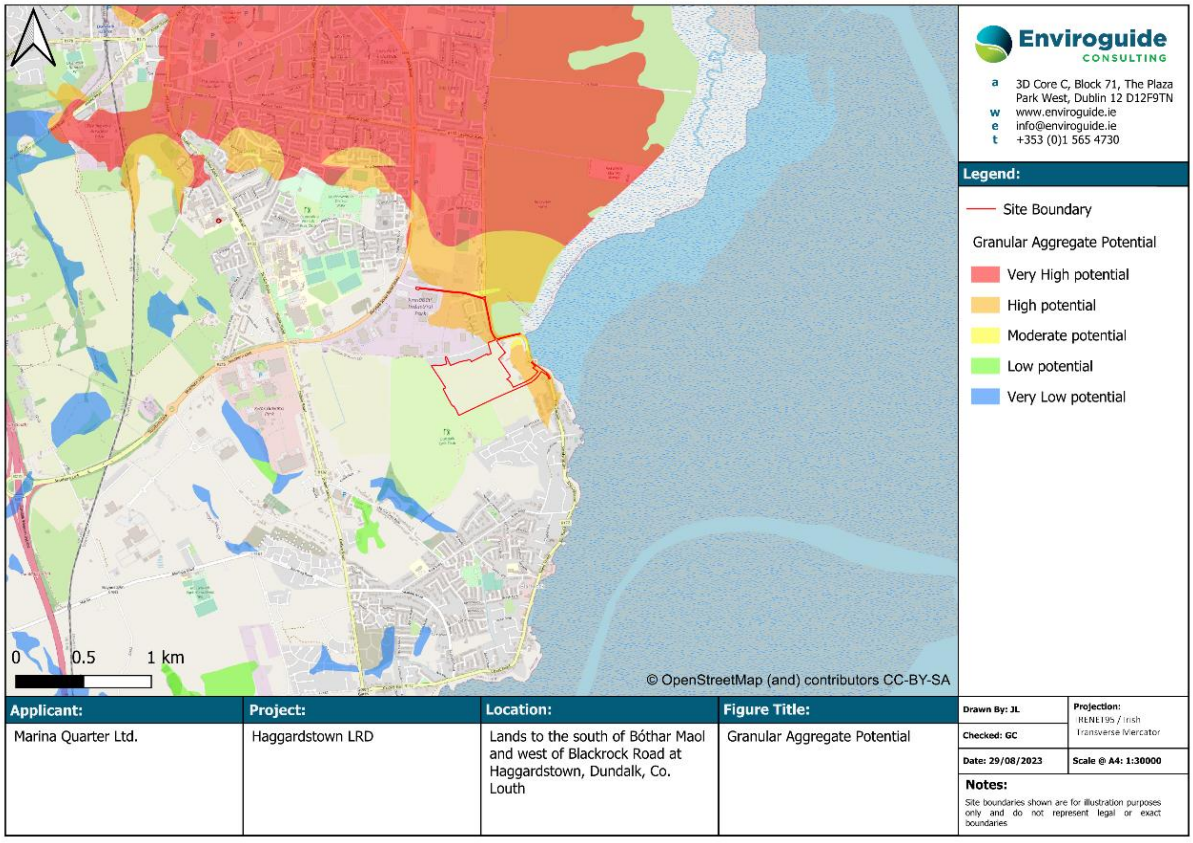

Figure 9-10: Granular Aggregate Potential

9.6.14 Importance of Baseline Environment

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It is noted that, in accordance with the TII Guidance as documented by the NRA (NRA, 2009) and as outlined in Table 9.1, the soil and geology underlying the Proposed Development would be rated as attributes of 'medium' importance as the majority of the site is underlain by soil with no aggregate potential, while an area to the east and north are considered to have a 'high' potential for granular aggregates. The Dundalk Bay geological heritage site is located adjacent to eastern site boundary which is classified based on the wide coastal embayment.

9.7 The 'Do Nothing' Scenario

In the "Do Nothing" Scenario, it is assumed that the Proposed Development does not proceed. The site, zoned as 'A2 New Residential Phase 1' and 'H1 Open Space' under the Louth County Development Plan (2021–2027), would remain as undeveloped lands in the immediate term. However, given the zoning and planning context, it is reasonable to expect that a similar residential development could be proposed for the site. Therefore, while the site would remain undeveloped in the short term, the potential for future development remains. As such, even in the absence of the Proposed Development, it is considered that the types of construction and operational phase impacts assessed in this chapter of the EIAR may still occur in the future, albeit under a different development proposal. In this scenario, the current assessment remains relevant as an indication of the likely nature and scale of impacts on land, soil and geology associated with residential development on the site.

9.8 Potential Significant Effects

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 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 assessment will identify the likely impacts during the construction and operational phases of the Proposed Development. This will involve assessing the significance of any potential effects by determining the sensitivity of the receptors and the magnitude of the potential effect.

9.8.1 Construction and Demolition Phase

The potential impacts associated with the construction phase of the Proposed Development are summarised below.

9.8.1.1 Land Take and Land Use

The land use at the site will change from primarily unmanaged agricultural land to residential. The Proposed Development will require a land take of 17.6ha and will develop lands for residential use and open space. The change of land use aligns with the zoning objectives set out in the Louth County Council Development Plan 2021–2027, which designates the site for residential and amenity purposes.

The Proposed Development will result in an unavoidable land take with loss of undeveloped land and soil with a 'negative' 'significant' and 'permanent' impact, particularly in the context of the EIA

Directive, taking account of the surrounding land and zoning objectives. However, while the loss of undeveloped land is unavoidable, it is important to note that the proposed development is consistent with the strategic land use planning framework established by the Louth County Council Development Plan 2021-2027.

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9.8.1.2 Excavation and Removal of Soil, Subsoil and Bedrock

There will be an unavoidable loss of in-situ soils, subsoils, and bedrock from the site to achieve the formation levels for the Proposed Development including building foundations, roads, drainage and other infrastructure.

It is intended to reuse suitable excavated soil and subsoil for landscaping and engineering use. However, it is anticipated that there will be surplus and unsuitable material to be removed offsite. The soils underlying the Proposed Development are considered to be of 'medium' importance. Accordingly, there will be a 'negative', 'moderate' and 'permanent' impact on the underlying soils at the site and is considered non-significant in the context of the EIA Directive.

The removal of surplus soil offsite will be undertaken 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 7 of this EIAR.

9.8.1.3 Soil Quality and Contamination

Reuse of Soils

The current site use is greenfield. The ground investigation indicates localised areas of made ground thus there is a potential for low quality made ground to be present. The laboratory analytical results for samples collected indicated that the soil at one location had minor anthropogenic materials. However geochemical testing of the soils reported results below all applicable human health thresholds and frequently less than applicable laboratory limits of detection. 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. Therefore, the reuse of soils onsite will result in a 'neutral', 'imperceptible' and 'permanent' impact on the quality of shallow soils underlying the site and is considered non-significant in the context of the EIA Directive.

Concrete Works

There is a potential risk associated with the use of cementitious materials during construction of subsurface structures (such as foundations) on the underlying soil and geology at the Proposed Development. 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 and is considered non-significant in the context of the EIA Directive.

Handling of Fuels and Hazardous Materials

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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. It is noted that this impact is considered significant in the context of the EIA Directive due to the potential for long-term degradation of the impacted soils in the absence of mitigation. This worst-case scenario is deemed to be unlikely to occur.

9.8.1.4 Dust Generation

There is a potential for creation of windblown dust generation from the temporary stockpiling of materials onsite. There will be some exhaust emissions generated from the use of excavators, HGVs (heavy goods vehicles) 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 13 of this EIAR.

9.8.1.5 Geological Heritage

The far eastern boundary of the site is located within the Dundalk Bay geological heritage area. The construction works within geological heritage areas include surface water drainage within the existing road. The Dundalk Bay is considered a geological heritage area based on the expanse of coastal flats, associated beach dunes and slack features (beaches salt marshes and headlands). The construction works for the Proposed Development will occur within the existing R172 road and not within the features which define the areas as a geological heritage site (i.e., beach, tidal flats etc). In the absence of avoidance and mitigation measure, in a worst-case scenario, there is a potential for fuel spill from the works flowing over the road surface and entering the Dundalk Bay geological heritage site. In this unlikely scenario, there is a potential 'negative' 'slight' and 'medium- term' impact on the receiving geological heritage site. The impact is considered slight and insignificant in the context of the EIA Directive given the scale of the feature, and that any impact would be localised.

9.8.1.6 Soil Structure

The excavation and re-use of soil at the site (where possible) will result in the exposure of the materials to various elements including weather, construction traffic and temporary stockpiling. This exposure can lead to changes in the soil's moisture content, temperature, and structure (e.g., rain can cause the soil to become waterlogged, dry weather can lead to desiccation and cracking, movement of construction vehicles and equipment over the soil can cause compaction and disturbance reducing the soil's porosity, making it less able to absorb water and nutrients). Over time, the soil may become less cohesive and more prone to erosion and instability. The combined effects of exposure to elements, construction traffic, and temporary stockpiling will have a potential 'negative,' slight' and 'long term' impact on the natural strength of the materials and is considered non-significant in the context of the EIA Directive.

9.8.1.7 Importation of Fill Materials

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The importation of aggregate fill materials will be required for the construction of the proposed development (e.g., construction of the piling mat and granular material beneath road pavement, under floor slabs and for drainage and utility bedding / surrounds). 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 'neutral,' 'imperceptible' and 'permanent' impact on the source site. This impact is considered imperceptible and non-significant in the context of the EIA Directive 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.

9.8.2 Operational Phase

Taking account of the design of the Proposed Development, it is concluded that there will be no likely significant impacts on the receiving land, soil, or geological environment during the operational phase. The predicted effects are considered to be imperceptible and not significant in the context of the EIA Directive.

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

9.8.3 Cumulative Effects

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.

As part of this assessment, other offsite developments and proposed offsite developments as detailed in Chapter 1 of this EIAR were reviewed and considered for possible cumulative effects with the Proposed Development.

9.8.3.1 Construction Stage

Excavation and Removal of Soil and Subsoil

Excavated soil, subsoil and bedrock 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 detailed in Chapter 1 of this EIAR and within the wider Louth Area. All surplus soils and subsoils from the site will be removed offsite in accordance with the requirements of the OCEMP (DOBA, 2025) and 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' and is considered non-significant in the context of the EIA Directive.

Import of Aggregates and Materials

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The importation of aggregates to the Proposed Development may be sourced from the same borrow site as other permitted developments detailed in Chapter 1 of this EIAR and within the wider Louth Area. However, contract and procurement procedures will ensure that all aggregates and fill material originating from quarry sources that will be required for construction are sourced from reputable authorised suppliers operating in a sustainable manner and in accordance with the necessary statutory consents. Therefore, regardless of the number of other projects and developments using aggregates from the same source sites, there will be an 'indirect', 'neutral', 'imperceptible' and 'permanent' impact on the geological environmental at the source site and is considered non-significant in the context of the EIA Directive.

There are no other cumulative impacts associated with land, soil and geology associated with the construction phase of the Proposed Development.

9.8.3.2 Operational Stage

There will be no cumulative effects on land, soil and geology during the operational phase of the Proposed Development.

9.8.4 Summary

Table 9-6 summarises the identified likely significant effects during the construction phase of the Proposed Development before mitigation measures are applied.

Table 9-6 Summary of Construction Phase Likely Significant Effects in the absence of mitigation

Likely Significant Effect	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type
Land Take and Land Use	Negative	Significant (significant)	Local	Likely	Permanent	Direct
Excavation of Soil and Subsoil	Negative	Moderate (non-significant)	Local	Likely	Permanent	Direct
Re-use of Soil and Subsoil Onsite	Neutral	Imperceptible (non-significant)	Local	Likely	Permanent	Direct
Removal of Soil and Subsoil Not Suitable for Re-use Onsite (Where Required)	Neutral	Imperceptible (non-significant)	Regional	Likely	Permanent	Indirect / Cumulative

Likely Significant Effect	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type
Use of Cementitious Materials	Negative	Moderate (non-significant)	Local	Possible	Long-term	Direct
Accidental Release of Deleterious Materials	Negative	Moderate to Significant (significant)	Local	Worst-case	Long-term	Direct
Construction Works within Geological Heritage Areas	Negative	Slight (non-significant)	Local	Likely	Medium-term	Direct
Stockpiling of Excavated Soil and Subsoils	Negative	Slight (non-significant)	Local	Possible	Long-term	Direct
Import of Required Soil, Subsoil and Aggregates	Neutral	Imperceptible (non-significant)	Regional	Likely	Permanent	Indirect / Cumulative

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Table 9-7 summarises the identified likely significant effects during the operational phase of the Proposed Development before mitigation measures are applied.

Table 9-7 Summary of Operational Phase Likely Significant Effects in the absence of mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
There are no identified impacts on the receiving land, soil and geological environment during the operational phase of the Proposed Development.						

9.9 Mitigation Measures

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

9.9.1 Incorporated Design Mitigation

The following measures have been incorporated into the design:-

- The design and specification for all buildings will be in accordance with current Building Regulations, including radon protection measures appropriate to a 'High' Radon Area.

9.9.2 Construction and Demolition Phase Mitigation

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An Outline Construction Environmental Management Plan (OCEMP) has been prepared by DOBA (DOBA, 2025; submitted with the planning application under separate cover). The OCEMP address construction waste, construction environmental management (including a surface water management plan) and construction traffic management. Following appointment, the contractor will be required to further develop the OCEMP and prepare and project specific CEMP, for approval by Louth County Council prior to any works commencing. The project specific CEMP will provide detailed construction phasing, waste management and methods to manage and prevent any potential emissions to ground and surface water with regard to the relevant industry standards (e.g., Guidance for Consultants and Contractors, CIRIA-C532', CIRIA, 2001). The project specific CEMP will take cognisance of measures outlined in the EIAR and OCEMP submitted with the planning application.

The project specific 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.

Import of Aggregates

Contract and procurement procedures will ensure that all imported aggregates and materials required for the construction of 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 and materials will be subject to management and control procedures which will 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.

Airbourne 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 procures set out in the OCEMP (DOBA, 2025) and the project specific CEMP in order to protect ground and minimise airborne dust. The normal 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. Furthermore, as documented in the OCEMP (DOBA, 2025a), a minimum 1.8m hoarding will also be provided around the site works to minimise the dispersion of dust from the working areas. Potential impacts and avoidance and mitigation measures associated with generation of dust are addressed in Chapter 13 of this EIAR.

Reuse of Soil

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

- Define the criteria by which the suitability of the soils for reuse will be assessed (e.g., analytical parameters and limits), the engineering requirements such as geotechnical parameters for the material to be used within the works.

- Delineation of areas where excavated soil is intended for disposal off-site as waste, and where it is intended for reuse on site.
- Identification and recording of the location from where the soil will be excavated and its proposed reuse location and function.
- Engineering assessment to confirm its suitability for reuse.
- Any proposed treatment or processing required to enable its reuse, as well as any associated treatment permits, or licences required.

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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 OCEMP (DOBA, 2025) and the project specific CEMP which will be prepared by the main contractor in advance of construction works commencing.

Where possible, stockpiling of soil and stone on-site 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 (watercourse and drain). As documented in the OCEMP (DOBA, 2025), stockpiles of loose material will be a minimum of 20m from drains. When a stockpile has been sampled for re-use or waste classification purposes, it shall be considered to be complete, and no more soil shall be added to that stockpile prior to removal. An excavation/stockpile register shall be maintained on-site.

Prior to site works commencing, the OCEMP (DOBA, 2025) will be updated to reflect specific measures to minimise waste generation and resource consumption, including providing details of proposed waste contractors and destinations for each waste stream.

The reuse of suitable excavated soil and bedrock for the proposed development (i.e., landscaping or engineering) will be undertaken in accordance with the engineered design and landscape plan for the proposed development. As documented in the OCEMP (DOBA, 2025), rock reusability testing carried out by the applicant show the existing rock is suitable for use as 6F2 capping material across the site subject to appropriate material testing and grading onsite. Soil including topsoil and subsoil will be segregated and stored appropriately to prevent deterioration of soil structure and quality to ensure the material will be suitable for re-use onsite.

Surplus material, not suitable for re-use on-site, will be segregated, and stockpiled appropriately for removal off-site. 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.
- Stockpiles will be a minimum of 20m from drains.

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Export of Resource (Soil, Subsoil and Bedrock) and Waste

Any waste generated from construction activities, including concrete, asphalt and soil stockpiles, will be managed in accordance with the procedures outlined in the OCEMP (DOBA, 2025) and the project specific CEMP (to be developed by the main contractor in advance of construction works commencing) and will be stored onsite in such a manner as to:

- Prevent environmental pollution (bunded 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.
- Prevent hazards to site workers and the general public during Construction stage (largely noise, vibration and dust).

All surplus materials and any waste will be removed off-site in accordance with the requirements outlined in the OCEMP (DOBA, 2025) and the project specific CEMP (to be developed by the main contractor in advance of construction works commencing) 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 offsite.

Where appropriate, excavated soil and material intended for recovery or disposal offsite will require appropriate waste classification in order to select an appropriate receiving facility. Assessment of the excavated material will be carried out with due regard to the following guidance and legislation:

- Environmental Protection Agency document entitled Waste Classification; List of waste and determining if waste is Hazardous or Non-Hazardous.
- EU Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Directive 1999/31/EC (2002).
- Environmental Protection Agency documented entitled Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities.
- Environment Agency, 2018. Technical Guidance WM3: Guidance on the classification and assessment of waste.
- Any other guidance or legislation that might be applicable or relevant at the time of disposal.

The re-use of soil and rock 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.

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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.

As documented in the OCEMP (DOBA, 2025), Public roads outside the Site will be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary. Trucks entering / leaving the site will pass through a wheel washing system. The wheels of all Lorries will be cleaned prior to leaving the Site so that traffic leaving the Site compound will not generate dust or cause the build-up of aggregates and fine material in the public domain. This will be carried out in a dedicated wash down zone with dedicated site personnel. The correct use and management of these will be undertaken by the appointed contractor to ensure that there is no harm or impact to the receiving water environment.

Concrete Works

The use of cementitious grout during the construction of footpaths and other site infrastructure will be required. Any potential impact to water quality will be avoided through the use of appropriate design and methods that will be implemented by the Contractor and in accordance with the OCEMP (DOBA, 2025), the project specific CEMP (which will be developed by the main contractor in advance of construction works commencing) and relevant industry standards.

Where possible precast concrete will be used for concrete works. However, where cast-in-place concrete is required (i.e., foundations, footpaths), all work will be carried out to avoid any contamination of the receiving water environment. All work must be carried out in dry conditions and be effectively isolated from any groundwater.

The following mitigation measures are outlined in the OCEMP (DOBA, 2025).

- Any in-situ concrete work to be lined and areas bunded (where possible) to stop any accidental spillage.
- No direct discharges made to waters where there is potential for cement or residues in discharge.
- Designated impermeable cement washout areas must be provided and which are to drain into the designated settlement tank on-site pending removal offsite.
- Concrete batching will take place off site or in a designed area with an impermeable surface.
- For concrete mixers, control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.
- Concrete wash down and wash out of concrete trucks will take place off site or in an appropriate facility.
- All 'wash out' of concrete trucks will take place off site and any excess concrete is not to be disposed of on site.

In addition to the measures set out in the OCEMP (DOBA, 2025), weathering forecasting should be utilised to plan dry days for concrete pours. Prior to pours, the designated area of the site shall be free of standing water and plastic covers will be ready in the case of sudden rainfall event.

Handling of Fuels, Chemicals and Materials

Fuelling and lubrication of equipment will be carried out in a designated area of the site away from any watercourses and drains (where not possible to carry out such activities offsite).

As documented in the OCEMP (DOBA, 2025), any diesel, fuel or hydraulic oils stored on-site will be stored in designated areas, these areas will be bunded and located away from surface water drainage and features. It is noted that the use of cleaning chemicals will be kept to a minimum. There will be clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage. Adequate security will be provided by the appointed contractor to potential pollutants against vandalism.

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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.

All fuel, soil and chemical storage will be bunded in the site compound and will be clearly marked. As documented in the OCEMP (DOBA, 2025), the bund will be at least 50m away from drains, excavations, and other locations where it may cause contamination. Furthermore, no storage of hydrocarbons or any polluting chemicals will occur within 10m of the SAC/ SPA. Fuel will then be transported from the compound to the plant and equipment in mobile units based on need, a dedicated fuel fill point will be set up on site with all plant brought to this point for filling.

Spill kits will be kept in these areas. Site crew will be trained in appropriate refuelling techniques. Equipment will not be left unattended during refuelling. Refuelling of construction machinery shall be undertaken in designated areas away from surface water drainage in order to minimise potential contamination of the water environment. Spill kits shall be kept in these areas in the event of spillages.

Emergency Procedures

As documented in the OCEMP (DOBA, 2025), the contractor will maintain an emergency response action plan which will cover any foreseeable risks.

Emergency procedures will be developed by the main 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 through induction, toolbox talks, and method statements to ensure that all staff members are well-prepared and knowledgeable about the necessary steps to take in the event of an emergency (e.g., 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 proposed development 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.

- 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.

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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 offsite to a licensed facility. All waste from welfare facilities will be managed in accordance with the relevant statutory obligations by an appropriately authorised contractor.

Any connection to the public foul drainage network during the construction phase of the Proposed Development will be undertaken in accordance with the necessary temporary discharge licences issued by UE.

9.9.3 Operational Phase Mitigation

Taking account of the design of the Proposed Development, it is concluded that there will be no likely significant impacts on the receiving land, soil, or geological environment during the operational phase. The predicted effects are considered to be imperceptible and not significant in the context of the EIA Directive. Therefore, there is no requirement for mitigation measures for the operational phase.

9.10 Residual Impact Assessment

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.

9.10.1 Construction and Demolition Phase

The predicted impacts of the construction phase of the Proposed Development are described in Section 9.8.1 in terms of quality, significance, extent, likelihood, and duration.

These assessments informed the development of a comprehensive suite of mitigation measures as detailed in Section 9.10.1. These included, control and management of earthworks, control and management of soils, subsoils and stockpiles, management and control procedures for the exportation of surplus soils and subsoils, management and control procedures for the importation of aggregates and materials, control and handling of cementitious materials, control and handling of fuel and hazardous materials, and accidental release of contaminants. The effectiveness of these measures was assessed in terms of their ability to break pollutant linkages and reduce the magnitude and likelihood of impacts. The residual impacts, which take these measures into account, are summarised in Table 9-8.

Overall, considering the avoidance, remedial and mitigation measures detailed in Section 9.10.1, the residual effects regarding the construction phase of the Proposed Development are considered

'imperceptible' to the receiving water environment (land, soil and geology) and considered non-significant in the context of the EIA Directive.

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Table 9-8. Residual Impacts (Construction Phase)

Activity	Attribute	Predicted Impact	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type	Mitigation	Residual Impact (Significance in the Context of EIA Directive)
Construction of the Proposed Development	Land Use and Land take	The proposed development will development land for residential use, resulting in a change in land from greenfield to residential and open space.	Negative	Significant (significant)	Local	Likely	Permanent	Direct	Unavoidable and no mitigation. The proposed development will develop lands in line with the land zoning as set out in the Louth County Council Development Plan 2021-2027.	Significant (significant)
Excavation and Removal of Soils and Bedrock	Soils and Bedrock	There will be an unavoidable a loss of in-situ soil, subsoil and bedrock through excavation works to achieve the formation	Negative	Moderate (non-significant)	Local	Likely	Permanent	Direct / Cumulative	None required. Where possible, it is intended to retain and re-use suitable excavated soil and subsoil at the site for engineering fill and	Moderate (non-significant)

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Activity	Attribute	Predicted Impact	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type	Mitigation	Residual Impact (Significance in the Context of EIA Directive)
		levels for the proposed development including the foundations, roadways, parking, drainage infrastructure and landscaping.							landscaping. The removal of surplus soil offsite will be undertaken 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.	
Re-Use of Soil, Subsoil and Bedrock	Soils and Subsoils	It is intended to reuse all suitable excavated soil for engineering fill and landscaping.	Neutral	Imperceptible (non-significant)	Local	Likely	Permanent	Direct	The re-use of soil onsite will be subject to control procedures which will include soil quality testing to ensure suitability	Imperceptible (non-significant)

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Activity	Attribute	Predicted Impact	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type	Mitigation	Residual Impact (Significance in the Context of EIA Directive)
									for use onsite and in accordance with engineering and environmental specification for the Proposed Development.	
Removal of Soil and Subsoil Not Suitable for Re-use Onsite (Where Required)	Source Site Lands, Soils and Geology	Excavated soil, subsoil and bedrock 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	Neutral	Imperceptible (non-significant)	Regional	Likely	Permanent	Indirect / Cumulative	All surplus soils and subsoils from the site will be removed offsite in accordance with the requirements of the OCEMP (DOBA, 2025) and all statutory legislation	Imperceptible (non-significant)

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Activity	Attribute	Predicted Impact	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type	Mitigation	Residual Impact (Significance in the Context of EIA Directive)
		other developments								
Use of Cementitious Materials	Soils and Subsoils	Potential release of cementitious material during construction works for foundations, pavements and infrastructure to the land, soil, and geological environment.	Negative	Moderate (non-significant)	Local	Possible	Long Term	Direct	Where cast-in-place concrete is required, all work will be carried out to avoid any contamination of the receiving land, soil and geological environment through the use of appropriate design and methods implemented by the main contractor and in accordance with the CEMP and relevant industry standards.	Imperceptible (non-significant)
Accidental release of deleterious	Soils, Subsoils	Potential (albeit low) for uncontrolled	Negative	Moderate to Significant (significant)	Local	Worst-case	Long-term	Direct / Worst Case	Refuelling of plant during the construction phase	Imperceptible (non-significant)

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Activity	Attribute	Predicted Impact	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type	Mitigation	Residual Impact (Significance in the Context of EIA Directive)
materials including cement, fuel and other material being used on-site.	and Bedrock	release of deleterious materials including fuels , cement and other materials being used on-site, through the failure of secondary and tertiary containment or a materials handling accident, to the land, soil, and geological environment.							will only be carried in a designated impermeable area on-site equipped with spillage kits. Any other diesel, fuel or hydraulic oils stored on-site or within fuel containing equipment will be stored accordance with the CEMP and in bunded storage tanks / drip trays.	
Excavation and Removal of Soil, Subsoil and Bedrock	Geological Heritage	The construction works within geological heritage areas include surface water drainage	Negative	Slight (non-significant)	Local	Likely	Medium-term	Direct / Worst Case	The construction works for the Proposed Development will occur within the existing R172 road	Imperceptible (non-significant)

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Activity	Attribute	Predicted Impact	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type	Mitigation	Residual Impact (Significance in the Context of EIA Directive)
		within the existing road. There is a potential for fuel spill from the works flowing over the road surface and entering the Dundalk Bay geological heritage site							and not within the features which define the areas as a geological heritage site (i.e., beach, tidal flats etc). Regardless, refuelling of plant and storage of any deleterious materials including fuels will be undertaken in accordance with the requirements and procedures outlined in the CEMP.	
Excavation and Re-use of Soil, Subsoil and Bedrock	Soil, Subsoils and Bedrock In-Situ Loss & Structure	Stockpiling of soil and subsoil pending reuse on-site will result in the exposure of the materials to	Negative	Slight (non-significant)	Local	Possible	Permanent	Direct	Soil including topsoil and subsoil will be segregated and stored appropriately to prevent deterioration of	Imperceptible (non-significant)

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Activity	Attribute	Predicted Impact	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type	Mitigation	Residual Impact (Significance in the Context of EIA Directive)
		various elements including weather and construction traffic.							soil structure and quality to ensure the material will be suitable for re-use onsite.	
Import of Required Aggregates and Materials	Land, Soil and Geology at the Source Site	The Proposed Development will require the importation of aggregates for the construction of roads and utility infrastructure. The potential impacts may include loss of attribute and changes in geological setting at the source site.	Negative	Slight (non-significant)	Regional	Likely	Permanent	Indirect / Cumulative	Only certified materials from authorised sources will be used.	Imperceptible (non-significant)

9.10.2 Operational Phase

There are no likely significant residual impacts on the receiving land, soil, or geological environment during the operational phase. The predicted effects are considered to be imperceptible and not significant in the context of the EIA Directive.

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9.10.3 Summary of Post-mitigation Effects

Table 9-9 summarises the identified likely significant residual effects during the construction phase of the Proposed Development following the application of mitigation measures.

Table 9-9 Summary of Construction Phase Effects Post Mitigation

Likely Significant Effect	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type
Land Take and Land Use	Negative	Significant (significant)	Local	Likely	Permanent	Direct
Excavation of Soil and Subsoil	Negative	Moderate (non-significant)	Local	Likely	Permanent	Direct
Re-use of Soil and Subsoil Onsite	Neutral	Imperceptible (non-significant)	Local	Likely	Permanent	Direct
Removal of Soil and Subsoil Not Suitable for Re-use Onsite (Where Required)	Neutral	Imperceptible (non-significant)	Regional	Likely	Permanent	Indirect / Cumulative
Use of Cementitious Materials	Negative	Imperceptible (non-significant)	Local	Possible	Long-term	Direct
Accidental Release of Deleterious Materials	Negative	Imperceptible (non-significant)	Local	Worst-case	Long-term	Direct
Construction Works within Geological Heritage Areas	Negative	Imperceptible (non-significant)	Local	Likely	Medium-term	Direct
Stockpiling of Excavated Soil and Subsoils	Negative	Imperceptible (non-significant)	Local	Possible	Long-term	Direct

Likely Significant Effect	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type
Import of Required Soil, Subsoil and Aggregates	Neutral	Imperceptible (non-significant)	Regional	Likely	Permanent	Indirect / Cumulative

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Table 9-10 summarises the identified likely residual significant effects during the operational phase of the Proposed Development post mitigation.

Table 9-10 Summary of Operational Phase Effects Post Mitigation

Likely Significant Effect	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type
There are no likely significant residual impacts on the receiving land, soil, or geological environment during the operational phase. The predicted effects are considered to be imperceptible and not significant in the context of the EIA Directive.						

9.11 Risk of Major Accidents or Disasters

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 indicates that the site is located within an area of low susceptibility to landslides. Furthermore, there are no potential ground stability hazards identified for the site. The predicted effects are considered to be imperceptible and not significant in the context of the EIA Directive.

The site is not located within an area associated with karst geology and therefore there is no identified risks associated with karst features. The predicted effects are considered to be imperceptible and not significant in the context of the EIA Directive.

All aggregates imported to the site for use in the Proposed Development will be subject to strict quality control procedures in accordance with the design specification and relevant Building Regulations therefore avoiding any potential issues with pyrite in aggregates. Therefore, the predicted effects are considered to be imperceptible and not significant in the context of the EIA Directive.

The site is identified as being located within a 'High' Radon Area. The design and specification for all buildings will be in accordance with current Building Regulations and therefore any potential issues associated with radon will be addressed and avoided. Therefore, the predicted effects are considered to be imperceptible and not significant in the context of the EIA Directive.

Overall, the impacts of geohazard risks due to the Proposed Development is considered to be 'neutral' 'imperceptible' and 'permanent' and not significant in the context of the EIA Directive.

9.12 Worst Case Scenario

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In a 'Worst Case' scenario the potential accidental release of hazardous material including fuels, or other hazardous materials being used onsite during the construction phase and operational phase of the Proposed Development would present a 'negative', 'moderate to significant' and 'long-term' impact on the receiving land, soils, and geology environment. It is noted that this impact is considered significant in the context of the EIA Directive due to the potential for long-term degradation of the impacted soils in the absence of mitigation. However, this scenario would only occur through the failure of secondary containment or a major incident on the site. This worst-case scenario is deemed to be unlikely to occur.

9.13 Interactions

Interactions are dealt with in Chapter 16 of this EIAR.

9.14 Monitoring

9.14.1 Construction and Demolition Phase

During the construction and demolition phase, 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.
- The appointed contractor will employ a suitably qualified person to monitor excavations in made ground to ensure that any contaminated material is identified, segregated and disposed of appropriately. The appointed contractor will monitor excavations to ensure consistency with the descriptions and classifications according to waste acceptance criteria testing carried out as part of the site investigations.
- A dust deposition monitoring programme will be implemented during the construction phase in order to verify the continued compliance with relevant standards and limits. The appointed contractor will undertake dust monitoring at a range of nearest sensitive receptors during the construction phase of the Proposed Development with the Technical Instructions on Air Quality Control (TA Luft) dust deposition limit set at 350 mg/m2/day, averaged over one year and applied as a 30-day average.
- Materials management and waste audits will be carried out at regular intervals to monitor the following:
    - Management of soils onsite 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.

9.14.2 Operational Phase

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

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9.15 Conclusion

Overall, there are no significant residual impacts on land, soils and geology anticipated regarding the construction phase and operational phase of the Proposed Development. The predicted residual effects are considered to be imperceptible and not significant in the context of the EIA Directive.

9.16 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).
- Core Environmental Consulting, 2018. Combined Preliminary (PRA) and Generic Quantitative Risk Assessment (GQRA) for Proposed Residential Development Lands at Blackrock, Dundalk
- Donnachadh O' Brien and Associates Consulting Engineers, 2025. Infrastructure Design Report (Planning Submission).
- Donnachadh O' Brien and Associates Consulting Engineers, 2025. Construction Management Plan (Planning Submission).
- Enterprise Ireland. Best Practice Guide BPGCS005. Oil Storage Guidelines.
- Environmental Protection Agency, 2025. EPA Envision Maps. https://gis.epa.ie/EPAMaps/. Consulted on 14/04/2025.
- Environmental Protection Agency, 2020. Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities.
- Environmental Protection Agency, May 2022. Guidelines on the information to be contained in Environmental Impact Assessment Reports.
- Geological Society of Ireland, 2025. GSI web mapping. https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228. Consulted on 14/04/2025.
- Google Earth Pro, 2025. Consulted on 14/04/2025.
- Institute of Geologists of Ireland Guidelines, 2002. Geology in Environmental Impact Statements, A Guide.
- Institute of Geologists of Ireland Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements.
- Louth County Council Development Plan 2021-2027.
- National Roads Authority, 2009. Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.
- Ordnance Survey Ireland, 2024. Ordnance Survey Ireland webmapping http://map.geohive.ie/mapviewer.html. Consulted on 14/04/2025.
- 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
- Teagasc, 2025 webmapping. http://gis.teagasc.ie/soils/map.php. Consulted on 14/04/2025.

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Main Statement

Volume II

CHAPTER 10

Water & Hydrology

May 2025

McCutcheon Halley
CHARTERED PLANNING CONSULTANTS

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10 Water & Hydrology

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10.1 Introduction

This chapter of the EIAR was prepared to assess the potential significant effects of the Proposed Development on the receiving hydrology and hydrogeology (water) environment on lands to the south of Bóthar Maol and west of Blackrock Road at Haggardstown, Dundalk, Co. Louth (hereafter referred to as the 'site' and 'Proposed Development') 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 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.
- Evaluate the significance of any residual impacts.

It should be read in conjunction with Chapter 4 Population & Human Health, Chapter 9 Land, Soil and Geology, Chapter 13 Air Quality, Chapter 5 Landscape & Visual Impact, Chapter 8 Material Assets: Waste and Chapter 11 Biodiversity of the EIAR and other information provided by the Applicant pertaining to the design proposals for the Proposed Development and submitted with the planning application.

10.2 Expertise & Qualifications

This Chapter was prepared by Gareth Caroll of Enviroguide Consulting (a DNV Company). Gareth Carroll holds a BA in Mathematics and a BEng in Civil, Structural and Environmental Engineering from Trinity College Dublin. Gareth Carroll, a Chartered Environmentalist with the Institute of Environmental Sciences (CEnv) and over 12 years' experience as an Environmental Consultant, has carried out environmental assessments for a range of project types and geological and hydrogeological site settings and been involved in the preparation of EIARs for the following projects:

- Large-Scale Residential Development at Wayside, Enniskerry Road and Glenamuck Road, Kilternan, Dublin 18.
- Large-Scale Residential Development at White Car Park Site (Site A) at Blanchardstown Town Centre, Coolmine, Dublin 15.
- Large-Scale Residential Development at the Former Ford Distribution Site, fronting onto Centre Park Road, Ballintemple, Co. Cork.

10.3 Proposed Development

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The proposed development is described in Chapter 2. The development generally comprises of 502 no. residential units, comprising 1, 2, 3 and 4 bed units in a mix of maisonettes, terraced and semi-detached units, with 1 no. detached bungalow unit; Creche building and all associated site and development works including landscaping and amenity areas, infrastructure and services, and new entrance from Blackrock Road, with additional pedestrian/cycle access from Bóthar Maol.

10.3.1 Aspects Relevant to this Chapter

The Proposed Development will include the following components which are of particular relevance with respect to hydrology and hydrogeology.

10.3.1.1 Construction Phase

The construction phase of the Proposed Development will include:

- Foundations will consist of concrete strip and pad foundations with no requirement for piling.
- As documented in the Construction Management Plan (OCEMP (DOBA, 2025)) (Donnachadh O'Brien and Associates Consulting Engineers (DOBA), 2025), the proposed development will require excavation for the following non-exhaustive list of activities with associated approximate volumes of the materials to be excavated.
    - Topsoil - 53,000m^3.
    - Subsoils from reduced level excavations - 32,500m^3.
    - Subsoils for main drainage and attenuation - 10,000m^3.
    - Rock for main drainage and attenuation - 5,000m^3.
    - Subsoils for site services - 10,000m^3.
- Where possible, it is intended to reuse all suitable excavated topsoil and subsoil to achieve formation levels and for landscaping and engineering use. As documented in the OCEMP (DOBA, 2025) (DOBA, 2025), the following quantities are assumed to be reused in the development:
    - Topsoil - 28,000m^3.
    - Subsoils from reduced level excavations - 6,500m^3.
    - Rock for main drainage - 5,000m^3.
- Surplus soil, and soil not suitable for re-use will be removed offsite in accordance with all statutory legislation. As documented in the OCEMP (DOBA, 2025) (DOBA, 2025), the following quantities are assumed to be removed offsite for reuse or to an appropriate licenced landfill:
    - Topsoil - 25,000m^3.
    - Subsoils from reduced level excavations - 26,000m^3.
    - Subsoils for main drainage and attenuation - 10,000m^3.
    - Subsoils for site services - 10,000m^3.
- Localised groundwater dewatering during the construction of utility services is anticipated to enable 'dry excavation' during excavation.
- Temporary stockpiling of excavated material pending re-use on site or export offsite.

- Construction of new surface water drainage designed in accordance with the principles of Sustainable Drainage Systems (SuDS).
- Construction of new foul drainage 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), IS EN 752 Drain and Sewer Systems outside Buildings, IS EN 12056 Gravity Drainage Systems inside Buildings and the Building Regulations Technical Guidance Document Part H Drainage and Wastewater.

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10.3.1.2 Operational Phase

Surface Water Drainage

As outlined in the Infrastructure Design Report (Donnachadh O'Brien and Associates Consulting Engineers (DOBA), 2025), surface water from the Proposed Development will be managed in accordance with the principles and objectives of Sustainable Drainage Systems (SuDS), the Greater Dublin Sustainable Drainage System (GDSDS) and Louth County Council (LCC) to treat and attenuate water prior to discharging offsite as follows:

- Surface water from the main area of the Proposed Development will be discharged at greenfield runoff rates (64.5 l/s) to a new outfall at the existing unnamed stream located to the north of Bóthar Maol.
- Surface water from the entrance to the Proposed Development will be discharged at greenfield runoff rates (5.0 l/s) to the existing wetland and unnamed stream located at the eastern boundary of the site adjacent to the R172 Blackrock Road.

The surface water drainage for the Proposed Development has been designed to cater for surface water runoff from all hard surfaces including roadways, carparks, and roofs, and will adequately accommodate the 1 in 100year rainfall event plus 20% to account for the effects of climate change.

The following attenuation and SuDS measures will be incorporated into the Proposed Development as detailed in the Infrastructure Design Report (DOBA, 2025):

- Bioretention Areas.
- Bioswales.
- Tree Pits.
- Unlined Tree Pit Trenches.
- Unlined Permeable Paving.
- Filter Drains.
- Detention Basin.
- Over-sized Pipes.
- Petrol / Oil Separators.
- Rainwater Harvesting.

The proposed surface water drainage layout is presented in drawing 2268-DOB-XX-SI-DR-C-0200 (DOBA, 2025) submitted with the application.

Foul Water

The estimated peak Wastewater loading generated by the Proposed Development's Dry Weather Flow (DWF) is estimated at 2.45 l/s while the Design Wastewater Flow of 3DWF is 7.36 l/s (DOBA, 2025).

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As outlined in the Infrastructure Design Report (DOBA, 2025), foul water from the Proposed Development will be pumped via the new 189m^3 Type 3 Wastewater Pump Station (WwPS), located to the east of the site, to a new 110mm internal diameter (I.D.) rising main constructed along the public road before discharging the existing 600mm UE foul sewer located along Finnabair Crescent approximately 0.8km northwest of the site.

The Uisce Eireann (UE) Confirmation of Feasibility (CoF) letter dated the 19th of May 2025 (UE COF Reference: CDS24010739) states that the wastewater connection is feasible subject to upgrades by UE. As described within the Infrastructure Design Report (DOBA, 2025), foul water from the Proposed Development will drain northwards to the existing Coes Road Pumping Station prior to being pumped to the Dundalk Waste Water Treatment Plan (WwTP). The UE CoF notes that upgrades to the Coes Road Pumping Station, which will be carried out by UE, are planned for Q1 2030 (this may be subject to change) at which point there will be capacity for the Proposed Development. Therefore, the proposed 7-year permission provides adequate time for this infrastructure to be completed in advance of construction of the 502No. residential units in a worst-case scenario. Alternatively, where a connection is proposed in advance of the Coes Road Pumping Station upgrades the following interim solution has been confirmed by UE; "*Flows from the pumping station constructed under Phase 1 of the development (serving 200 units) shall not be increased during daytime hours (i.e., 7am to 7pm). This would amount to approximately 61m3 total volume pumped in these hours. The remaining balance of flows (serving 303 units) would be stored during the day then discharged in the night (7pm to 7am) Dosing would be required to avoid septicity This arrangement would be temporary until the Coe's road upgrade project is completed. Once this is completed the pumping station can operate as normal throughout the day.".* Therefore, capacity can alternatively be provided for the Proposed Development in the interim and in advance of the Coes Road Pumping Station upgrades in Q1 2030. The Applicant will ensure that any connection will be under the consent of UE and subject to a connection offer.

Foul water from the Proposed Development will be treated at the Dundalk WWTP (EPA Licence No. D0188-01) before ultimately discharging to Fane Estuary transitional waterbody (EU Code: IE_NB_040_0400).

The proposed foul water drainage design layout is presented in drawing: 2268-DOB-XX-SI-DR-C-0300 (DOBA, 2025) submitted with the application.

Water Supply

The estimated peak hour water demand generated by the Proposed Development is 15.32l/s (DOBA, 2025).

As outlined in the Infrastructure Design Report (DOBA, 2025), water supply to the Proposed Development will be from the new 200mm diameter looped watermain with 150mm and 100mm diameter spurs connected to the upgraded 150mm diameter watermain located on the R172 Blackrock Road to the east of the Proposed Development.

The UE CoF letter dated the20th of December 2024 states that the water supply connection is feasible without infrastructure upgrade by Uisce Éireann (UE CoF Reference: CDS24010739).

The proposed water supply layout is presented in drawing 2268-DOB-XX-SI-DR-C-0400 (DOBA, 2025) submitted with the application.

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10.4 Methodology

10.4.1 Relevant Legislation & Guidance

The methodology adopted for this assessment takes cognisance of the relevant guidelines in particular the following:

- 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.
- Act No. 30/2007, Water Services Act 2007 as amended.
- Act No. 21/1990, Local Government (Water Pollution) (Amendment) Act, 1990 as amended.
- Act No. 1/1977, Local Government (Water Pollution) Act, 1977 as amended.
- S.I. No. 722/2003 – European Communities (Water Policy) Regulations 2003 as amended.
- 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 as amended.
- S.I. No. 272/2009 - European Communities Environmental Objectives (Surface Waters) Regulations 2009 as amended.
- S.I. No. 9 of 2010 - European Communities Environmental Objectives (Groundwater) Regulations 2010 as amended.
- WFD Working Group, 2005. Guidance on the Assessment of the Effect of Groundwater Abstractions (WFD, 2005).
- Louth County Council, 2021. Louth County Development Plan 2021- 2027.
- Louth County Council, 2025. Dundalk Local Area Plan 2025-2031.

Other guidance used in the assessment of potential effects on the receiving water environment 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 Effect 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 Effect Assessment Reports (EPA, 2022).

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10.4.2 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 effect 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 effect determination. This element of the assessment also included developing the Conceptual Site Model (CSM) for the Site and receiving environment.

This stage of the assessment included a desktop study that comprised a review of published environmental information for the Site. The study area, for the purposes of assessing the baseline conditions for this chapter of the EIAR, extends beyond the site boundaries and includes a 2.0km radius of the site and Proposed Development 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 Site. This broader area is necessary to identify and evaluate all potential receptors that could be affected by the Proposed Development, either directly or indirectly. The distinction between the application site and the study area is crucial. The site of the Proposed Development is the focal point of the Proposed Development, while the study area includes any potential hydrogeological / hydrological connections to sensitive receptors including habitats that might experience secondary effects.

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.

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A site walkover survey to establish the environmental site setting and baseline conditions at the site of the Proposed Development relevant to the hydrological and hydrogeological environment was undertaken by Enviroguide Consulting on 14th of February 2025.

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, 2025).
- Geological Survey Ireland (GSI) Datasets Public Viewer and Groundwater web mapping (EPA, 2025).
- National Parks and Wildlife Services (NPWS) web mapping (NPWS, 2025).
- Ordnance Survey Ireland (OSI) web mapping (OSI, 2025).
- Water Framework Directive Ireland (WFD) web mapping (WFD, 2025).
- Office of Public Works (OPW) database on historic flooding and the Catchment Flood Risk Assessment and Management (CFRAM) maps (OPW, 2025); and
- Information provided by the Applicant pertaining to the design proposals for the Proposed Development.

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. The results of the site investigations, detailed in Section 10.4.5, were used to identify and assess hydrogeological subsurface features at the site.

Element 3: Evaluation of Impacts, Mitigation Measures, Residual Impacts and Final Impact Assessment were based on the outcome of the information gathered in Element 1 and Element 2 of the assessment. Mitigation measures to address all identified adverse impacts that were identified in Element 1 and Element 2 of the assessment were considered in relation to the construction and operational phases 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.

10.4.3 Description of Importance of Receiving Environment

The National Roads Authority (NRA) criteria for estimation of the importance of hydrogeological features at the site during the Environmental Impact Assessment (EIA) stage, as documented by IGI (IGI, 2013) are summarised in

Table 10-1.

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Table 10-1: Criteria for Rating Importance of Hydrological 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.

10.4.4 Description and Assessment of Potential Impact

Impacts will vary in quality from negative, 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 based upon the 2022 EPA Guidelines on the information to be contained in EIARs, as outlined in Chapter 1 of this EIAR.

10.4.5 Site Surveys/Investigations

Site investigations (including trial pitting, borehole drilling, the installation of groundwater monitoring wells, groundwater level monitoring and infiltration tests) were undertaken by Geotechnical

Environmental Services Ltd. (GES) in June 2018 and by IGSL Ltd. (IGSL) in March 2023. The GES site investigation report (Geotechnical Environmental Services Ltd., 2018. Ground Investigation Factual and Interpretive Report) and the IGS site investigation report (IGSL Ltd., 2023. Ground Investigation and Geotechnical Interpretive Report) are included in Volume 3 of this EIAR.

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10.4.6 Consultation

Pre-planning consultation was held with Louth County Council as part of the LRD process, including both a S.247 Meeting and a Section 32B meeting . The relevant findings of the Large-Scale Residential Development (LRD) Opinion Report (Louth County Council, 2025) in respect to hydrology and hydrogeology including foul water disposal, surface water drainage, water flow have been considered in this chapter of the EIAR.

10.5 Difficulties Encountered

There were no difficulties were encountered in the preparation of this chapter of the EIAR.

10.6 Baseline Environment

10.6.1 Site Location and Surrounding Land Use

The site of the Proposed Development is located on lands to the south of Bóthar Maol and west of the R172 Blackrock Road at Haggardstown, Dundalk, Co. Louth. This is the principal site for the Proposed Development and measures c.17.6 ha. The site is currently accessed via the existing entrance off Bóthar Maol to the north of the site.

The redline boundary for the Proposed Development extends along the R172 Blackrock Road and Finnabair Crescent to facilitate the construction of mains water and wastewater connections to existing Uisce Éireann (UE) infrastructure.

The site of the Proposed Development is irregular in shape and comprises primarily two (2No.), largely unmanaged, agricultural fields. There is a hedgerow running down the (approximate) centreline of the site. The site is demarked with hedgerows, treelines, and stone walls. There is a small disused pump house in the northeast corner of the site.

During the site walkover undertaken by Enviroguide Consulting on the 14th of February 2025, evidence of disturbed ground was identified across the site. It is understood that these works were undertaken under the previously granted Strategic Housing Development (SHD) permission and included the development haul roads and the excavation of foundations for a group of residential properties in the southern portion of the site.

The area surrounding the site is characterised by a mix of land uses. The site is bound south by agricultural lands, to the west by Dundalk Golf Club, to the north by private properties and Bóthar Maol and to the east by private residential properties with a portion of the site bounding the R172

Blackrock Road. The Inner Dundalk Bay transitional waterbody (EU Code: IE_NB_040_0100) is located approximately 0.03km east of the site at its closest point.

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The Site location is presented in Figure 10-1 and the existing site layout is presented in Figure 10-2.

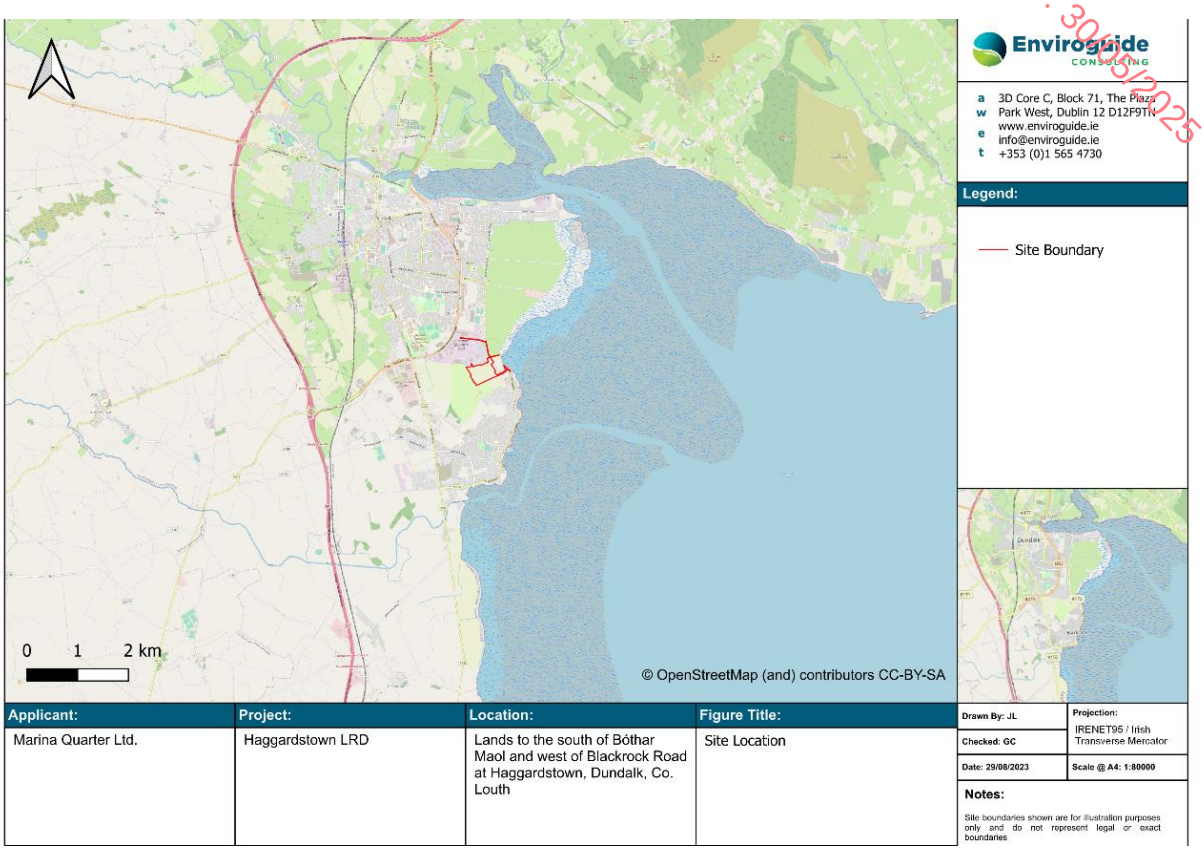

Figure 10-1: Site Location

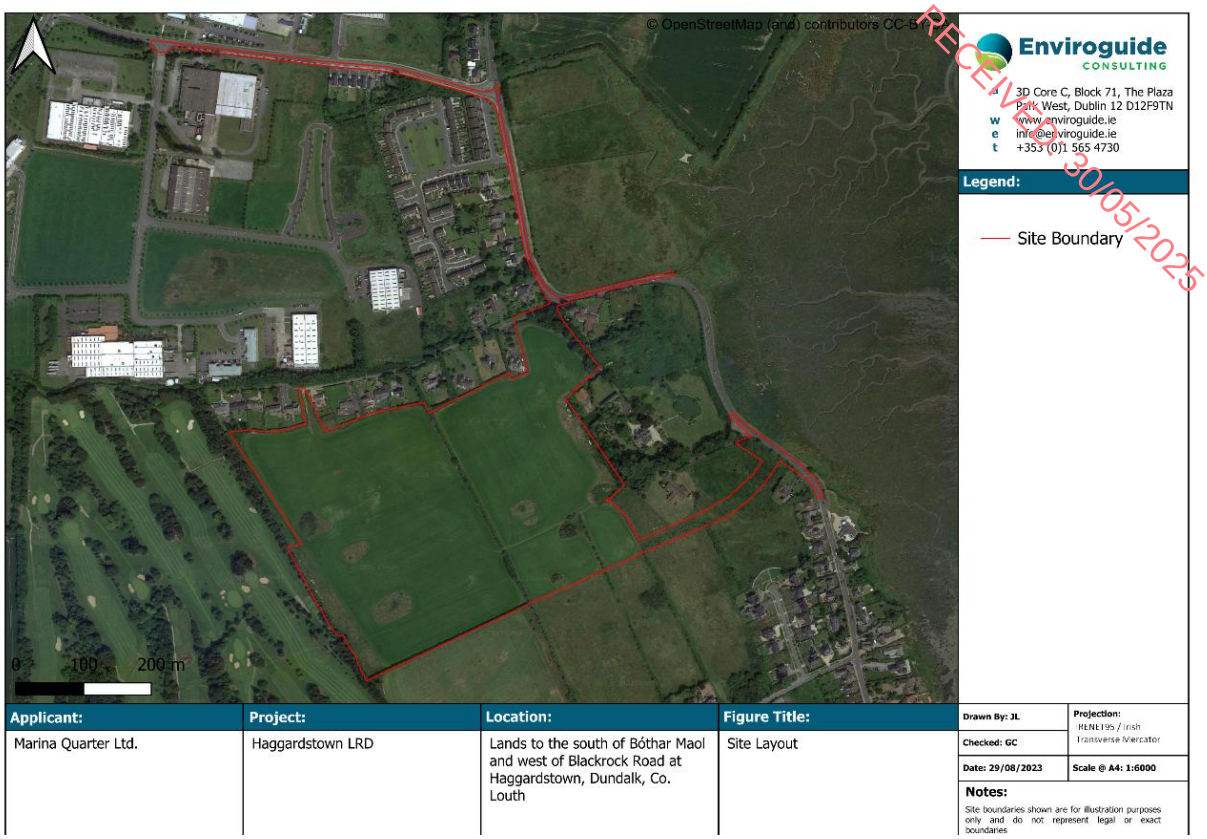

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Figure 10-2: Current Land Use

10.6.2 Topography

The site topography is relatively steeply sloping from west to east. There are a number of topographic knolls which are present in both the western and eastern portions of the site. They form prominent local peaks.

As documented in the Infrastructure Design Report (DOBA, 2025 submitted with the planning application under separate cover), the existing levels at the site extend from approximately 22.00 meters above Ordnance Datum (mOD) along the western boundary to 8.00 mOD along the eastern boundary and reducing again to 3.30 mOD at the interface with the R172 Blackrock Road.

A topographical survey detailing the existing levels at the site is presented in Figure 9.4.

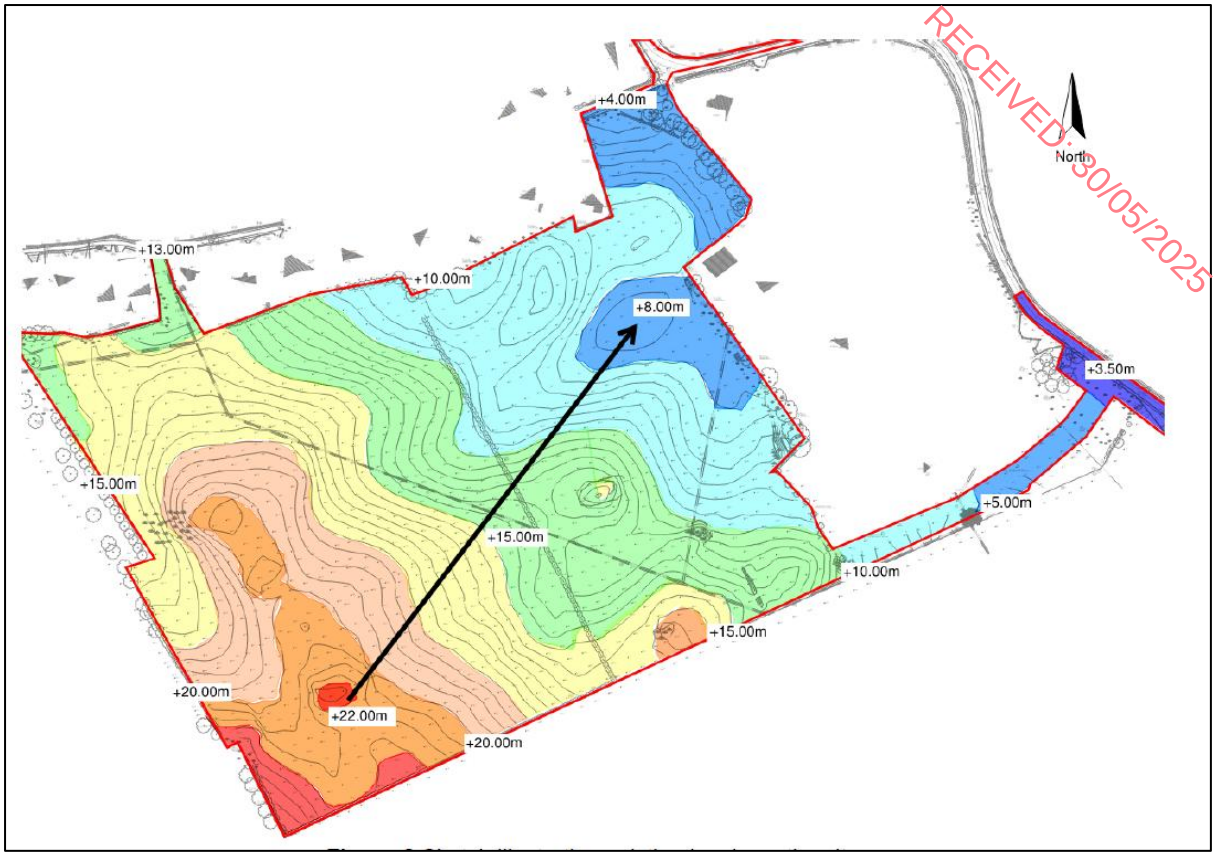

Figure 9.4: Existing Levels Onsite (DOBA, 2025)

10.6.3 Soil and Geology

The soils and geology at the site are described and assessed in Chapter 9 – Land Soils and Geology of this EIAR and summarised as follows:

- The soils beneath the main site area are mapped as till derived chiefly from Lower Palaeozoic rocks of the Acid Brown Earths, Brown Podzolics soil group within the category of deep well drained mineral (mainly acidic) (IFS Soil Code: TLPSsS) (GSI, 2025);
- The soils beneath the portion of the site where the eastern site boundary extends toward the Dundalk estuary (i.e., at the entrance to the Proposed Development), are mapped as beach sands and gravels (IFS Soil Code: MarSands) (GSI, 2025).
- The soils beneath the portion of the site extending along the R172 Blackrock Road and Finnabair Crescent are mapped as Irish Sea till of the Surface water Gleys, Ground water Gleys soil group within the category mineral poorly drained (mainly acidic) (IFS Soil Code AminPD) and made ground (IFS Soil Code: Made) (GSI, 2025).
- The bedrock underlying the Site is mapped as the Clontail Formation which comprises green-grey, medium to thickly bedded, coarse and very fine grained tae greywackes, with dark grey, thinly bedded, poorly graded, quartzose fine sandstone to siltstone units (GSI, 2025). Previous ground investigations (GES, 2018 and IGSL, 2023) encountered bedrock between 1.7mbGL and 3.6mbGL.

- Bedrock outcrops were not identified during the site walkover, however, the GSI (GSI, 2025) has mapped a number of bedrock outcrops across the site.
- There are no karst features within the Site boundary or within a 2.0 km radius of the site (GSI, 2025).

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10.6.4 Rainfall

Monthly rainfall data available for 1km x 1km grids (for the period 1991 to 2020) was sourced from Met Éireann (Met Éireann, 2025) and is presented in Table 10-2.

Table 10-2: Long Term Mean Monthly Rainfall Data

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Long Term Average
198.7	155.1	127.9	111.2	97.4	106.2	114.3	123.7	130.4	181.6	190.1	206.1	1742.7
Note: 1.0 km x 1.0 km Irish Grid Coordinates selected for the site = X (Easting): 113000, Y (Northing): 460000												

The closest synoptic meteorological station to the site is the Dunsany Grange station located approximately 54.0 km southwest of the site. A summary of the long-term average potential evapotranspiration (PE) at Dunsany Grange station for the period 2024 (Met Éireann, 2025) is presented in Table 10-3.

Table 10-3: Average Potential Evapotranspiration

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Long Term Average
12.8	17.8	33.3	51.7	76.1	84.4	81.0	73.6	45.4	27.9	11.7	11.7	527.4

10.6.5 Regional Hydrogeology

10.6.5.1 Groundwater Body

The bedrock aquifer of the Clontail Formation beneath the site is within the Louth Groundwater Body (GWB) (EU Code: IEGBNI_NB_G_019) (EPA, 2025). The Clontail GWB covers an area of 1,621 sq.km. across Co. Louth, Co. Monaghan, Co. Meath, and Northern Ireland (GSI, 2025).

As documented in the Louth GWB Summary of Initial Characterisation (GSI, 2004), groundwater flow will be concentrated in upper fractured and weathered zones and in the vicinity of fault zones. Groundwater levels across the Louth GWB are mainly between 0.0 meters below ground level (mbGL) and 10mbGL. Flow paths will be short, in general between 30m and 300 m, with groundwater discharging rapidly to nearby streams and small springs.

Diffuse recharge occurs via rainfall percolating through the subsoil and rock outcrops. Due to the low permeability of some subsoil deposits (e.g., thicker till) and the aquifers, a high proportion of the

effective rainfall will quickly discharge to the streams in the GWB. The relatively high stream density reflecting the higher proportion of surface runoff as opposed to aquifer recharge (GSI, 2004).

The main groundwater discharges are to the rivers and streams crossing the GWB, which reflect short groundwater flow paths. Small springs and seeps are likely to issue at the stream heads and along their course and on the coastal cliff faces (GSI, 2004).

Groundwater flow directions are expected to follow topography, overall, in an easterly direction (GSI, 2004).

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10.6.5.2 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 what that enters the aquifer at points (e.g., sinkholes) or along linear fractures (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, 2025) have calculated an average annual capped recharge of between 67mm/year and 100mm/year for the aquifer beneath the site based on the effective rainfall (ER) value of 337mm/year and a recharge coefficient of between 20% and 85%. The low recharge potential is due to the presence of low permeability subsoil overlying a poor aquifer (Pl).

10.6.5.3 Aquifer Classification and Groundwater Vulnerability

The bedrock aquifer within the Clontail Formation beneath the site is classified by the GSI (GSI, 2025) as a Poor Aquifer (Pl) which is generally unproductive except for local zones thereby indicating low capacity of the aquifer at the site to accept recharge via infiltration of rainfall. Poor aquifers are capable of supplying 'moderate' to 'low' yields (<100m^3/day) and groundwater flow occurs predominantly through a limited and poorly connected network of fractures, fissures, and joints (GSI, 2017).

A locally important gravel aquifer (Lg) is mapped by the GSI (GSI, 2025) approximately 0.12km north of the site along the section of Finnabair Crescent where the connection to the existing 600mm UE foul sewer is proposed (refer to Figure 10-3).

The vulnerability categories, and methods for determination, are presented in the Groundwater Protection Schemes publication (DEHLG/EPA/GSI, 1999) and summarised in Table 10-4. 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 10-4: Vulnerability Mapping Criteria (DEHLG/EPA/GSO, 1999)

	Hydrogeological Requirements

Subsoil Thickness	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	Extreme	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.

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The GSI has a assigned a groundwater vulnerability rating of 'Extreme' (E) and 'Rock at or Near Surface or Karst' for the groundwater beneath the majority of the site (GSI, 2025). While a groundwater vulnerability rating of 'High' (H) has been assigned by the GSI (GSI, 2025) to the groundwater in the north of the site (along the section of Finnabair Crescent where the connection to the existing 600mm UE foul sewer is proposed).

The anticipated depth to bedrock based on the low permeability subsoil encountered and the 'Extreme' groundwater vulnerability rating is between 0.0mbGL and 3.0mbGL.

The bedrock aquifer classification and groundwater vulnerability rating maps are provided in Figure 10-3 and Figure 10-4 respectively.

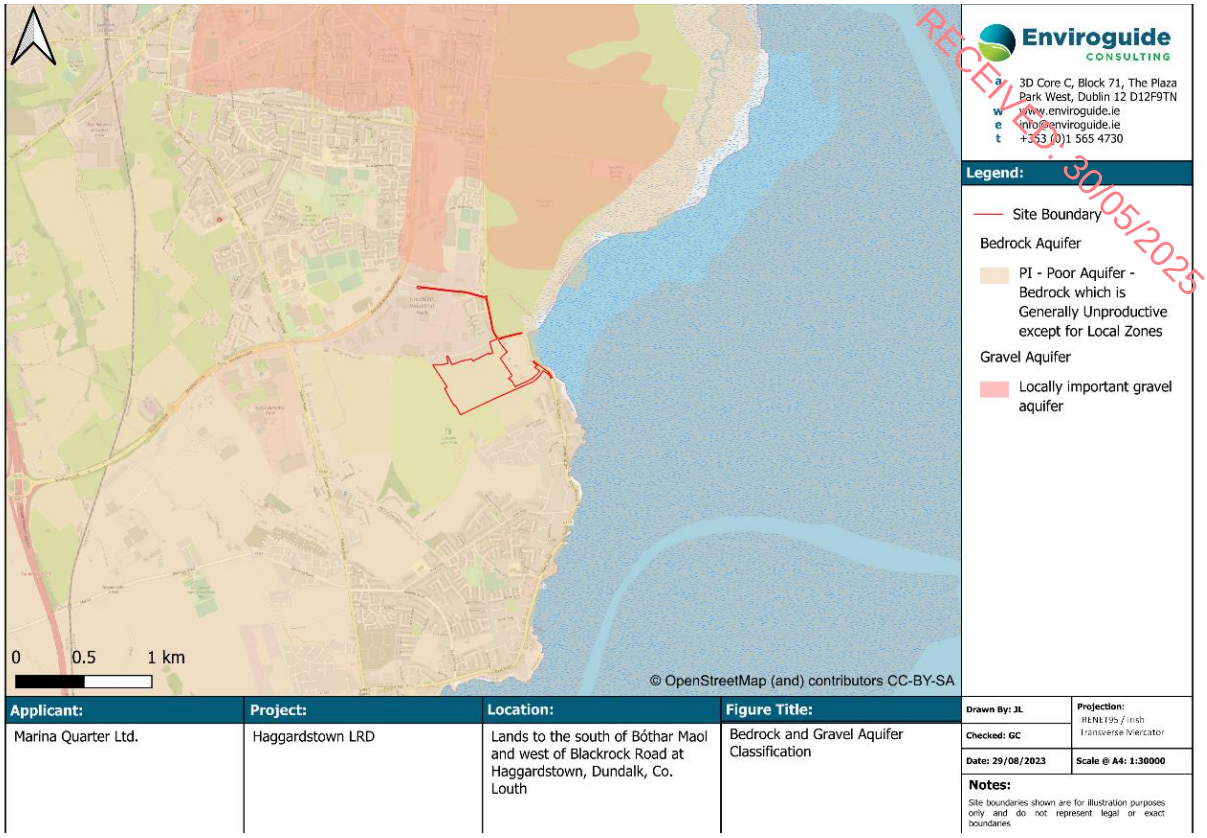

Figure 10-3: Bedrock and Gravel Aquifer Map

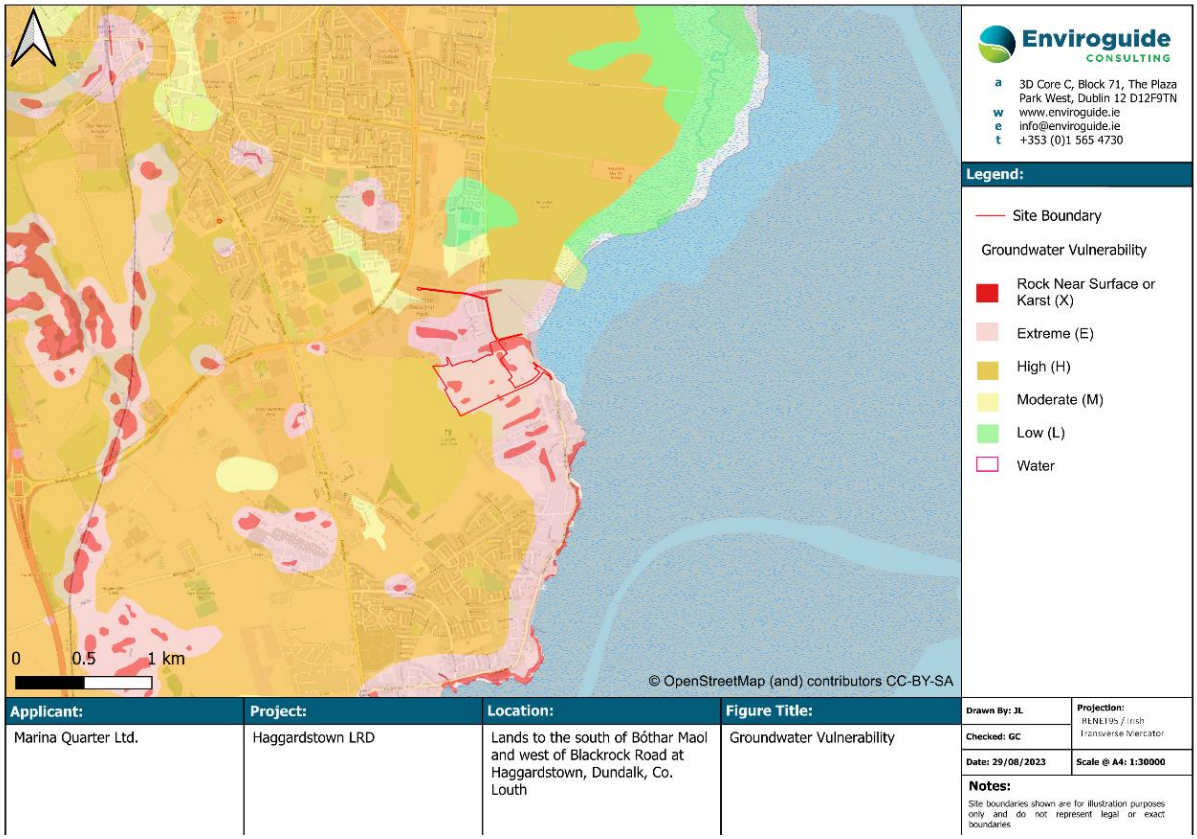

Figure 10-4: Groundwater Vulnerability

10.6.6 Site Hydrogeology

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As documented in the ground investigation reports (GES, 2018 and IGSL, 2023), groundwater / groundwater strikes were not encountered during trial pit excavations and drilling of boreholes advance to a maximum depth of 10.5mbGL. Groundwater monitoring wells were installed at six (6No.) borehole locations across the site (GES, 2018: BH1, BH2 and BH4. IGSL, 2023: RC01, RC02 and RC03).

Groundwater monitoring well locations BH1, BH2 and BH4 were screened with a response zone across slightly sandy, slightly gravelly, silty clay and weathered bedrock (GES, 2018). The three (3No.) groundwater monitoring wells (BH1, BH2 and BH4) were dipped to measure groundwater levels on three (3No.) occasions between the 19th and 28th June 2018.

Groundwater monitoring well locations RC01, RC02 and RC03 were screened with a response zone in weathered bedrock (IGSL, 2023). The three (3No.) groundwater monitoring wells (RC01, RC02 and RC03) were dipped to measure groundwater levels at the completion of drilling between the 15th and 21st March 2023.

The results of the groundwater level monitoring are summarised in Table 10-5.

Based on the site topography (refer to Section 10.6.2) and the results of the site investigation, the locally inferred groundwater flow direction is to the east toward the Inner Dundalk Bay transitional waterbody.

As documented in the ground investigation report (IGSL, 2023), infiltration tests were carried out at 12No. locations (BRE01 to BRE12 at depths between 2.0mbGL and 2.5mbGL) in accordance with BRE digest 365 'Soakaway' design tests. Infiltration rates were recorded as 'low' to 'very low' (IGSL, 2023). The infiltrations test rate ranged from no infiltration to a maximum rate of 3.2906xE-05m/sec (IGSL, 2023). The result indicates that the soil and subsoil are of low permeability with limited to no infiltration capacity from the ground surface to the underlying aquifer through the clay subsoils present at the site.

Table 10-5: Summary of Groundwater Level Monitoring Data

Borehole	Screen Interval	Response Zone Stratigraphy	Date Recorded	Groundwater Level
BH1 (GES, 2018)	0.50mbGL to 3.74mbGL	Silty Clay and Weathered Bedrock	19/06/2018	3.59mbGL (13.39mOD)
			25/06/2018	3.62mbGL (13.36mOD)
			28/06/2018	3.62mbGL (13.36mOD)
BH2 (GES, 2018)	0.50mbGL to 4.00mbGL	Silty Clay and Weathered Bedrock	19/06/2018	Dry (i.e., greater than 4.00mbGL / 17.20mOD)
			25/06/2018	
			28/06/2018	
BH4 (GES, 2018)	0.50mbGL to 2.00mbGL	Silty Clay and Weathered Bedrock	19/06/2018	Dry (i.e., greater than 2.00mbGL / 7.88mOD)
			25/06/2018	
			28/06/2018	
RC01(IGSL, 2023	2.50mbGL to 8.00mbGL	Weathered Bedrock	22/03/2023	3.45mbGL (17.26mOD)*
RC02(IGSL, 2023	3.00mbGL to 8.00mbGL	Weathered Bedrock	21/03/2023	4.20mbGL (18.25mOD)*

RC03(IGSL, 2023	1.00mbGL to 10.50mbGL	Weathered Bedrock	16/03/2023	8.80mbGL (5.93mOD)*
RC04(IGSL, 2023	Groundwater Monitoring Well No Installed	N/A	15/03/2023	3.10mbGL (8.48mOD)*
Notes: '*' = Water level recorded 5min after completion of borehole (IGSL, 2023)				

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10.6.7 Hydrology

The site is located within the Newry, Fane, Glyde and Dee WFD Catchment (Catchment I.D.: 06), the Castletown_SC_020 WFD Sub-catchment (Sub-Catchment ID 06_12) and the Haggardstown_010 WFD River Sub-basin (EU Code: IE_NB_06H080570) (EPA, 2025).

The EPA (EPA, 2025) records a number of surface waterbodies with a potential hydraulic connection to the site including the following:

- The Inner Dundalk Bay transitional waterbody (EU Code: IE_NB_040_0100) is located approximately 0.03 km east of the site at its closest point;
- The Castletown Estuary transitional waterbody (EU Code: IE_NB_040_0200) is located approximately 2.75 km north of the site at its closest point;
- The Outer Dundalk Bay coastal waterbody (EU Code: IE_NB_040_0000) is located approximately 3.05 km southeast of the site at its closest point; and
- The Upper Marshes Stream (River Waterbody Code: IE_NB_06H080570) is located approximately 0.01 km east and approximately 0.15 km north of the site at its closest points. The Upper Marshes Stream flows west before discharging to the Inner Dundalk Bay transitional waterbody and ultimately the Outer Dundalk Bay coastal waterbody.

The surface water courses and relevant other water bodies to the Site are presented in Figure 10-5.

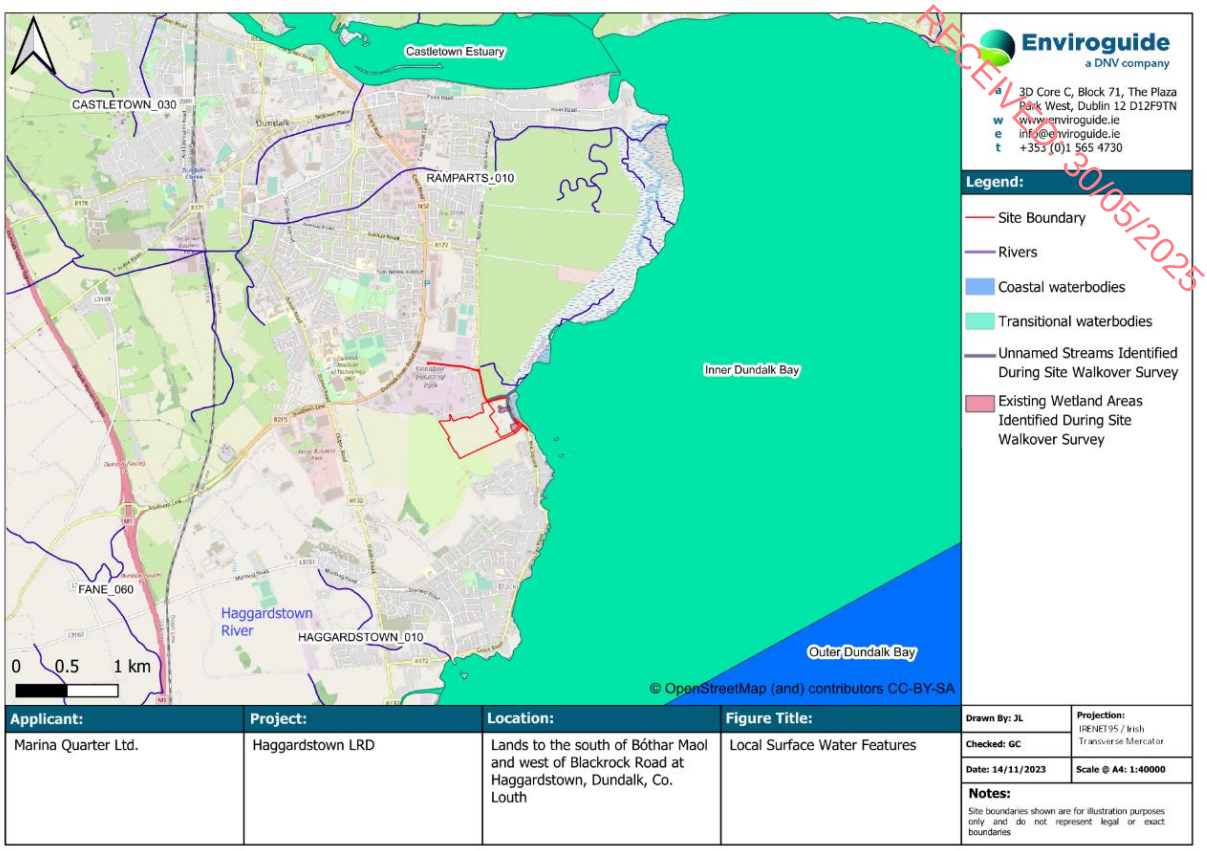

Figure 10-5: Surface Waterbodies within 2.0 km of the Site

10.6.7.1 Site Drainage

There are two (2No.) unnamed streams located at the eastern boundary of the site adjacent to the R172 Blackrock Road (i.e., at the entrance to the Proposed Development) and to the north of Bóthar Maol (refer to Figure 10-7). There are no other surface water courses, drains or sewers mapped or identified at the site during the site walkover undertaken by Enviroguide Consulting on the 14th of February 2025. It is noted that the ground within this eastern portion of the site was noted to be marshy and waterlogged in the vicinity of this unnamed watercourse during the site visit. The unnamed stream to the east of the site flows approximately 0.2 km north through private properties prior to crossing beneath the R172 Blackrock Road and converging with the unnamed stream identified to the north of Bóthar Maol. Both streams ultimately discharge in a northeast direction towards the Inner Dundalk Bay transitional waterbody (EU Code: IE_NB_040_0100) approximately 0.12 km downstream of the site and the point at which the two unnamed streams converge.

Based on the site topography (refer to Section 10.6.2) and the low permeability of the soils and subsoils at the site (i.e., limited to no infiltration capacity), it is considered that flow from the Site will ultimately be toward the two (2No.) unnamed streams and the Inner Dundalk Bay transitional waterbody (EU Code: IE_NB_040_0100).

10.6.8 Flooding

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A detailed flood risk assessment report (FRA) was produced for the site and Proposed Development (IE Consulting, 2025. Site-Specific Flood Risk Assessment Report). It assessed the potential flood risk associated with fluvial, groundwater, coastal and pluvial flooding.

The primary flood risk identified is from tidal flooding due to the site's proximity to Dundalk Bay (Irish Sea), with secondary risks from pluvial flooding caused by overland flow from elevated lands. The assessment includes detailed modelling of tidal and pluvial flood scenarios, revealing that the eastern site entrance is vulnerable to extreme tidal events. Mitigation measures are proposed to manage these risks. These measures are described below:

Measure 1: Greenfield pluvial runoff shall be intercepted where it intersects the southern area of the proposed road embankment. The pluvial runoff shall be diverted in a northerly direction in a proposed 600mm diameter drainage pipe and will discharge to the existing drainage channel located to the north of the R172 road. The design of this system has been prepared by Donnachadh O'Brien & Associates Consulting Engineers and is shown on the stormwater design drawings prepared by the same.

- Measure 2: Conveyance pipe culverts and 300mm (minimum depth) cut off drainage channels
- shall be constructed as follows:
- 3 x 450mm pipes, 23.8m in length, non-return valve (Tideflex or similar) on northern side of road.
- 2 x 450 pipe, 19.7m in length, non-return valve (Tideflex or similar) on northern side.
- 2 x 300mm pipes under field access entrance, 8.6m in length.
- 1 x 450mm pipe, 13.2m in length.
- Drainage channels along toe of embankment on north and south sides.

The SSFRA report concludes that:

- The Proposed Development is considered to comply with the requirements of the Justification Test for development management.
- The flood risk to and from the development as proposed is considered to be LOW. The development as proposed is not expected to result in an adverse impact to the hydrological regime of the area or increase flood risk elsewhere and is therefore considered to be appropriate from a flood risk perspective.

10.6.9 Water Quality Data

10.6.9.1 Published Regional Surface Water Quality

The EPA surface water quality monitoring database (EPA, 2025) was consulted and there is no available EPA water quality monitoring data published for the river waterbodies within the vicinity of the Site, including the two (2No.) unnamed streams located along the eastern and northern boundaries of the

site and the Upper Marshes Stream located approximately 0.01km east and 0.15km north of the site at its closest points.

There is available EPA water quality monitoring data (EPA, 2025) published for the Inner Dundalk Bay transitional waterbody and the Outer Dundalk Bay coastal waterbody (refer to Table 10-6).

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Table 10-6: EPA Surface Water Quality Data

EPA WFD Parameter Quality & Trend Analysis					
Location	**Period**	**Parameter**	**Indicative Quality**	**Trend**	**Baseline Conc. (2017)**
Inner Dundalk Bay Transitional Waterbody	Summer	Chlorophyll	High	None	7.10mg/l
	Winter		Good	Upwards	11.05mg/l
	Summer	Dissolved Inorganic Nitrogen (as N)	High	None	0.04mg/l
	Winter		Good	Downwards	0.294mg/l
	Summer	Orthophosphate (as P)-unspecified	High	Downwards	16.00mg/l
	Winter		High	Downwards	25.50mg/l
Castletown Estuary Transitional Waterbody	Summer	Chlorophyll	Good	Upwards	17.0mg/l
	Winter		High	Upwards	5.0mg/l
	Summer	Dissolved Inorganic Nitrogen (as N)	Good	Downwards	0.344mg/l
	Winter		Moderate	Downwards	0.83mg/l
	Summer	Orthophosphate (as P)-unspecified	Moderate	Downwards	59.5mg/l
	Winter		Good	Upwards	43.0mg/l
Outer Dundalk Bay Coastal Waterbody	Summer	Chlorophyll	High	Downwards	2.20mg/l
	Summer	Dissolved Inorganic Nitrogen (as N)	High	None	0.026mg/l
	Summer	Orthophosphate (as P)-unspecified	High	Downwards	8.3mg/l

10.6.9.2 Published Regional Groundwater Quality

The EPA (EPA, 2025) groundwater monitoring data was reviewed and there are no groundwater quality monitoring stations within a 2.0 km radius of the Site or that are hydraulically connected to the Site (EPA, 2025).

10.6.9.3 Receiving Water Quality – Dundalk Waste Water Treatment Plant (WWTP)

Foul water from the Proposed Development will discharge via the Dundalk WWTP to the Castletown Estuary transitional waterbody. The Dundalk WWTP is operated under relevant statuary approvals.

The most recent available Annual Environmental Report (AER) for the Dundalk WWTP is 2022 (UE, 2023). The AER identified that the final effluent was non-compliant with the Emission Limit Value (ELV) for total phosphorus as specified in the discharge license (D0034-01). It was reported that the non-compliances were as a result of *'Inadequate Operational Procedures/Training'*. The following is also noted under the significance of results section of the AER:

> *'The discharge from the wastewater treatment plant may be having an observable negative impact on the water quality and the WFD status of the Castletown Estuary and Inner Dundalk Bay.'*

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10.6.10 Water Use and Drinking Water Source Protection

A review of the GSI wells and springs database (GSI, 2025) has identified nineteen (19No.) sources of 'unknown' / 'other' use and one (1No.) source of 'industrial' use within a 2.0 km radius of the site (refer to Figure 10-6). It is noted that all identified sources are considered to be upgradient of the site based on the inferred groundwater flow direction to the east beneath the site.

There are no mapped source protection zones within a 2.0 km radius of the site. The closest source protection area is the Ardtullybeg Public Water Supply (PWS) located approximately 11.6 km east of the site and on the opposite side of the Inner Dundalk Bay transitional waterbody.

There are no surface water drinking water sources, under Article 7 of the Water Framework Directive, identified by the EPA (EPA, 2025) within a 2.0 km radius of the site.

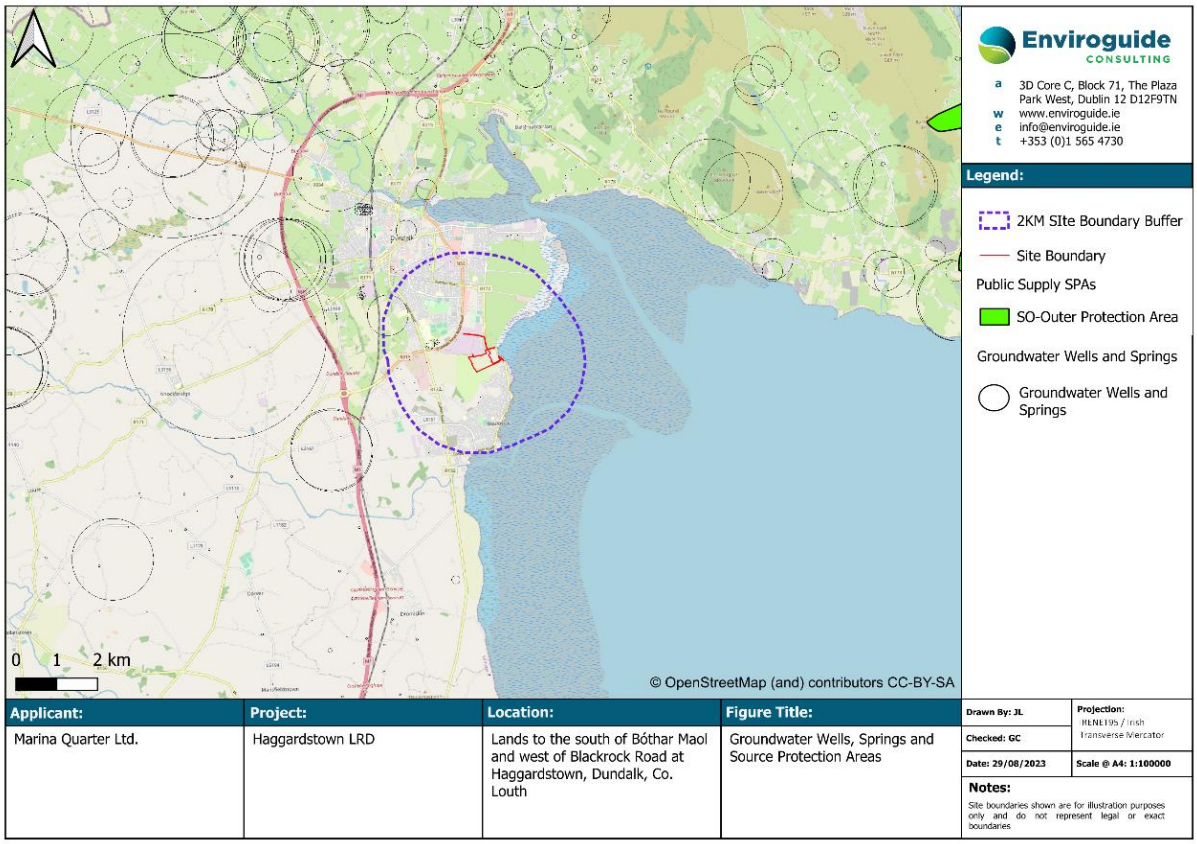

Figure 10-6: Groundwater Wells and Springs

10.6.11 Water Framework Directive Status

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The WFD status for river, lake, groundwater, transitional and/or coastal water bodies that have a potential hydraulic connection to the site as recorded by the EPA (EPA, 2025) in accordance with European Communities (Water Policy) Regulations 2003 (SI no. 722/2003) are provided in Table 10-7 and Figure 10-7.

It is noted that the Marshes Upper Stream is part of the Haggardstown_010 WFD river waterbody.

Table 10-7: WFD Risk and Waterbody Status

Waterbody Name	Water Body EU code	Location from Site	Distance from Site (km)	WFD water body status (2016-2021)	WFD 3rd Cycle Risk Status	Hydraulic Connection to the Site
River Waterbodies						
Haggardstown_010 (i.e., Upper Marshes Stream)	IE_NB_06HO80570	East / North	c. 0.01 / approximately 0.15	Poor	Review	Yes, receives surface water flow from the site
Groundwater Bodies						
Louth Groundwater Body	IEGBNI_NB_G_019	Underlying	n/a	Good	Not at Risk	Yes, underlying the site
Transitional Water Bodies						
Inner Dundalk Bay	IE_NB_040_0100	East	c. 0.03	Moderate	At Risk	Yes, receives groundwater and surface water flow from the site. Also receives treated effluent from the Proposed Development via the Dundalk WWTP.
Castletown Estuary	IE_NB_040_0200	North	c. 2.75	Poor	At Risk	Yes, receives treated effluent from the Proposed Development via the Dundalk WWTP.
Coastal Water Bodies						
Outer Dundalk Bay	IE_NB_040_0000	Southeast	3.05	High	Not at Risk	Yes, downstream of

						Inner Dundalk Bay and Castletown Estuary transitional waterbodies.

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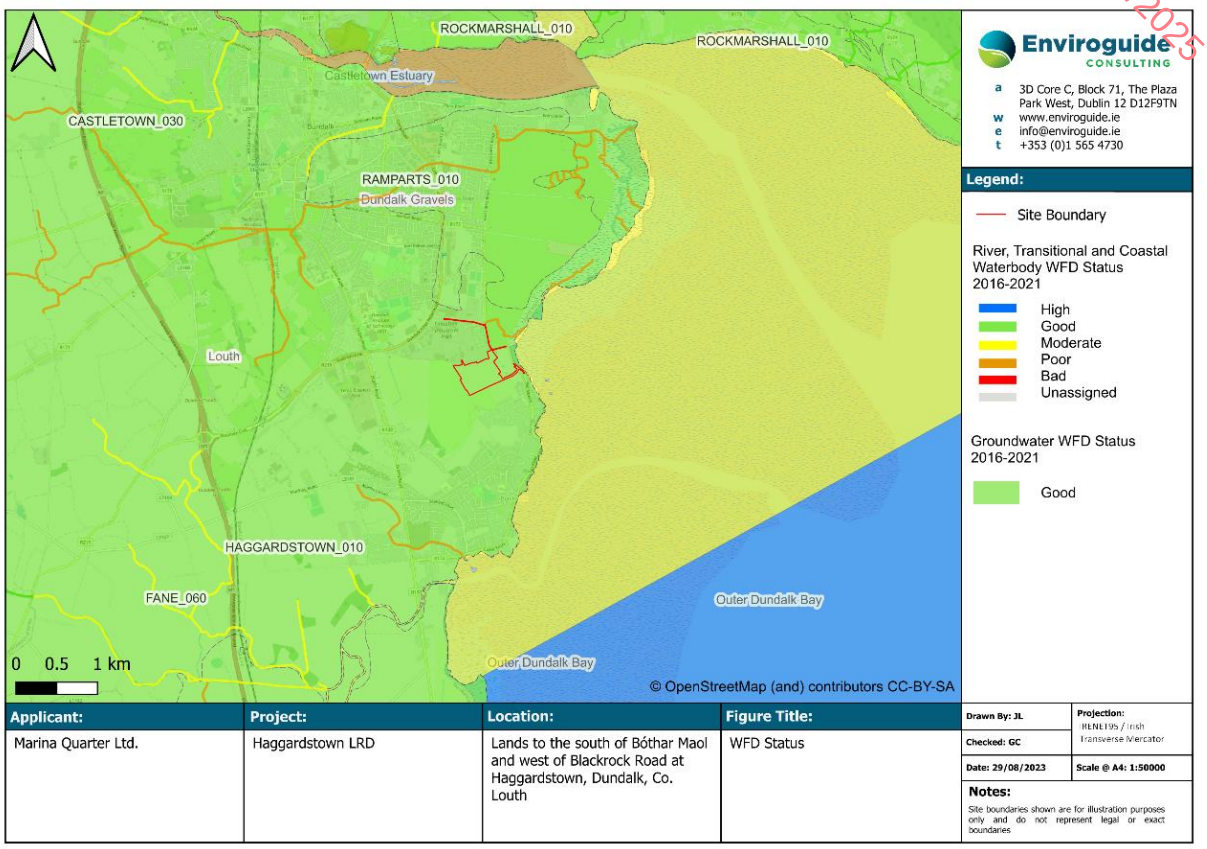

Figure 10-7: WFD Waterbody Status

10.6.12 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 two (2No.) Natura 2000 sites that are identified with a potential hydraulic connection to the site and Proposed Development (refer to Figure 10-8):

- Dundalk Bay SAC (Site Code: 000455).
- Dundalk Bay SPA (Site Code: 004026).

There is also one (1No.) proposed Natural Heritage Area (pNHA) identified with a potential hydraulic connection to the site and Proposed Development (refer to Figure 10-8):

- Dundalk Bay pNHA (Site Code: 000455).

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The SACs, SPAs, and pNHAs with a potential hydraulic connection to the site and Proposed Development are presented in Figure 10-8.

The Natura 2000 sites are described in further detail in Chapter 11 – Biodiversity of this EIAR and within the Appropriate Assessment Screening Report (Enviroguide Consulting, 2025a) and the Natura Impact Statement (Enviroguide Consulting, 2025b) that accompanies this application under separate cover.

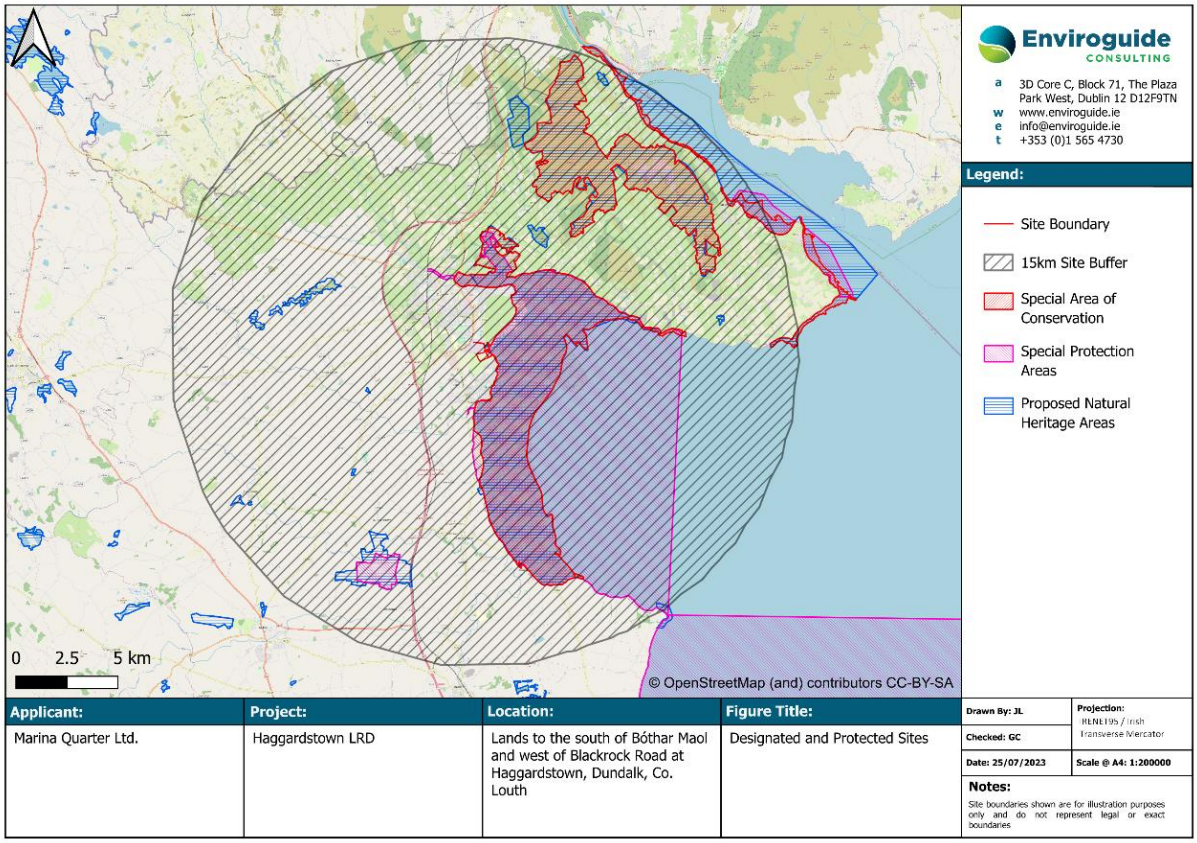

Figure 10-8: Natura 2000 Sites

10.6.13 Importance of Receiving Environment

Taking account of the receiving hydrological and hydrogeological environment, the site is considered to be of 'low' hydrogeological importance (refer to

Table 10-1) given that the Clontail Formation beneath the site is mapped as poor aquifer with no drinking water wells or springs recorded downgradient of the site.

The WFD status has been assigned as 'good' for the Louth GWB. The WFD status has been assigned as 'poor' to the Haggardstown_010 river waterbody, 'moderate' to the Inner Dundalk Bay transitional waterbody and 'high' to the Outer Dundalk Bay coastal waterbody.

There is an identified hydraulic connection between the site and Proposed Development and Dundalk Bay SAC, Dundalk Bay SPA and Dundalk Bay pNHA. The SACs, SPAs, and pNHAs with a potential hydraulic connection to the site and Proposed Development are assessed in further detail in Chapter 11 – Biodiversity of this EIAR.

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10.7 The 'Do Nothing' Scenario

In the "Do Nothing" Scenario, it is assumed that the Proposed Development does not proceed. The site, zoned as 'A2 New Residential Phase 1' and 'H1 Open Space' under the Louth County Development Plan (2021–2027), would remain as undeveloped lands in the immediate term. However, given the zoning and planning context, it is reasonable to expect that a similar residential development could be proposed for the site before 2027. Therefore, while the site would remain undeveloped in the short term, the potential for future development remains. As such, even in the absence of the Proposed Development, it is considered that the types of construction and operational phase impacts assessed in this chapter of the EIAR may still occur in the future, albeit under a different development proposal. In this scenario, the current assessment remains relevant as an indication of the likely nature and scale of impacts associated with residential development on the site.

10.8 Potential Significant Effects

10.8.1 Construction and Demolition Phase

In the absence of appropriate mitigation measures during the construction and demolition phase of the Proposed Development there could be an effect on the receiving water environment including the following receptors:

- Underlying receiving GWB: the Louth GWB.
- Downstream receiving waterbodies including the Upper Marshes Stream, Inner Dundalk bay, Castletown Estuary and Outer Dundalk Bay.
- Regionally groundwater flow is in a general easterly direction following topography towards Inner Dundalk bay. Local groundwater flows will similarly be Easterly towards Inner Dundalk bay.
- The GSI (GSI, 2025) have identified 20No. groundwater sources within a 2km radius of the site.
- There are 2No. Natura 2000 Sites and 1No. pNHA with an identified hydraulic connection to the site and Proposed Development. The Natura 2000 sites are assessed and described in further detail in Chapter 6 of this EIAR.

10.8.1.1 Hydrological and Hydrogeological Flow Regime

It is anticipated that groundwater may be encountered during excavation for the construction of building foundations, foul water, and surface water drainage infrastructure. Excavations may intersect the measured groundwater level which was recorded between 3.1mbGL and 8.8mbGL across the site (GES, 2018 and IGSL, 2023).

Therefore, there may be a requirement for localised dewatering or sump pumping on a temporary basis during the excavations. Appropriate construction measures to enable working in the dry during excavations, and methods to minimise the volume of dewatering water generated that will require management will be considered in the detailed design and the contractors construction methods. Where water must be pumped from the excavations, it is considered that there will be a temporary drawdown of local groundwater levels during the dewatering operations. However, the extent of the impact is considered to be localised to the immediate area surrounding the excavations. Therefore, the potential impact on the groundwater levels and flow regime associated with the works will be 'negative', 'slight' and 'temporary' and is considered non-significant in the context of the EIA Directive.

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10.8.1.2 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 during construction in particular for below ground structures and foundations where shallow groundwater may be encountered.
- Runoff with entrained sediment or other contaminants from stockpiled soils onsite to surface water drainage.
- Sediment or contaminants entrained in groundwater encountered during dewatering.
- Accidental release of wash-water or foul water from facilities at the site (e.g., wheel wash and temporary welfare facilities).
- 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.
- Overland flow during rainfall events entering the unnamed streams located at the eastern and northern boundaries of the site and / or the Upper Marshes Stream via existing surface water drainage along Finnabair Crescent.
- Sediment released to the unnamed stream located at the eastern boundary of the site during the construction of the entrance to the Proposed Development.
- 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 contaminates to underlying bedrock aquifer).
- Lateral migrations within the bedrock aquifer.
- 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 receptor of water from the site include:

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- Underlying Clontail Formation bedrock aquifer which is part of the Louth GWB.
- The two (2No.) unnamed streams located at the eastern and northern boundaries of the site, the Upper Marshes Stream and downstream river waterbodies (including the Inner Dundalk Bay transitional waterbody and the Outer Dundalk Bay coastal waterbody).
- Dundalk Bay SAC (Site Code: 000455), Dundalk Bay SPA (Site Code: 004026) and Dundalk Bay pNHA (Site Code: 000455).

Excavation

During excavation, there is a risk to the underlying bedrock aquifer due to any accidental release of fuels or other contaminates to exposed granular subsoils or bedrock creating a direct pathway to the bedrock aquifer. In a worst case, un-mitigated scenario there is a 'negative', 'moderate to significant' and 'long-term' impact to the bedrock aquifer. It is noted that this impact is considered significant in the context of the EIA Directive due to the potential for long-term degradation of groundwater quality in the absence of mitigation.

Dewatering of Groundwater and Surface Water Runoff

The appointed Contractor will ensure that any run-off from the site or any areas of exposed soil will be managed as required with temporary pumping. Where dewatering of excavations is required or where water must be pumped from the excavations, water will be discharged by the contractor, following appropriate treatment (e.g., settlement or hydrocarbon interceptor), to sewer, watercourses or groundwater 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 Louth County Council under Section 4 of the Local Government (Water Pollution) Act 1977, as amended in 1990 for discharges to surface water / groundwater. There will be no unauthorised discharge of water (groundwater / surface water runoff) to sewer, watercourses or groundwater during the construction phase of the Proposed Development. Therefore, the potential impacts will have been adequately assessed and mitigated as part of the statutory consent and there will be 'neutral', 'imperceptible' and 'temporary' impact on the receiving water environment and is considered non-significant in the context of the EIA Directive.

Surface Water Runoff

It is understood that the wetland area in the eastern portion of the site (i.e., at the entrance to the Proposed Development) drains to the unnamed stream located at the eastern boundary of the site. During the construction of the entrance to the Proposed Development, there is a potential for release of suspended sediments entrained in surface runoff from groundworks or indirectly tracked on vehicles / machinery entering the unnamed stream. This may result in a 'negative' 'slight to moderate' and 'short- term' impact on the quality of the receiving surface water bodies including the unnamed stream east of the site and locally at the discharge point to the Inner Dundalk Bay transitional waterbody. It is noted that this impact is considered non-significant in the context of the EIA Directive, due to its limited spatial extent, short duration, and the implementation of standard construction mitigation measures detailed in Section 10.9

Concrete Works

There is a potential risk associated with the cementitious materials used during the construction of deeper infrastructure where groundwater may be encountered that could result in a 'negative', 'moderate' to 'significant' and 'medium-term' impact on the underlying groundwater quality beneath the site. In the absence of mitigation and considering the potential for adverse effects on the underlying groundwater body, this impact is considered significant in the context of the EIA Directive.

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Handling of Fuels and Hazardous Materials

If the accidental release of hazardous material including fuels, chemicals and materials being used onsite, through the failure of secondary containment or a materials handling accident at the site, were to occur over open ground which will result in a temporary increase in groundwater vulnerability to potential contaminants, then these materials could infiltrate to the underlying groundwater or flow as overland flow and enter the unnamed stream located at the eastern boundary of the site / surface water drainage along Finnabair Crescent and the R172 Blackrock Road, discharging to the unnamed stream located at the northern boundary of the site or the Upper Marshes Stream and ultimately the Inner Dundalk Bay transitional waterbody. In the event of such scenario, it is considered that this could result in a 'negative' 'moderate to significant' and 'long-term" impact on the receiving hydrogeological and hydrological environment depending on the nature of the incident. In the absence of mitigation and considering the potential for widespread and lasting effects on both hydrogeological and hydrological receptors, this impact is considered significant in the context of the EIA Directive.

Flooding

During a flood event there is the potential for pollutants derived from construction materials to be mobilised by flood waters. Overall, flood events during the construction phase have the potential to have 'negative', 'moderate' to 'significant' and 'temporary' effects on hydrological receptors. Given the potential for short-term but widespread effects on sensitive hydrological features, this impact is considered significant in the context of the EIA Directive.

Welfare

Foul water discharge from the temporary welfare units at the site during the construction phase will be tankered offsite in accordance with waste management legislation. It is considered that any impact on the relating to waste water during the construction phase will be 'neutral', 'imperceptible' and 'temporary' and is considered non-significant in the context of the EIA Directive.

10.8.2 Operational Phase

During the Operational Phase of the Proposed Development, there is limited potential for any adverse impact on the receiving water (hydrological and hydrogeological) environment at the site taking account of the design for the Proposed Development.

10.8.2.1 Drainage and Flood Risk

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The Infrastructure Design Report (DOBA, 2025) notes the surface water drainage at the Proposed Development has been designed in accordance with SuDS and satisfies the requirements of the Greater Dublin Strategic Drainage Study (GDSDS) 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.
- Criterion 4 – River Flood Protection.

The FRA (IE Consulting, 2025. Site-Specific Flood Risk Assessment Report) identifies that while the majority of the site is located within Flood Zone C, the eastern portion of the site (i.e. the initial section of the new access roadway and embankment) is located in Flood Zone A and B. However, the FRA concludes that design of the Proposed Development is not expected to result in an adverse impact on the hydrological regime of the areas or increase flood risk elsewhere. Furthermore, the FRA concludes that the Proposed Development is considered to comply with the requirements of the justification test for development management. Therefore, the Proposed Development is considered appropriate taking account of the findings of the FRA. Therefore, it is considered that the potential flooding impacts associated with the Proposed Development are 'neutral', 'imperceptible', and 'long-term' and are considered non-significant in the context of the EIA Directive.

10.8.2.2 Hydrological and Hydrogeological Flow Regime

During the operational phase there will be no discharges to ground from drainage and only rainfall on public open spaces will infiltrate to ground.

The Proposed Development will result in a increase of hardstanding on the site. The proposed SuDS include unlined elements allowing for infiltration to ground (though infiltration capacity is limited). This combined with the close proximity to the coast means any effect on groundwater flow will be highly localised within the site. Therefore, it is considered that there will be little to no change to the overall recharge potential to the aquifer. Taking account of the baseline hydrogeological setting and nature of the Proposed Development there will be a 'negative', 'imperceptible' and 'permanent' effect on the hydrogeological flow regime within a very localised zone of the aquifer and is considered non-significant in the context of the EIA Directive.

10.8.2.3 Water Quality

There will be no discharges to ground from drainage and only rainfall on public open spaces will infiltrate to ground.

As outlined in the Infrastructure Design Report (DOBA, 2025) prior to surface water discharge to the two (2No.) unnamed streams located at the eastern boundary of the site adjacent to the R172 Blackrock Road (i.e., at the entrance to the Proposed Development) and to the north of Bothar Maol, all surface water runoff will pass through a two-stage treatment train including natural based SuDS (i.e., bioretention areas, bio-swales etc. as detailed in Section 10.3.1) and proprietary system SuDS

(i.e., class 1 bypass patrol interceptor). Therefore, it is considered that there will be a 'neutral', 'imperceptible', and 'long-term' impact on to the quality of receiving hydrological receptors including the Inner Dundalk Bay transitional waterbody (which is part of the Dundalk Bay SAC, SPA and pNHA) and is considered non-significant in the context of the EIA Directive.

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All foul water from the Proposed Development will be directed to the foul sewer mains in accordance with agreement from UE. The UE CoF letter (UE COF Reference: CDS24010739)) states that the wastewater connection is feasible subject to upgrades by UE. As described within the Infrastructure Design Report (DOBA, 2025), foul water from the Proposed Development will drain northwards to the existing Coes Road Pumping Station prior to being pumped to the Dundalk Waste Water Treatment Plan (WwTP). The UE CoF notes that upgrades to the Coes Road Pumping Station, which will be carried out by UE, are planned for Q1 2030 (this may be subject to change) at which point there will be capacity for the Proposed Development. Therefore, the proposed 7-year permission provides adequate time for this infrastructure to be completed in advance of construction of the 502No. residential units in a worst-case scenario. Alternatively, where a connection is proposed in advance of the Coes Road Pumping Station upgrades the following interim solution has been confirmed by UE; "*Flows from the pumping station constructed under Phase 1 of the development (serving 200 units) shall not be increased during daytime hours (i.e., 7am to 7pm). This would amount to approximately 61m3 total volume pumped in these hours. The remaining balance of flows (serving 303 units) would be stored during the day then discharged in the night (7pm to 7am) Dosing would be required to avoid septicity This arrangement would be temporary until the Coe's road upgrade project is completed. Once this is completed the pumping station can operate as normal throughout the day.".* Therefore, capacity can alternatively be provided for the Proposed Development in the interim and in advance of the Coes Road Pumping Station upgrades in Q1 2030. The Applicant will ensure that any connection will be under the consent of UE and subject to a connection offer.

As outlined in the Infrastructure Design Report (DOBA, 2025), the foul drainage for the Proposed Development has been 'designed in accordance with the principles and methods set out in UE's Code of Practice for Wastewater Infrastructure (IW-CDS-5030-03), IS EN 752 Drain and Sewer Systems outside Buildings, IS EN 12056 Gravity Drainage Systems inside Buildings and the Building Regulations Technical Guidance Document Part H Drainage and Wastewater. Thereby, preventing any potential leakage of foul effluent to ground and risk of infiltration into the underlying groundwater and bedrock aquifer.

Foul water from the Proposed Development will eventually discharge to the Dundalk WWTP (EPA Licence No. D0188-01) before ultimately discharging to Fane Estuary transitional waterbody (EU Code: IE_NB_040_0400). While it is noted there is an exceedance in effluent above the discharge license ELVs, as specified in the 2022 AER, it is reported that this was as a result of *'Inadequate Operational Procedures/Training'*. The increase discharge to the Dundalk WWTP, as a result of the Proposed Development, is considered to be insignificant in terms of the overall scale of the facility. The increased load does not have the capacity to alter the effluent released from the Dundalk WWTP to such an extent as to result in likely significant effects on its receiving waters. 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 Dundalk 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 and WFD status of the Fane Estuary transitional waterbody associated with the discharge of foul water from the Proposed Development. This impact is considered non-significant in the context of the EIA Directive.

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10.8.3 Cumulative Effects

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.

As part of this assessment, other offsite developments and proposed offsite developments as detailed in Chapter 1 of this EIAR were reviewed and considered for possible cumulative effects with the Proposed Development.

10.8.3.1 Water Resources

The Proposed Development will be connected to the upgraded 150mm watermain located on the R172 Blackrock Road to the east of the development subject to agreement with UE. The UE CoF letter states that the water supply connection is feasible without network upgrade works (UE CoF Reference: CDS23001478). The mains water supply is operated in accordance with relevant existing statutory consents there will be a 'neutral', 'imperceptible', 'long-term' impact associated with the Proposed Development on the supply network and water resources of other developments detailed in Chapter 1 of this EIAR and within the wider Louth Area.

10.8.3.2 Water Quality

As outlined in the Infrastructure Design Report (DOBA, 2025), foul water from the Proposed Development will be discharged to the mains foul network for treatment at Dundalk WWTP subject to agreement with UE. The UE CoF letter (UE COF Reference: CDS23001478) states that the wastewater connection is feasible subject to upgrades by Uisce Eireann. Wastewater from the Proposed Development, as described within the Infrastructure Design Report (DOBA, 2025) will drain northwards to the existing Coes Road Pumping Station prior to being pumped to the Dundalk Waste Water Treatment Plan (WwTP). The UE CoF notes that upgrades to the Coes Road Pumping Station, which will be carried out by Uisce Eireann, are planned for Q1 2030 at which point there will be capacity for the Proposed Development. Therefore, the proposed 7-year permission provides adequate time for this infrastructure to be completed in advance of construction of the 502 No. residential units in a worst-case scenario. states that the wastewater connection is feasible subject to upgrades by UE. As described within the Infrastructure Design Report (DOBA, 2025), foul water from the Proposed Development will drain northwards to the existing Coes Road Pumping Station prior to being pumped to the Dundalk Waste Water Treatment Plan (WwTP). Alternatively, where a connection is proposed in advance of the Coes Road Pumping Station upgrades the following interim solution has been confirmed by UE; "*Flows from the pumping station constructed under Phase 1 of the development (serving 200 units) shall not be increased during daytime hours (i.e., 7am to 7pm). This*

would amount to approximately 61m3 total volume pumped in these hours. The remaining balance of flows (serving 303 units) would be stored during the day then discharged in the night (7pm to 7am) Dosing would be required to avoid septicity This arrangement would be temporary until the Coe's road upgrade project is completed. Once this is completed the pumping station can operate as normal throughout the day.". Therefore, capacity can alternatively be provided for the Proposed Development in the interim and in advance of the Coes Road Pumping Station upgrades in Q1 2030.

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The Applicant will ensure that any connection will be under the consent of UE and subject to a connection offer. The Dundalk WWTP is operated in accordance with relevant statutory approvals and therefore, there will be a 'neutral', 'imperceptible', 'long-term' impact on receiving water quality and WFD status of the Fane Estuary transitional waterbody associated with the discharge of foul water from the Proposed Development via Dundalk WWTP individually or in-combination with other developments detailed in Chapter 1 of this EIAR and within the wider Louth Area. This impact is considered non-significant in the context of the EIA Directive

Considering the design of the surface water drainage network in accordance with the principles and objectives of SuDS, the GDSDS and LCC to treat and attenuate water prior to discharging offsite, it is considered that there will be a 'neutral', 'imperceptible', and 'long-term' impact on to the quality of receiving hydrological receptors including the Inner Dundalk Bay transitional waterbody (which is part of the Dundalk Bay SAC, SPA and pNHA) individually or in-combination with other developments detailed in Chapter 1 of this EIAR and within the wider Louth Area. This impact is considered non-significant in the context of the EIA Directive.

10.8.3.3 Flooding

The FRA (IE Consulting, 2025) concludes that design of the Proposed Development is not expected to result in an adverse impact on the hydrological regime of the areas or increase flood risk elsewhere. Therefore, it is considered that there will be no cumulative impacts on the receiving surface water environment in terms of flood risk associated with the Proposed Development and considered offsite developments detailed in Chapter 1 of this EIAR.

There are no other potential cumulative impacts associated with the Proposed Development.

10.8.4 Summary

Table 10-8 summarises the identified likely significant effects during the construction phase of the Proposed Development before mitigation measures are applied.

Table 10-8: Summary of Construction Phase Likely Significant Effects in the Absence of Mitigation

Likely Significant Effect	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type
Groundwater Flow Regime as a result of Temporary Dewatering	Negative	Slight (non-significant)	Local	Likely	Temporary	Direct
Introduction of contaminants to Open Excavations	Negative	Moderate to Significant (significant)	Regional	Worst Case Scenario	Longterm	Direct
Discharge of Entrained Sediment or Other Contaminants in Surface Runoff (Overland Flow)	Negative	Slight to Moderate (non-significant)	Local	Possible	Short Term	Direct
Discharge of Water (Groundwater / Surface Water Runoff) to Sewer, Watercourses or Groundwater	Neutral	Imperceptible (non-significant)	Local	Possible	Temporary	Direct
Introduction of Cementitious Materials to Groundwater	Negative	Moderate to Significant (significant)	Local	Worst-case	Medium-term	Direct
Potential Uncontrolled Release of Hazardous Materials Including, Fuels, Oils and Other Materials	Negative	Moderate to Significant (significant)	Local	Worst-case	Long-term	Direct
Mobilised Pollutants from Construction materials as a Result of Flooding	Negative	Moderate to Significant (significant)	Local	Possible	Temporary	Direct

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Likely Significant Effect	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type
Waste Water Generated on Site	Neutral	Imperceptible (non-significant)	Regional	Likely	Temporary	In-direct

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Table 10-9 summarises the identified n significant effects during the operational phase of the Proposed Development before mitigation measures are applied.

Table 10-9: Summary of Operational Phase Likely Significant Effects in the Absence of Mitigation

Likely Significant Effect	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type
Drainage and Flood Risk	Neutral	Imperceptible (non-significant)	Local	Likely	Long Term	Direct / Cumulative
Hydrological and Hydrogeological Flow Regime	Neutral	Imperceptible (non-significant)	Local	Likely	Permanent	Direct
Water Quality of receiving hydrological and hydrogeological receptors	Neutral	Imperceptible (non-significant)	Local	Likely	Long Term	Direct / Cumulative
Discharge of Treated Effluent	Neutral	Imperceptible (non-significant)	Regional	Likely	Long-term	In-direct / Cumulative
Water Resource	Neutral	Imperceptible (non-significant)	Regional	Likely	Long-term	Cumulative

10.9 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).

10.9.1 Incorporated Design Mitigation

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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.

With regard to the proposed discharge of treated operational surface water from the Proposed Development to the two (2No.) unnamed streams, SuDS measures and petrol interceptor are incorporated in the fundamental scheme design.

Foul water and water supply infrastructure will comply with UE Code of Practice for Wastewater Infrastructure (IW-CDS-5030-03), UE's Code of Practice for Water Infrastructure (IW-CDS-5020-03), IS EN 752 Drain and Sewer Systems outside Buildings, IS EN 12056 Gravity Drainage Systems inside Buildings and the Building Regulations Technical Guidance Document Part H Drainage and Wastewater.

10.9.2 Construction and Demolition Phase

An Outline Construction Environmental Management Plan (OCEMP) has been prepared by DOBA (DOBA, 2025; submitted with the planning application under separate cover). The OCEMP address construction waste, construction environmental management (including a surface water management plan) and construction traffic management. Following appointment, the contractor will be required to further develop the OCEMP and prepare and project specific CEMP, for approval by Louth County Council prior to any works commencing. The project specific CEMP will provide detailed construction phasing, waste management and methods to manage and prevent any potential emissions to ground and surface water with regard to the relevant industry standards (e.g., Guidance for Consultants and Contractors, CIRIA-C532', CIRIA, 2001). The project specific CEMP will take cognisance of measures outlined in the EIAR and OCEMP submitted with the planning application.

The project specific CEMP will be implemented for the duration of the construction phase, covering mitigation works that will be adopted as part of the construction works for the Proposed Development. The measures 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.
- Management of accidental release of contaminants at the 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 site including where appropriate 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).
- Inland Fisheries Ireland (2016). Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters.

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10.9.2.1 Control and Management of Water and Surface 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 site or any areas of exposed soil will be managed as required with temporary pumping and following appropriate treatment as required. Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to onsite settlement ponds to capture and treat sediment laden runoff prior to discharge at a controlled rate. Excavation works will be in accordance with the requirements of the Office of Public Works (OPW) and Inland Fisheries Ireland (IFI).

Where dewatering of shallow groundwater is required or where surface water runoff must be pumped from the excavations, water will be managed in accordance with best practice standards (i.e., CIRIA C750), the OCEMP (DOBA, 2025), the project specific CEMP and regulatory consents to minimise the potential impact on the local groundwater flow regime within the soil and bedrock.

All water leaving the site during construction will be desilted using standard techniques (e.g., settlement ponds, silt busters, silt socks etc.). Where required, local silt traps will be established onsite, these will be reviewed and moved regularly as necessary. Where required, the water will also be directed through a hydrocarbon interceptor prior to discharge from the site.

As documented in the OCEMP (DOBA, 2025), a buffer zone of 5m from the adjacent water course will be established by erecting a temporary fence along the length of the site in that area. This fence will comprise a silt curtain to prevent surface water runoff to the water course and will be retained in place for the duration of the construction period until soft landscaping of the buffer zone is implemented.

Unauthorised discharge of water (groundwater / surface water runoff) to ground, drains or watercourses will not be permitted. Existing surface water drainage located along public roads (i.e., Bóthar Maol, the R172 Blackrock Road and Finnabair Crescent) will be protected for the duration of the 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 Louth County Council under Section 4 of the Local Government (Water Pollution) Act 1977, as amended in 1990 for discharges to surface water.

As documented in the OCEMP (DOBA, 2025), a buffer zone of 20m will be maintained between onsite drains including the unnamed streams located along the eastern and northern boundaries of the site and stockpiles of loose materials. Stockpiles and runoff areas will have suitable silt barriers to prevent runoff of fines into the drainage systems.

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There may be a temporary increase in the exposure of the underlying shallow groundwater during excavation works. Where necessary, surface water runoff will be prevented from entering open excavations with sandbags or other approved methods proposed by the appointed contractor. Furthermore, the appointed contractor will ensure that machinery does not enter the groundwater if encountered during construction.

All works carried out within the wetland area in the eastern portion of the site (i.e., at the entrance to the Proposed Development) will be undertaken to prevent any erosion of sediment of other potential contamination of surface water runoff. Furthermore, the unnamed stream located at the eastern boundary of the site will be protected or temporary diversion put in place as necessary (e.g., straw bales, silt fences, sandbags etc.) for the duration of the construction phase with cognisance to 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.

To ensure protection of the downstream lands and watercourse on the eastern boundary there will be an installation of a silt curtain along the entire length of the downgradient boundary of the site where works are proposed; specifically, between the site works and the downgradient edge of the development site. The purpose of this membrane will be to prevent any sediment discharge from draining into the watercourse. These specific measures to include the silt curtain will be installed on-site at the preliminary Phase 1 stage of construction and remain in-situ and be adhered to until the development is complete. The project specific CEMP (which will be prepared by the main contractor in advance of construction works commencing) will identify how this silt curtain is to be installed and maintained throughout the construction phase.

A regular review of weather forecasts of heavy rainfall will be conducted, and a contingency plan will be prepared for before and after such events to minimise any potential nuisances. As the risk of the break-out of silt laden run-off is higher during these weather conditions, no work will be carried out during such periods where possible.

10.9.2.2 Drainage Construction and Commissioning

- All new infrastructure is to be installed and constructed to the relevant codes of practice and guidelines.
- All surface water infrastructure is to be pressure tested by an approved method during the construction phase and prior to connection to the public networks, all in accordance with Local Authority Requirements.
- Connections to the public network are be carried out to the approval and / or under the supervision of the Local Authority prior to commissioning.

- All new sewers are to be inspected by CCTV survey post construction; to identify any possible physical defects for rectification prior to operational phase.
- In respect of surface water networks, during the construction period the system and traps are to be inspected a minimum 4 times a year as the accumulation of silt is prevalent during this period. The number of inspections should be pro-active and if silting is found to be excessive in any of the apparatus the number of inspections should be raised accordingly and continually monitored and reviewed.
- Pipe ends associated with the surface water network should be blocked/capped off with proprietary fittings until connected to the completed storm-water system.

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10.9.2.3 Handling of Fuels and Hazardous Materials

Fuelling and lubrication of equipment will be carried out in a designated area of the site away from any watercourses and drains (where not possible to carry out such activities offsite).

As documented in the OCEMP (DOBA, 2025), any diesel, fuel or hydraulic oils stored on-site will be stored in designated areas, these areas will be bunded and located away from surface water drainage and features. It is noted that the use of cleaning chemicals will be kept to a minimum. There will be clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage. Adequate security will be provided by the appointed contractor to potential pollutants against vandalism.

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.

All fuel storage areas, which will be located outside of the predicted flood zone (IE Consulting, 2025), will be bunded in the site compound and will be clearly marked. As documented in the OCEMP (DOBA, 2025), the bund will be at least 50m away from drains, excavations, and other locations where it may cause contamination. Furthermore, no storage of hydrocarbons or any polluting chemicals will occur within 10m of the SAC/ SPA. Fuel will then be transported from the compound to the plant and equipment in mobile units based on need, a dedicated fuel fill point will be set up on site with all plant brought to this point for filling.

Spill kits will be kept in these areas. Site crew will be trained in appropriate refuelling techniques. Equipment will not be left unattended during refuelling. Refuelling of construction machinery shall be undertaken in designated areas away from surface water drainage in order to minimise potential contamination of the water environment. Spill kits shall be kept in these areas in the event of spillages.

10.9.2.4 Concrete Works

The use of cementitious grout during the construction of footpaths and other site infrastructure will be required. Any potential impact to water quality will be avoided through the use of appropriate design and methods that will be implemented by the Contractor and in accordance with the OCEMP

(DOBA, 2025), the project specific CEMP (which will be developed by the main contractor in advance of construction works commencing) and relevant industry standards.

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Where possible precast concrete will be used for concrete works. However, where cast-in-place concrete is required (i.e., foundations, footpaths), all work will be carried out to avoid any contamination of the receiving water environment. All work must be carried out in dry conditions and be effectively isolated from any groundwater.

The following mitigation measures are outlined in the OCEMP (DOBA, 2025).

- Any in-situ concrete work to be lined and areas bunded (where possible) to stop any accidental spillage.
- No direct discharges made to waters where there is potential for cement or residues in discharge.
- Designated impermeable cement washout areas must be provided and which are to drain into the designated settlement tank on-site pending removal offsite.
- Concrete batching will take place off site or in a designed area with an impermeable surface.
- For concrete mixers, control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.
- Concrete wash down and wash out of concrete trucks will take place off site or in an appropriate facility.
- All 'wash out' of concrete trucks will take place off site and any excess concrete is not to be disposed of on site.

In addition to the measures set out in the OCEMP (DOBA, 2025), weathering forecasting should be utilised to plan dry days for concrete pours. Prior to pours, the designated area of the site shall be free of standing water and plastic covers will be ready in the case of sudden rainfall event.

10.9.2.5 Emergency Procedures

Emergency procedures will be developed by the main 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 through induction, toolbox talks, and method statements to ensure that all staff members are well-prepared and knowledgeable about the necessary steps to take in the event of an emergency (e.g., 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.
- All construction works staff on-site will be fully trained on the use of equipment.

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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.

10.9.2.6 Stockpile Management

Stockpiled materials pending removal offsite or reuse onsite will be located in in designated areas only and there will be no storage of materials within 20m of the onsite drains or the unnamed streams located along the eastern and northern boundaries of the site. Stockpiles will be located, arranged, and managed so that the risk to the receiving water from silt and contamination is minimised.

Stockpiles and runoff areas following clearance will have suitable silt barriers to prevent runoff of fines into the drainage system. Stockpiles of earthwork and site clearance materials will be located on impermeable surface and covered with appropriate measures. In addition, silt traps will be placed in road gullies to capture any excess silt from the working areas.

10.9.2.7 Flooding

The main contractor will continuously monitor weather warnings, coastal water levels and predicted tides. Site materials including deleterious materials (e.g., fuel, chemicals etc.) being used onsite will be located outside of the flood zone. Where required, the contractor will also provide method statements for the removal of site materials, fuels, tools, vehicles, and persons from flood zones in order to minimise the risk to persons working on the site as well as potential input of sediment or construction materials into the waterbodies during flood events.

10.9.2.8 Welfare Facilities

Welfare facilities have the potential, if not managed appropriately, to release organic and other contaminants to ground or surface water courses. All waste from welfare facilities will be managed in accordance with the relevant statutory obligations through either a temporary connection to mains foul sewer (subject to receipt of the relevant consent from UE) or by tankering of waste offsite by an appropriately authorised contractor.

10.9.2.9 Wheelwash

As documented in the OCEMP (DOBA, 2025), Public roads outside the Site will be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary. Trucks entering / leaving the site will pass through a wheel washing system. The wheels of all Lorries will be cleaned prior to leaving the Site so that traffic leaving the Site compound will not generate dust or cause the build-up of aggregates and fine material in the public domain. This will be carried out in a dedicated wash down zone with dedicated site personnel. The correct use and management of these will be undertaken by

the appointed contractor to ensure that there is no harm or impact to the receiving water environment.

Discharge from any vehicle wheel wash area is to be directed to the onsite settlement tank for discharge to the UE foul network (subject to receipt of the relevant consent from UE) or by tankering of waste offsite by an appropriately authorised contractor. Any debris or sediment within the wheel-wash will be emptied periodically for disposal offsite at a licenced facility.

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10.9.3 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 two (2No.) unnamed streams, located along the eastern and northern boundaries of the site, and ultimately the Inner Dundalk Bay transitional waterbody, the potential for surface water generated at the Proposed Development to cause significant effects to downstream sensitivities during the operational phase is considered negligible due in part to the SuDS measures and petrol interceptor incorporated in the fundamental scheme design. Project specific SuDS measures are described in Section 10.3.1.

10.10 Residual Impact Assessment

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.

10.10.1 Construction and Demolition Phase

The predicted impacts of the Construction and demolition Phase of the Proposed Development are described in Section 10.8.1 in terms of quality, significance, extent, likelihood, and duration.

These assessments informed the development of a comprehensive suite of mitigation measures as detailed in Section **Error! Reference source not found.**. These included controlled dewatering, bunded s torage of fuels and chemicals, silt fences, settlement ponds, and emergency response protocols to manage accidental discharges. The effectiveness of these measures was assessed in terms of their ability to break pollutant linkages and reduce the magnitude and likelihood of impacts. The residual impacts, which take these measures into account, are summarised in Table 10-10.

Overall, considering the avoidance, remedial and mitigation measures detailed in Section **Error! R eference source not found.**, the residual effects regarding the construction phase of the Proposed Development are considered 'imperceptible' to the receiving water environment (hydrology and hydrogeology) and considered non-significant in the context of the EIA Directive.

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Table 10-10: Residual Impacts (Construction Phase)

Activity	Attribute	Predicted Impact	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type	Mitigation	Residual Impact (Significance in the Context of EIA Directive)
Dewatering Works	Hydrogeological Flow Regime	There may be a requirement for localised dewatering or sump pumping on a temporary basis during excavation works. However, it is considered that the extent of any impact will be localised to the immediate area surrounding the excavations.	Negative	Slight (non-significant)	Local	Likely	Temporary	Direct	Water pumped from excavations will be managed in accordance with best practice standards (i.e., CIRIA C750), the OCEMP (DOBA, 2025) and regulatory consents.	Imperceptible (non-significant)
Introduction of Contaminants to Open Excavations	Groundwater and Receiving Surface Water Quality and WFD status	During excavation, there is a risk to the underlying bedrock aquifer due to any accidental release of fuels or other contaminates to exposed granular subsoils or bedrock creating a direct	Negative	Moderate to Significant (significant)	Regional	Worst Case Scenario	Long-term	Direct / Worst Case	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	Imperceptible (non-significant)

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Activity	Attribute	Predicted Impact	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type	Mitigation	Residual Impact (Significance in the Context of EIA Directive)
		pathway to the bedrock aquifer.							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.	
Discharge of Entrained Sediment or Other Contaminants in Surface Runoff	Receiving Surface Water Quality and WFD status	There is a potential for release of suspended sediments entrained in surface runoff from groundworks or indirectly tracked on vehicles / machinery entering the unnamed	Negative	Slight to Moderate (non-significant)	Local	Possible	Short Term	Direct	Implementation of appropriate procedures in accordance with the OCEMP (DOBA, 2025) including silt fences and buffer zones will be	Imperceptible (non-significant)

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Activity	Attribute	Predicted Impact	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type	Mitigation	Residual Impact (Significance in the Context of EIA Directive)
(Overland Flow)		stream located at the eastern boundary of the site.							implemented to prevent fugitive runoff.	
Discharge of Water (Groundwater / Surface Water Runoff) to Sewer, Watercourses or Groundwater	Groundwater and Receiving Surface Water Quality and WFD status	Water will be discharged by the contractor, following appropriate treatment (e.g., settlement or hydrocarbon interceptor), to sewer, watercourses or groundwater in accordance with the necessary discharge licences issued by UE or LCC.	Neutral	Imperceptible (non-significant)	Local	Possible	Temporary	Direct	There will be no unauthorised discharge of water (groundwater / surface water runoff) to sewer, watercourses or groundwater	Imperceptible (non-significant)
Introduction of Cementitious Materials to Groundwater	Groundwater Quality and WFD status	Potential release of cementitious material during construction works for foundations, pavements and infrastructure.	Negative	Moderate to Significant (significant)	Local	Worst-case	Medium Term	Direct / Worst Case	Where cast-in-place concrete is required, all work will be carried out to avoid any contamination of the receiving water environment through the use of	Imperceptible (non-significant)

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Activity	Attribute	Predicted Impact	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type	Mitigation	Residual Impact (Significance in the Context of EIA Directive)
									appropriate design and methods implemented by the appointed Contractor and in accordance with the OCEMP (DOBA, 2025), and relevant industry standards.	
Potential Uncontrolled Release of Hazardous Materials Including, Fuels, Oils and Other Materials	Groundwater and Receiving Surface Water Quality and WFD status	Potential for uncontrolled release of deleterious materials to the underlying groundwater and surface water environment with potential impact on the receiving water quality / WFD Status of the two (2No.) unnamed streams adjacent the site, the Upper Marshes Stream, Inner Dundalk	Negative	Moderate to Significant (significant)	Local	Worst-case	Long Term	Direct / Worst Case	Refuelling of plant and storage of any deleterious materials including fuels will be undertaken in accordance with the requirements and procedures outlined in the OCEMP (DOBA, 2025).	Imperceptible (non-significant)

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Activity	Attribute	Predicted Impact	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type	Mitigation	Residual Impact (Significance in the Context of EIA Directive)
		Bay transitional waterbody, the Outer Dundalk Bay coastal waterbody and the Louth GWB.								
Mobilised Pollutants from Construction materials as a Result of Flooding	Groundwater and Receiving Surface Water Quality and WFD status	During a flood event there is the potential for pollutants derived from construction materials to be mobilised by flood waters.	Negative	Moderate to Significant			Temporary	Direct	The Contractor will continuously monitor weather warnings, coastal water levels and predicted tides. The Contractor will also provide method statements for the removal of site materials, fuels, tools, vehicles, and persons from flood zones.	Imperceptible (non-significant)
Waste Water Generated Onsite	Receiving Surface Water Quality and WFD status	Foul water generated from welfare facilities onsite will be managed discharged offsite through a temporary	Neutral	Imperceptible			Temporary	In-direct	All waste from welfare facilities will be managed in accordance with the	Imperceptible (non-significant)

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Activity	Attribute	Predicted Impact	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type	Mitigation	Residual Impact (Significance in the Context of EIA Directive)
		connection to mains foul sewer (subject to receipt of the relevant consent from UE) or by tankering of offsite by an appropriately authorised contractor.							relevant statutory obligations.	

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10.10.2 Operational Phase

As described in Section 10.8.2, during the operational phase of the Proposed Development, there is limited potential for any adverse impact on the receiving water (hydrological and hydrogeological) environment at the site taking account of the design for the Proposed Development.

Therefore, there are no significant residual impacts on the receiving water environment (hydrology and hydrogeology) regarding the operational phase of the Proposed Development. These effects are considered are considered 'imperceptible' and non-significant in the context of the EIA Directive as they are not expected to result in measurable deterioration of receiving hydrological and hydrogeological receptors and are expected to be highly localised and confined to the immediate vicinity of the Proposed Development.

10.10.3 Cumulative Effects

There are no significant cumulative residual impacts on the receiving water environment (hydrology and hydrogeology) during the construction phase and / or operational phase of the Proposed Development. These effects are considered imperceptible and non-significant in the context of the EIA Directive, reflecting the embedded design and mitigation measures and the limited potential for interaction with other developments in the area. The cumulative impacts are not expected to result in measurable deterioration of water quality or flow regime and occur within a low-sensitivity hydrological setting.

10.10.4 Summary of Post-mitigation Effects

Table 10-11 summarises the identified likely significant residual effects during the construction phase of the Proposed Development following the application of mitigation measures.

Table 10-11: Summary of Construction Phase Effects Post Mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Groundwater Flow Regime as a result of Temporary Dewatering	Negative	Imperceptible	Local	Likely	Temporary	Direct
Introduction of contaminants to Open Excavations	Negative	Imperceptible	Regional	Worst Case Scenario	Longterm	Direct
Discharge of Entrained Sediment or Other Contaminants	Negative	Imperceptible	Local	Possible	Short Term	Direct

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
in Surface Runoff (Overland Flow)						
Discharge of Water (Groundwater / Surface Water Runoff) to Sewer, Watercourses or Groundwater	Neutral	Imperceptible	Local	Possible	Temporary	Direct
Introduction of Cementitious Materials to Groundwater	Negative	Imperceptible	Local	Worst-case	Medium-term	Direct
Potential Uncontrolled Release of Hazardous Materials Including, Fuels, Oils and Other Materials	Negative	Imperceptible	Local	Worst-case	Long-term	Direct
Mobilised Pollutants from Construction materials as a Result of Flooding	Negative	Imperceptible	Local	Possible	Temporary	Direct
Waste Water Generated on Site	Neutral	Imperceptible	Regional	Likely	Temporary	In-direct

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Table 10-12 summarises the identified likely residual significant effects during the operational phase of the Proposed Development post mitigation.

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Table 10-12: Summary of Operational Phase Effects Post Mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
There are no identified residual impacts on the receiving hydrological and hydrogeological environment during the operational phase of the Proposed Development.						

10.11 Risk of Major Accidents or Disasters

The FRA (IE Consulting, 2025. Site-Specific Flood Risk Assessment Report) identifies that while the majority of the site is located within Flood Zone C, the eastern portion of the site (i.e. the initial section of the new access roadway and embankment) is located in Flood Zone A and B.

The project can exacerbate the risk of flooding during construction by temporarily increasing hard standing in areas that are currently greenfield. Extreme flood events (heavy rainfall events, storms, high tides and storm surges in Dundalk Bay) have the potential to flood the construction site which stores construction material and equipment which are potential sources of contaminants. In the absence of any mitigation measures it is considered that there would be a potential 'negative', 'moderate' to 'significant' and 'temporary' effect on hydrological receptors. To mitigate these risks, site materials including deleterious materials (e.g., fuel, chemicals etc.) being used onsite will be located outside of the flood zone. Where necessary, the contractor will also provide method statements for the removal of site materials, fuels, tools and vehicles, from flood zones in order to minimise the potential input of sediment or construction materials into the waterbodies during flood events

Additionally, the construction works will increase the number of people working near known sources of flooding, thus increasing the potential for flood risk related impacts on human health. The majority of the site is outside the 1 in 1000 year coastal flood zone as such suitable emergency refuge is available in an emergency. Where required, the contractor will also provide method statements for the removal of persons from flood zones during such events. The potential effects on human health are further assessed in Chapter 4 of this EIAR.

10.12 Worst Case Scenario

During the construction phase and operational phase of the Proposed Development, in a worst-case scenario, such as a fuel spill or accidental unmitigated release of other hazardous compounds occurring, and in the absence of any mitigation measures it is considered that there would be a potential 'negative', 'significant', 'medium term' impact on the quality of the underlying aquifers. Taking account of the underlying aquifer properties, it is considered that there is also an indirect risk

to the downstream receiving waterbodies. However, this worst-case scenario is deemed to be unlikely scenario taking account of the embedded design avoidance measures and mitigation measures.

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10.13 Water Framework Directive

The EU Water Framework Directive (2000/60/EC), as amended by Directives 2008/105/EC, 2013/39/EU, and 2014/101/EU ("WFD"), was established to ensure the protection and enhancement of the water environment across all EU member states. In Ireland, the WFD has been transposed through the European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003).

The WFD requires that all member states protect and improve water quality in all waters, with the objective of achieving at least 'good' status by 2027. It applies to all surface waters (including rivers, lakes, reservoirs, streams, and canals), groundwater, transitional (estuarine), and coastal waters. Any new development must ensure that this objective is not compromised.

A risk-based assessment was undertaken to evaluate the potential impact of the Proposed Development on water quality within the surrounding hydrological environment. This assessment considered both the baseline conditions and the relevant legislative framework, including the WFD and associated national regulations.

10.13.1 Waterbody Status

The risk-based assessment focused on the following waterbodies that have a potential hydraulic connection to the site:

- Louth GWB (IEGBNI_NB_G_019)
- Haggardstown_010 (i.e., Upper Marshes Stream) (IE_NB_06HO80570)
- Inner Dundalk Bay (IE_NB_040_0100)
- Outer Dundalk Bay (IE_NB_040_0000)
- Castletown Estuary (IE_NB_040_0200)

The WFD status for river, lake, groundwater, transitional and coastal water bodies outlined above as recorded by the EPA (EPA, 2025) in accordance with European Communities (Water Policy) Regulations 2003 (SI no. 722/2003) are provided in Table 10-7 and Figure 10-7.

10.13.2 Assessment

The findings of the risk-based assessment identified that in the absence of any mitigation and avoidance measures there could be a potential impact on the water quality within receiving waterbodies associated with the Proposed Development, specifically within the Louth GWB, the Haggardstown_010 and Inner Dundalk Bay waterbody. There is no identified potential impact to the Castletown Estuary and Outer Dundalk Bay attributed to the separation distances and anticipated assimilation capacity of the receiving water bodies taking account of the existing baseline conditions and WFD Status.

To address potential risks, the Proposed Development incorporates design avoidance and mitigation measures as outlined in this chapter of the EIAR, including the implementation of a robust OCEMP (DOBA, 2025) during the construction phase and the incorporation of SuDS in the design of the Proposed Development. These measures will serve to mitigate any potential impact on the receiving groundwater and surface water environment. Hence, the Proposed Development will not have any effect on compliance with the EU Water Framework Directive

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10.13.3 Conclusion

Taking into account the embedded design and mitigation measures, the Proposed Development:

- Will not result in deterioration of the status of hydrologically connected waterbodies.
- Will not compromise the objective of achieving 'good' surface water status or good ecological potential.
- Will remain compliant with the WFD and relevant national legislation.

There will be no adverse effect on the existing WFD status of hydraulically connected waterbodies associated with the Proposed Development including the Louth GWB, the Haggardstown_010, the Inner Dundalk Bay, Castletown Estuary and Outer Dundalk Bay.

Overall, there will be a 'neutral to positive', 'slight to moderate' and 'long-term' impact on the WFD Status and is considered non-significant in the context of the EIA Directive.

10.14 Interactions

Interactions are dealt with in Chapter 16 of this EIAR.

10.15 Monitoring

10.15.1 Construction and Demolition Phase

During the construction and demolition phase of the Proposed Development the following monitoring measures will occur:

- Inspections will be undertaken during excavations and other groundworks to ensure that measures that are protective of water quality are fully implemented and effective.
- Discharges to surface water / foul sewers will be monitored where required in accordance with statutory consents (i.e., discharge licence).
- Routine monitoring and inspections will be undertaken by the main contractor or appointed delegate during refuelling, concrete works to ensure no impacts and compliance with avoidance, remedial and mitigation measures.
- Surface water samples will be collected at the commencement of works to establish the baseline scenario. The monitoring locations will be agreed with LCC in advance of works commencing.
- Visual inspection and water samples of the watercourse will be undertaken daily to ensure no sediment/pollutant deposits are evident.

- Water samples will be taken once a month during the construction phase to demonstrate compliance with surface water regulation EQS standards. The monitoring locations will be agreed with LCC in advance of works commencing.
- The proposed surface water monitoring suite will include the following parameters: pH, electrical conductivity, total suspended solids, Total Petroleum Hydrocarbons, nitrate, ammonia, and COD. However, the final suite of analysis will be agreed with LCC in advance of works commencing.

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10.15.2 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.

In addition, surface water quality monitoring will be undertaken at the outlet to the existing public surface water sewer biannually (twice a year) for a period of 2 years following completion of the construction phase of the Proposed Development in order to ensure that the discharge is meeting all the relevant EQS limits. The suite of analysis will be agreed with LCC in advance.

10.16 Conclusion

Overall, taking account of the design avoidance and mitigation measures, there is no significant residual impacts on hydrology and hydrogeology anticipated regarding the construction phase and operational phase of the Proposed Development.

10.17 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 – guide to good practice, (CIRIA 532).
- Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy.
- Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC.
- Department of the Environment, Heritage and Local Government, Environmental Protection Agency and Geological Survey of Ireland, 1999. Groundwater Protection Schemes (Groundwater Protection Schemes, 1999).
- Donnachadh O' Brien and Associates Consulting Engineers, 2025. Infrastructure Design Report (Planning Submission).
- Donnachadh O' Brien and Associates Consulting Engineers, 2025. Construction Management Plan (Planning Submission).
- Enterprise Ireland. Best Practice Guide BPGCS005. Oil Storage Guidelines.
- Environmental Protection Agency, 2013. IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities.

- Environmental Protection Agency, 2025. EPA Envision Maps. https://gis.epa.ie/EPAMaps/Water. Consulted on 14/04/2025.
- Enviroguide Consulting, 2025. Appropriate Assessment Screening Report .
- Enviroguide Consulting, 2025. Natura Impact Statement.
- IE Consulting, 2025. Site-Specific Flood Risk Assessment.
- Geotechnical Environmental Services Ltd., 2018. Ground Investigation Factual and Interpretive Report.
- IGSL Ltd., 2023. Ground Investigation and Geotechnical Interpretive Report.
- Geological Society of Ireland, 2025. GSI webmapping, 2023. https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228. Consulted on 14/04/2025.
- Geological Survey of Ireland, 2017. A Description of Irish Aquifer Categories.
- Geological Survey of Ireland, 2004. Groundwater Body Reports, Louth GWB: Summary of Initial Characterisation.
- Inland Fisheries Ireland, 2016. Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters.
- Met Éireann, 2025. Barry Coonan, Mary Curley, Ciara Ryan 'Long-term rainfall averages for Ireland 1991-2020', Climatological Note, No.22, 2024.
- National Parks and Wildlife Services (NPWS) webmapping 2025. https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=8f7060450de3485fa1c1085536d477ba. Consulted on 14/04/2025.
- Ordnance Survey Ireland, 2025. Ordnance Survey Ireland webmapping http://map.geohive.ie/mapviewer.html. Consulted on 14/04/2025.
- Office of Public Works, 2025. http://www.floodinfo.ie/map/floodmaps/. Consulted on 14/04/2025.
- Teagasc, 2025 webmapping. http://gis.teagasc.ie/soils/map.php. Consulted on 14/04/2025.
- Uisce Eireann, 2023. Dundalk WWTP (D0034-01) Annual Environmental Report 2022.
- Water Framework Directive, 2025. Water Framework Directive web mapping - http://watermaps.wfdireland.ie/NsShare_Web/. Consulted on 14/04/2025.

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Main Statement

Volume II

CHAPTER 11

Biodiversity

May 2025

McCutcheon Halley
CHARTERED PLANNING CONSULTANTS

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11 Biodiversity

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11.1 Introduction

This chapter of the EIAR was prepared to assess the potential significant effects of the proposed development on the biodiversity of the Site and surrounding area.

This Biodiversity Chapter (hereafter referred to as the "Chapter") details the Ecological Impact Assessment (EcIA) of the proposed development, which assesses the potential effects of same on habitats and species; particularly those protected by National and International legislation or considered to be of particular nature conservation importance. This Chapter will describe the ecology of the Site and surrounding area, with emphasis on habitats, flora, and fauna, and will assess the potential effects of the Construction and Operational Phases of the proposed development on these ecological receptors. This assessment follows the *Guidelines for Ecological Impact Assessment in the UK and Ireland,* by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2024).

The information provided in this Chapter accurately and comprehensively describes the baseline ecological environment at the Site and provides an accurate prediction of the likely ecological effects of the proposed development.

This Chapter should be read in conjunction with the Appropriate Assessment (AA) Screening Report (Enviroguide a DNV Company, 2025a), the Natura Impact Statement (NIS) (Enviroguide a DNV Company, 2025b), the Infrastructure Design Report (IDR) (Donnachadh O'Brien & Associates Consulting Engineers Ltd. (DOBA), 2025a) and the Construction Environmental Management Plan (CEMP) (DOBA, 2025b) submitted with this application under separate cover.

11.2 Expertise & Qualifications

This chapter of the EIAR has been prepared by Liam Gaffney (LG), Senior Ecologist with Enviroguide, a DNV Company.

Liam holds a B.Sc. in Zoology (Hons) and a M.Sc. (Hons) in Wildlife Conservation and Management from University College Dublin. Liam is a Senior Ecologist with 5+ years of experience in ecological consultancy and is experienced in desktop research, literature scoping-review, and report writing, as well as practical field experience (e.g., Bat surveys, habitat surveys, invasive species surveys, wintering bird surveys, large mammals, fresh water macro-invertebrates etc.). Liam is experienced in compiling Biodiversity Chapters of EIARs, Ecological Impact Assessments (EcIA), Appropriate Assessment (AA) screening and Natura Impact Statements (NIS) reports, and in the overall assessment of potential impacts to ecological receptors from a range of developments. Liam is also a Qualifying member of the Chartered Institute of Ecology and Environmental Management (CIEEM) (Full membership application pending).

Liam has been involved in the preparation of EIARs including but not limited to the following projects:

- LRD at lands to the south of Bóthar Maol and to the west of Blackrock Road at Haggardstown, Dundalk, Co. Louth (on behalf of Marina Quarter Ltd., in 2023).

- LRD at lands at Bennetstown, Dunboyne, Co. Meath (on behalf of Marina Quarter Ltd., in 2023).
- LRD at lands adjoining Howth Demesne, Deer Park, Howth, Co. Dublin (on behalf of GLL PRS Holdco. Limited., in 2024).
- The Eastern Dunboyne Distributor Road on lands at Station Road, Pace Line Bracetown Dunboyne, Co. Meath (on behalf of John Connaughton Limited., in 2024).

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All surveying and reporting have been carried out by qualified and experienced ecologists and environmental consultants. Liam Gaffney, Senior Ecologist with Enviroguide a DNV Company, undertook the habitat & flora, fauna surveys of the Site, led the bat surveys at the Site, and carried out the desk work and report writing for this Chapter. Ben Lansbury, Principal Ecologist with Enviroguide a DNV Company, was the lead reviewer for this Chapter. Brian McCloskey Enviroguide Ornithologist undertook the Winter Bird Surveys of the Site. Enviroguide Ecologist Shane Connolly conducted the bat data analysis that informed this Chapter. Subcontracted Herpetologist Rob Gandola undertook the amphibian surveys at the Site.

Ben Lansbury holds a BSc. (Hons), First Class in Marine and Freshwater Biology and an MSc with Distinction in Environmental Consultancy. Ben is a Full Member of CIEEM and a Principal Ecologist with over 10 years of experience across both private and public sector projects: encompassing residential housing developments, large scale road schemes, cycles routes, railway, renewable, mineral, and waste schemes. Ben has been responsible for a variety of tasks, including, project and team management, specialist ecological reports to support planning applications with a particular interest in ornithology, botany and Biodiversity Net Gain, budget management, survey design, client liaison, tendering, quality assurance and specialist field surveys. Through working on a variety of projects, Ben has a thorough understanding of ecological legislation, the planning system, best practice survey methodologies, biodiversity net gain and is able to provide competent and concise reports to ensure legal compliance and support planning applications. Additionally, Ben has experience in Operations Management of a team of over 140 ecologists. Tasks included monthly reviews of utilization, forward workloads, project and revenue forecasting and input into monthly and annual income statements.

Brian McCloskey is an experienced Ornithologist with a BSc in Planning and Environmental management from the Technological University of Dublin (TUD) and 12 years of bird survey experience, including three years of professional Ornithology work. Brian is a longstanding and active member of Bird Watch Ireland and is also the author of several articles in UK birding publication *Birdwatch Magazine*. Brian is highly experienced in all survey methodologies and with surveying all species groups of Irish birds and migrants, having provided a range of ornithology survey work for ecological consultancies, e.g., vantage points surveys of gulls, terns, raptors, waders and wildfowl; hinterland surveys of the above as well as riverine species; and breeding waders and country birds.

Shane Connolly has a B.Sc. (Hons) in Botany from the University of Galway and 3 years' experience as an Ecological Consultant. Shane has extensive experience surveying bats, birds, mammals, plants, habitats, reptiles, amphibians, and invasive species. Shane is also experienced in obtaining bat derogation licences from the NPWS and holds a bat disturbance licence (DER/BAT 2024-107). Shanes experience in ecological report writing includes but is not limited to Appropriate Assessment (AA)

Screenings and Natura Impact Statements (NIS), Ecological Impact Assessments (EcIA), Bat Reports, Constraints Reports, Invasive Species Management Plans (ISMP), and EIAR chapters.

Rob Gandola is a herpetologist expert with a MSc in Ecology from Bangor University, Wales and a BSc (hons) Zoology from UCD. He provides training and professional advice to Local and National Authorities, heritage rangers, eNGOs, and community groups in Ireland and Northern Ireland, and regularly carries out surveys and implements monitoring projects on their behalf.

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11.3 Proposed Development

The proposed development is described in Chapter 2. The development generally comprises of 502 no. residential units, comprising 1, 2, 3 and 4 bed units in a mix of maisonettes, terraced and semi-detached units, with 1 no. detached bungalow unit; Creche building and all associated site and development works including landscaping and amenity areas, infrastructure and services, and new entrance from Blackrock Road, with additional pedestrian/cycle access from Bóthar Maol.

The Proposed Layout and Landscape Plan are shown in Figure 11-1 and Figure 11-8. Please refer to John Flemming Architect (JFA) drawing HGG-00-XX-DR-JFA-AR-P1004 and Park Hood landscape drawing 7742-L-2100 respectively.

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Figure 11-1 Site Layout (main Site area) (Source: JFA Drwg: HGG-00-XX-DR-JFA-AR-P1004)

11.3.1 Aspects Relevant to this Assessment

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11.3.1.1 Drainage and Foul Water

Existing Surface Water Situation

According to the *Infrastructure Design Report* (IDR) prepared by DOBA (DOBA, 2025a), there is no formal surface water drainage on site with the exception of an existing watercourse which is evident along the eastern boundary adjacent to the R172 Blackrock Road (see Figure 11-2). Further to a review of the topographical survey, geotechnical investigations carried out on site and the *Site-Specific Flood Risk Assessment* (SSFRA) prepared by IE Consulting (2025) (submitted with this application), surface water run-off from the existing greenfield site and thus the subject lands, which does not infiltrate to ground, flows overland in an easterly direction towards the existing watercourse. This existing watercourse flows northwards via existing culverts and conveyance channels prior to crossing beneath the R172 and discharging in a north-easterly direction towards the Irish Sea (see Figure 11-2).

The Applicant notes that the surface water discharge locations, as illustrated on DOBA Engineering drawing series C-0200 pertaining to the Proposed Development, are located in the same positions and use the same existing culverts and conveyance channels as was previously granted by An Bord Pleanála case reference TA15.304782 – SHD development and considered in the previous LRD application under Reg Ref. 2360476 (ABP Ref. 319077). Additionally, the proposed surface water discharge rate from the development, equating to 67.50 litres per second (l/s) as calculated in Section 4.6 of the Infrastructure Design Report, is 38.4 l/s less than the previously permitted rate of 105.9 l/s, and therefore comparatively reduces flows on the downstream receiving network.

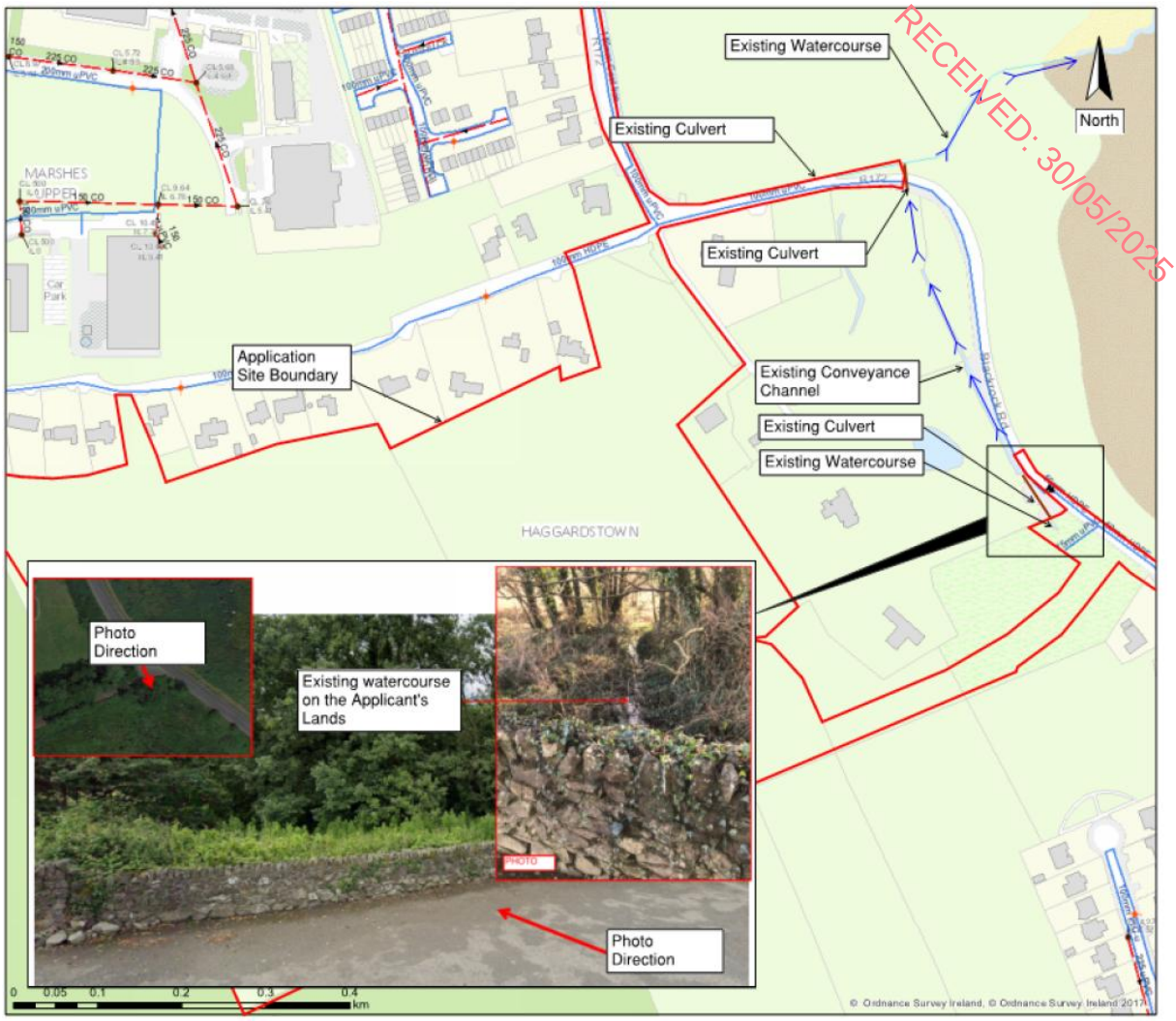

Figure 11-2 Extract from IDR showing the existing surface water channel to east of the Site and existing drainage channel network directing water to Dundalk Bay to the north-east (Source: DOBA, 2025a).

Proposed Surface Water Situation

It is proposed to collect and manage surface water at the Site through a suite of Sustainable Urban Drainage System (SUDS) measures, prior to discharge to Dundalk Bay via a) a new headwall constructed along an existing drain to the north-east of the main Site area (See Figures 11-3, 11-4 and 11-5), and b) to the existing drainage channel in the east of the Site, at the proposed main entrance (See Figure 11-6).

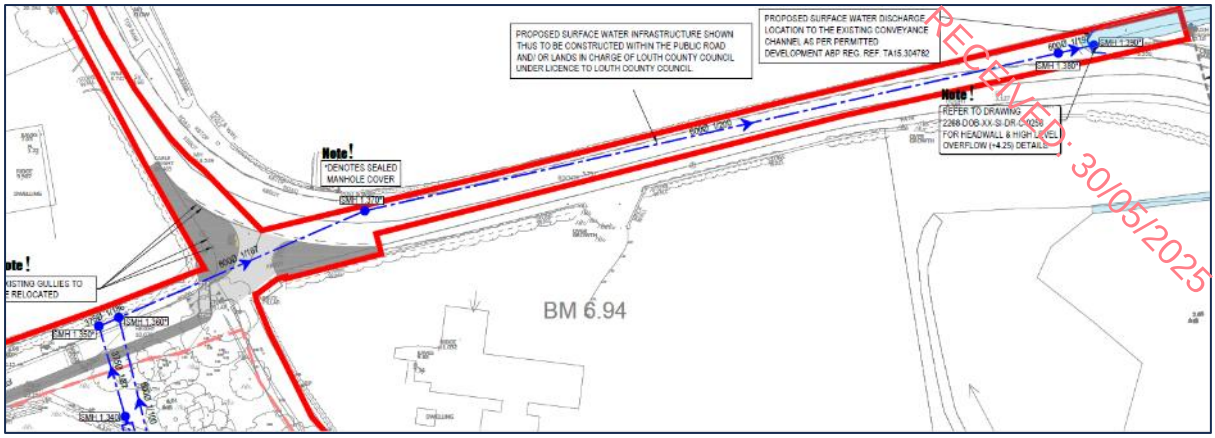

Figure 11-3 Extract from Proposed Surface Water Drainage Layout showing detail at north-eastern surface water outfall to northern drainage channel and Dundalk Bay (Source: DOBA Drwg: 2268-DOB- XX-SI- DR-C-0202).

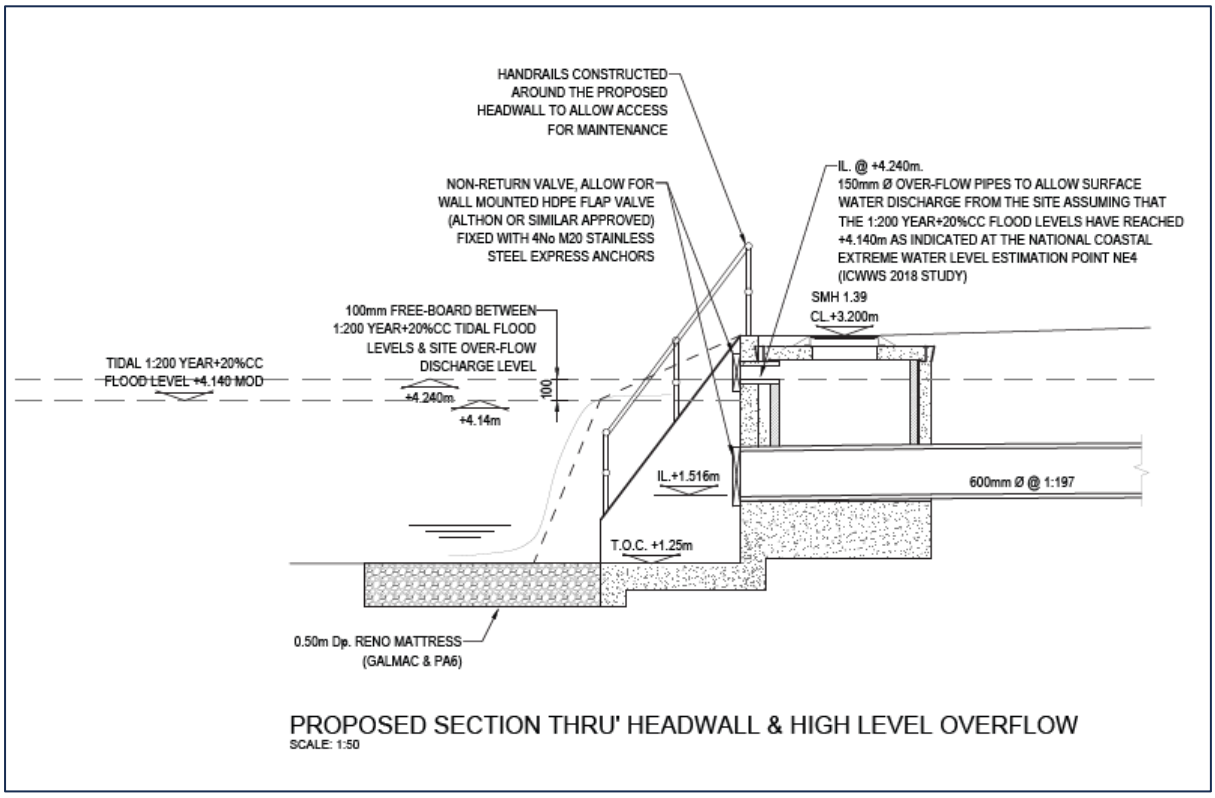

Figure 11-4 Surface water outfall detail of discharge point to northern drainage channel and Dundalk Bay (Source: DOBA Drwg: 2268-DOB-XX-SI-DR-C-0256).

Figure 11-5 Northern drainage channel viewed facing west (left image) and east (right image) (Images taken 07/02/2024).

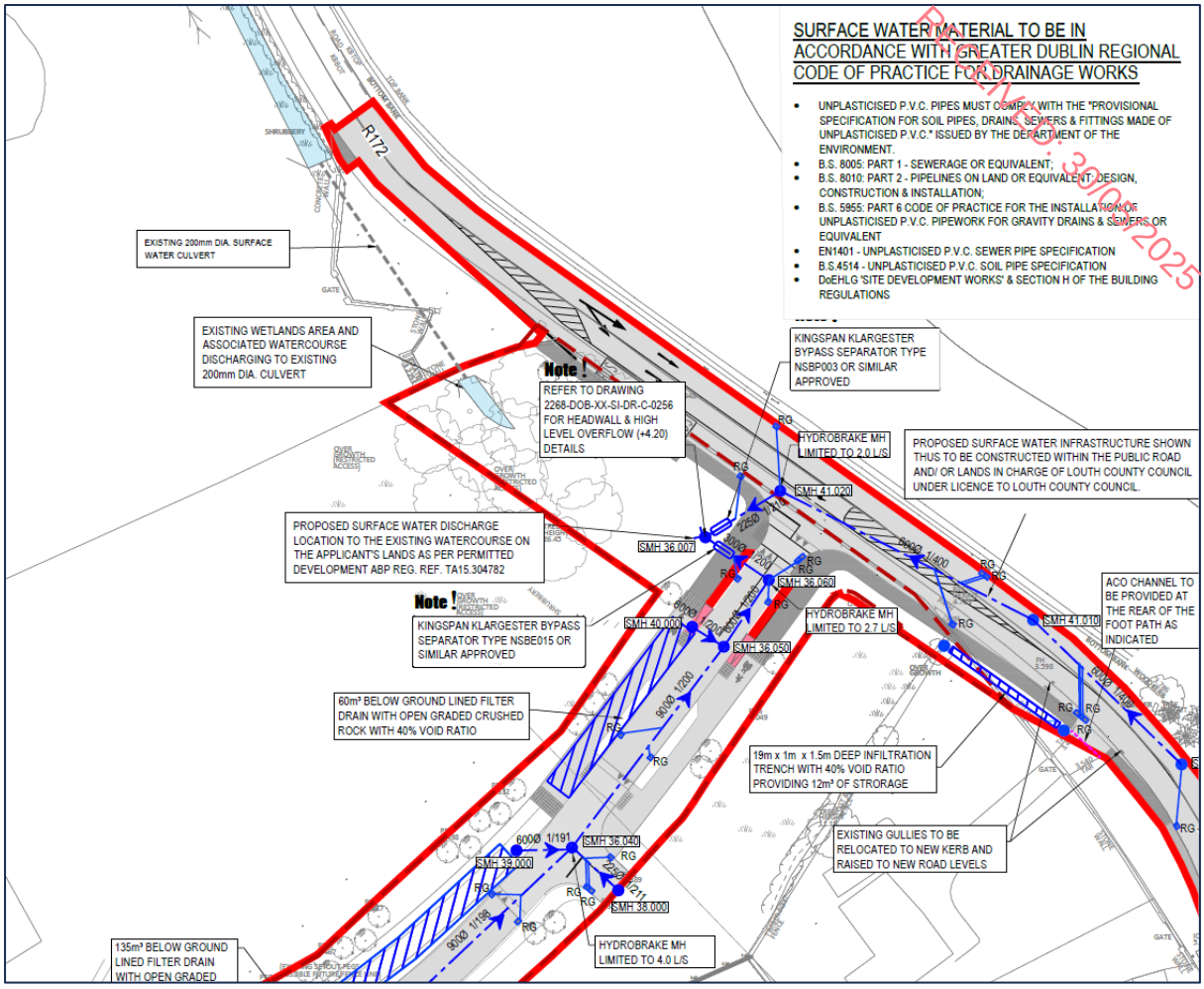

Figure 11-6 Extract from Proposed Surface Water Drainage Layout showing detail at eastern access to R172 Road (Source: DOBA Drwg: 2268-DOB- XX-SI- DR-C-0202).

The suite of SUDS measures proposed by DOBA include the following:

- Bioretention areas and bioswales located within the proposed Loaker's Park (central public space) and various green spaces within the Site.
- Tree pits and unlined tree pit trenches dotted throughout the Site.
- Unlined permeable paving located throughout the development under all the residential driveways.
- Filter drains located underground along the main entrance roadway.
- Detention basins located throughout the Loaker's Park and other greens spaces at the Site. In the east of the Site, detention basins are connected to underground attenuation tanks to provide additional capacity.
- Oversized pipes are proposed to be used.
- Petrol/oil separators are proposed to be placed prior to the discharge of surface water to the public surface water drainage network
- Rainwater harvesting proposed as a source control measure to the Creche only.

Foul Drainage

There is no existing wastewater drainage infrastructure on or in close proximity to the Site of the proposed development. The closest gravity wastewater network, as indicated by the Uisce Éireann (UÉ) GIS mapping, which is applicable for a connection from the proposed development, is located along Finnabair Crescent, approximately 0.8km to the north-west of the Site.

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The Applicant has liaised with UÉ in relation to the Proposed Development and submitted a pre-connection enquiry (PCE) to which UÉ responded with a Confirmation of Feasibility (CoF) letter. In summary, the CoF letter notes that a wastewater connection for the full development can be facilitated, in advance of upgrade works to the Coe's Road Wastewater Pumping Station (WwPS), via an interim temporary solution whereby flows from the Proposed Development in excess of 61m3 arestored on the development Site during the day (7am to 7pm) and are discharged to the public network during the night (7pm to 7am). An extract from the CoF letter is included below:

"*Upgrade works are required to increase the capacity of the existing wastewater network. Uisce Eireann currently has a project on our current investment plan which will provide the necessary upgrade and capacity. This upgrade project is scheduled to be completed by Q1 2030 (this may be subject to change) and the proposed connection could be completed as soon as possible after these works. Customer to engage at Connection Application stage.*

Where a connection is proposed in advance of the Coe's Rd project the following interim solution is required to confirm capacity as per below.

Flows from the pumping station constructed under Phase 1 of the development (serving 200 units) shall not be increased during daytime hours (ie 7am to 7pm). This would amount to approximately 61m3 total volume pumped in these hours. The remaining balance of flows (serving 303 units) would be stored during the day then discharged in the night (7pm to 7am). Dosing would be required to avoid septicity. This arrangement would be temporary until the Coe's Road upgrade project is completed. Once this is completed the pumping station can operate as normal throughout the day."

(please refer to the CoF in Appendix C of DOBA's 2025 IDR for further details).

According to the IDR (DOBA, 2025a), the proposed wastewater network will collect effluent from the proposed development via a main wastewater drainage network which is located within the road network around the proposed development where it will finally discharge by gravity to a new 189m^3 Type 3 WwPS to the east of the proposed development which will be provided with a 15m buffer to the nearest property boundary in accordance with Section 5.5 of the IW Wastewater Code of Practice IW-CDS-5030-03. A new 110mm internal diameter (I.D.) rising main will be installed along the public roads with scour and air valves as required and shall discharge to a new stand-off manhole prior to connecting to the existing gravity network at Finnabair Crescent in accordance with the requirements from the UÉ CoF. Flows from this point discharge by gravity to the existing Coes Road WwPS and are then pumped northeast to the final destination of the Dundalk WwTP. The proposed wastewater sewer network has been designed in accordance with the principles and methods set out in UÉ's Code of Practice for Wastewater Infrastructure IW-CDS-5030-03, IS EN 752 Drain & Sewer Systems outside Buildings, IS EN 12056 Gravity Drainage Systems inside Buildings and the Building Regulations Technical Guidance Document Part H Drainage & Wastewater. The estimated peak Wastewater loading generated by the proposed development's Dry Weather Flow is estimated at 2.45 l/s while

the Design Wastewater Flow of 3DWF is 7.36 l/s based in a reduced peaking factor of 3.0 in accordance with Section 2.2.5 of the IW Wastewater Code of Practice IW-CDS-5030-03 (please refer to DOBA's 2025 IDR for further details).

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11.3.1.2 Landscape Plan

As per the landscape proposals prepared by Park Hood (Drawing 7742-L-2101) and as detailed in their *Landscape Design Statement* (Park Hood, 2025), it is proposed to retain the majority of the field boundary hedgerows and treelines that make up the linear habitats at the Site as part of the landscaping of the Proposed Development, including the stone walls at their base where present.

Some small sections of hedgerows will be lost to allow for access roads and pathways to provide connectivity throughout the Site for future residents. A total number of 18 trees/tree groups/hedges are to be removed to facilitate the Proposed Development, with 63 trees/ tree groups proposed for retention. Ca.50% of hedgerow H46 in the north-east of the Site will be removed, however, this is not a significant loss compared to the size of the woodland section H46 links to. The young wet alder woodland (G23) in the east of the Site and associated marsh habitat will be protected and retained within the landscape plan for the Site during the construction of the main entrance to the Site and northbound bus stop. The construction of the bus stop can be conducted largely from the roadside to minimise the impact on the wet woodland pocket and marsh area adjacent. Some breaks to the internal north-south central hedgerow being retained will be required.

It is proposed to bolster this central hedgerow and widen it through additional planting of Blackthorn (*Prunus spinosa*), Hawthorn (*Crataegus monogyna*), Elder (*Sambucus nigra*), Hazel (*Corylus avellana*) and Bird Cherry (*Prunus padus*), as well as wildflower meadow and bulb planting (See Figure 11-7). A total of ca.500 trees are proposed to be planted across the Site as part of the proposed development's landscape plan including species such as Lime (*Tilia cordata*), Wild Cherry (*Prunus avium*), Scots Pine (*Pinus sylvestris*), Silver Birch (*Betula pendula*), Downy Birch (*Betula pubescens*), Goat Willow (*Salix caprea*), Rowan (*Sorbus acuparia*), Whitebeam (*Sorbus aria 'Lutescens'*), European Hornbeam (*Carpinus betulus 'fastigiata'*), Callery Pear (*Pyrus calleryana 'Chanticleer'*), Field Maple (*Acer campestre 'Elsrijk'*), Beech (*Fagus sylvatica*), Turkish Hazel (*Corylus colurna 'Granat'*) and Crab Apple (*Malus sylvestris*).

The proposed landscape plan is shown in Figure 11-8.

Figure 11-7 Extract adapted from Park Hood drawing 7742-L-2101 showing the proposed treatment of the central north-south hedgerow (Source: Park Hood)

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Figure 11-8 Site Landscape Plan (Source: Park Hood Drwg: 7742-L-2101)

11.3.1.3 Public Lighting Plan

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The lighting scheme for the Proposed Development has been designed by the lighting consultants PMEP Consulting with input from Enviroguide to ensure it is sensitive to local wildlife usage of the Site and the areas around the Site. The scheme has been designed so that lux levels along the vegetated boundaries of the Site have been minimised and limited to 0-1.5 lux and levels along the internal retained hedgerows minimised to 0-3 lux for the most part with light-spill of 5 lux occurring in limited instances where proposed pathways intersect the hedgerow. The luminaires selected are also of a warm lighting temperature of 3000k to minimise their impact to bats and other wildlife.

11.4 Methodology

11.4.1 Relevant Legislation & Guidance

An EcIA is a process of identifying, quantifying, and evaluating potential effects of development-related or other actions on habitats, species and ecosystems (CIEEM, 2024). When an EcIA is undertaken as part of an EIA process it is subject to the EIA Directive 2011/92/EU (as amended), the Planning and Development Act 2000 (as amended) and the Planning and Development Regulations 2001 (as amended). An EcIA is not a statutory requirement, however it is a best practice evaluation process. The EcIA encompassed within this Chapter is provided to assist the Competent Authority with its decision-making in respect of the Proposed Development.

There are a number of pieces of legislation, regulations and policies specific to ecology which underpin this assessment. These may be applicable at a European, National or Local level. Legislation at the International level relevant to the Proposed Development are listed below:

- *Council Directive 92/43/EEC* on the Conservation of Natural Habitats and of Wild Fauna and Flora (as amended); hereafter the 'Habitats Directive'.
- *Directive 2009/147/EEC* (as amended), hereafter the 'Birds Directive'.
- Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment as amended by Directive 2014/52/EU (the "EIA Directive")
- EU Regulation 1143/2014, on Invasive Alien Species (as amended).
- European Union (Invasive Alien Species) Regulations 2024 (SI 374/2024).
- Convention on the Conservation of European Wildlife and Natural Habitats 1982, hereafter the 'Bern Convention'
- The Convention on the Conservation of Migratory Species of Wild Animals 1983, hereafter the 'Bonn Convention'.
- Ramsar Convention on Wetlands 1971, hereafter referred to as 'Ramsar'.
- Water Framework Directive 2000/60/EC (as amended), hereafter the 'WFD'.

National legislation and policy relevant to the Proposed Development are listed below:

- Wildlife Act 1976, as amended.
- Flora (Protection) Order 2022.
- The Planning and Development Act 2000 (as amended).
- National Biodiversity Plan 2023-2030.

Additionally, Natural Heritage Areas (NHAs) are designations under the Wildlife Acts to protect habitats, species, or geology of national importance. The boundaries of many of the NHAs in Ireland overlap with Special Areas of Conservation (SAC) and/or Special Protection Area (SPA) sites. Although many NHA designations are not yet fully in force under this legislation (referred to as 'proposed NHAs' or pNHAs), they are offered protection in the meantime under planning policy which normally requires that planning authorities give recognition to their ecological value.

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Local plans relevant to the Proposed Development are listed below:

- The Louth County Development Plan 2021-2027,
- The Louth Biodiversity Local Action Plan (2021-2026).

Further details on legislation and policy relevant to the proposed development are detailed in Appendix 11.1.

11.4.2 Scope of Assessment

The specific aims and objectives of the EcIA detailed within this Chapter were to:

- Undertake baseline ecological surveys and evaluate the nature conservation importance of the Site;
- Identify and assess the direct, indirect and cumulative ecological implications or impacts of the Proposed Development during its lifetime; and
- Where possible, propose mitigation measures to remove or reduce those impacts at the appropriate stage of the development.

11.4.3 Desk Study

A desktop study was carried out to collate and review available information, datasets and documentation sources pertaining to the Site's natural environment. The desk study, completed in February 2025, relied on the following sources:

- Information on species records and distributions, obtained from the National Biodiversity Data Centre (NBDC) at *maps.biodiversityireland.ie*;
- Information on waterbodies, catchment areas and hydrological connections obtained from the Environmental Protection Agency (EPA) at *gis.epa.ie*;
- Information on bedrock, groundwater, aquifers and their statuses, obtained from Geological Survey Ireland (GSI) at *www.gsi.ie*;
- Information on the network designated conservation sites, site boundaries, qualifying interests and conservation objectives, obtained from the National Parks and Wildlife Service (NPWS) at *www.npws.ie;*
- Information on the existence of permitted developments, or developments awaiting decision, in the vicinity of the Proposed Development from the National Planning Application Database available at: *www.myplan.ie;*
- Satellite imagery and mapping obtained from various sources and dates including Google, Digital Globe, Bing and Ordnance Survey Ireland; and,

- Information on the extent, nature and location of the Proposed Development, provided by the applicant and/or their design team.

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A comprehensive list of all the specific documents and information sources consulted in the completion of this report is provided in Section 11.17 of this Chapter.

11.4.4 Zone of Influence

The 'zone of influence' (ZOI) for a project is the area over which ecological features may be affected by changes as a result of the Proposed Development and associated activities. This is likely to extend beyond the development Site, for example where there are ecological or hydrological links beyond the Site boundaries (CIEEM, 2018). The ZOI will vary with different ecological features, depending on their sensitivities to an environmental change.

Furthermore, ZOI in relation to European sites is described as follows in the 'OPR Practice Note PN01 - Appropriate Assessment Screening for Development Management' (OPR, 2021):

> "*The zone of influence of a proposed development is the geographical area over which it could affect the receiving environment in a way that could have significant effects on the Qualifying Interests of a European site. This should be established on a case-by-case basis using the Source-Pathway-Receptor framework and not by arbitrary distances (such as 15 km).*"

The ZOI of the Proposed Development is largely confined to habitats within and immediately adjacent to the Site due to the scale, nature and location of the Proposed Development. However, due to its proximity to the coast, ecological receptors within nearby Dundalk Bay are also considered.

11.4.5 Identification of Relevant Designated Sites

To determine the ZOI of the Proposed Development for designated sites, reference was made to the 2021 Practice Note *PN01 - Appropriate Assessment Screening for Development Management* (OPR, 2021), produced by the Office of the Planning Regulator, Dublin. This note was published to provide guidance on screening for AA during the planning process, and although it focuses on the approach a competent authority should take in screening for AA, the methodology is also readily applied in the preparation of EcIA reports such as this to identify all relevant designated sites potentially linked to the Proposed Development.

As noted above, the most recent guidance advises against the use of arbitrary distances that serve as precautionary ZOI (e.g., 15km), and instead recommends the application of the Source-Pathway-Receptor (S-P-R) model in the identification of designated sites, stating that "*This should avoid lengthy descriptions of European sites, regardless of whether they are relevant to the proposed development, and a lack of focus on the relevant European sites and issues of importance*". Although this statement refers to European sites, it is also applicable to other designated sites.

Thus, the methodology used to identify relevant designated sites comprised the following:

- Identification of potential sources of effects based on the Proposed Development description and details;

- Identification of potential pathways between the Site of the Proposed Development and any designated sites within the ZOI of any of the identified sources of effects.
    - Water catchment data from the EPA (www.epa.ie) were used to establish or discount potential hydrological connectivity between the Proposed Development and any designated sites.
    - Groundwater and bedrock information used to establish or discount potential hydrogeological connectivity between the Proposed Development and any designated sites.
    - Air and land connectivity assessed based on Proposed Development details and proximity to designated sites.
    - Consideration of potential indirect pathways, e.g., impacts to flight paths, *ex-situ* habitats, etc.
- Review of Ireland's designated sites to identify those sites which could potentially be affected by the Proposed Development in view of the identified pathways, using the following sources:
    - European sites and nationally designated sites (e.g., NHAs and pNHAs) from the NPWS (www.npws.ie);
    - Ramsar sites from the Irish Ramsar Wetland Committee (https://irishwetlands.ie/irish-sites/);
    - Other internationally designated sites e.g., UNESCO Biosphere's; and
- Regional development plans to identify any remaining sites or areas designated for nature conservation at a local level.

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11.4.6 Site Surveys/Investigations

A number of surveys have been carried out at the Site to date and these are listed in Table 11-1. No limitations to field surveys were encountered which would prevent robust conclusions being drawn as to the potential effects of the Proposed Development.

Table 11-1 Field surveys taken at the Site of the Proposed Development

Survey Type	2022	2023	2024	2025
Habitat/ Flora Surveys				
Habitats & Flora (incl. invasive species)	-	17th February 9th May	-	14th February
Mammal Surveys				
General mammal survey	-	9th May	-	14th February
Otter survey	-	-	7th February	14th February

Survey Type	2022	2023	2024	2025
Herptile Surveys				
Amphibian Surveys	-	-	-	25th February 10th March 24th March 1st April
Common Lizard Surveys	-	-	-	
Bird Surveys				
Breeding bird surveys	-	20th April 8th May 29th May	-	18th of April 8th of May
Winter Bird Surveys	18th October 2nd November 7th December	24th January 13th February 22nd March	4th November 12th December	28th January 21st February
Bat Surveys				
External ground-level roost assessment (trees and structures)	-	17th of February	-	14th February
Dusk Transect surveys	-	25th May 13th June 21st June	7th October	-
Emergence Surveys of two low roost suitability structures	-	30th May	-	-

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11.4.6.1 Habitat and Flora Surveys

An ecological walkover survey of the Site of the proposed development was conducted by Enviroguide Senior Ecologist Liam Gaffney on the 17th February 2023 as part of a previous LRD application at the Site. Further habitat and flora/invasive flora surveys were conducted during the flowering season on 9th May 2023; to provide a complete picture of the species/habitats present at the Site. Assessments of the habitat, flora and invasive species at the Site have been informed by surveys conducted during the appropriate survey period, as recommended in both Smith *et al.* (2011) and TII (2009). Another ecological site walkover was then conducted on the 14th of February 2025 to ground-truth the previous survey results as part of the current LRD application and to confirm whether any significant changes had occurred at the Site since then.

Habitats were categorised to level 3, according to the Heritage Council's '*A Guide to Habitats in Ireland*' (Fossitt, 2000). The habitat mapping exercise had regard to the '*Best Practice Guidance for Habitat Survey and Mapping*' (Smith *et al.*, 2011) published by the Heritage Council and the *National Roads Association* (now known as Transport Infrastructure Ireland (TII)) guidance on '*Ecological*

Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes' (TII, 2009*)*. Habitats within the surrounding area of the Proposed Development were classified based on views from the Site and satellite imagery where necessary (Google Earth, Digital Globe and OSI).

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A search for rare and invasive flora species was conducted during the habitat surveys of the Site. The locations of invasive species were documented on the field map, or through the use of GPS in the field, along with the extent of the area they cover. The invasive plant species survey primarily focused on plant species that are listed on Schedule III of the European Communities (Birds and Habitats) Regulations and considered to be 'High Impact' invasive species e.g., Japanese Knotweed (*Reynoutria japonica (*formerly *Fallopia japonica)*). Incidental observations of other terrestrial plant species known to be invasive, such as Butterfly Bush (*Buddleja davidii*) were also recorded, particularly if they occurred close to watercourses.

11.4.6.2 Mammal Surveys

Mammal surveys of the Site were carried out in conjunction with the ecological walkovers in February and May 2023 and February 2025. The surveys conducted as part of this assessment were carried out in compliance with the survey guidelines contained in '*Guidelines for the Assessment of Ecological Impacts of National Road schemes'* (NRA, 2009) and associated guidance '*Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes'* (NRA, 2008).

The Site was searched for tracks and signs of mammals e.g., scat, prints, hair, burrows, holts, couches etc. The habitat types recorded throughout the survey area were used to assist in identifying the fauna considered likely to utilise the area. The surveys were carried out at a suitable time for mammal surveys, with vegetation yet to have grown back after the winter during the February surveys; allowing easier identification of mammal dwellings if located in dense scrub. No difficulties were encountered in this regard with the Site largely open in nature.

11.4.6.2.1 Otter Surveys

All lands accessible to the surveyor were surveyed for signs of otter usage on the 7th February 2024 and the 14th February 2025. This included the verges either side of the R172 from Bóthar Maol down to the Proposed Site entrance (i.e., the extended bend of the R172). An area of *Phragmites* swamp to the east of the main Site area lies within private ownership and access was not possible during the surveys, however the surveys covered the entirety of the road adjacent to the swamp and focused on areas that might be used by otter to cross to same from the coast. The overgrown drainage ditch on the northern side of the R172 was surveyed for otter with the surveyor following this feature to the east towards the coast.

11.4.6.3 Bird Surveys

11.4.6.3.1 Breeding Bird Surveys

A general scoping bird survey of the Site was carried out during the initial walkover in February 2023, with a precautionary approach taken when assessing the likelihood of species recorded at the Site and likelihood to breed therein. The Site was walked with details of all bird species encountered recorded to assess their behaviour and numbers.

A suite of breeding bird surveys was subsequently conducted during the nesting season, with surveys carried on the mornings of the 20th April, 8th May and 29th May 2023. An ecological site walkover was then conducted on the 14th of February 2025 to ground-truth the previous survey results and to confirm whether any significant changes in habitat provision had occurred at the Site since 2023 that might affect the breeding bird assemblage it supports. A further set of breeding bird surveys was carried out at the Site on the 18th of April and the 8th of May 2025.

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The survey methodology employed during the bird surveys of the Site was based on that recommended in standard literature used by for example the British Trust for Ornithology (BTO) (Gillings et al, 2007; Bibby et al, 1992 and Gilbert et al, 1998), which has subsequently been adapted into guidelines for ecological consultants by the Bird Survey & Assessment Steering Group (2022). Transects were walked through the Site to record all the species that were present. A final zig-zag walk through the Site was conducted at the end of each survey to ensure no additional species were missed. Each transect was divided up into four parts (all of a similar distance) and then walked with all species occurring at each side of the ecologist noted. Distance brackets were also used, with the majority of species recorded within 50 meters each side of the surveyor on each transect.

11.4.6.3.2 Winter Bird Surveys

Winter bird surveys were conducted at the Site by Enviroguide Ornithologists over the course of the 2022/23 winter. One winter bird survey was conducted each month between October 2022 and March 2023, with each survey comprised of five hourly counts. Survey dates were as follows: 18th October 2022, 2nd November 2022, 7th December 2022, 24th January 2023, 13th February 2023, and 22nd March 2023.

Winter bird surveys were also carried out over the course of the 2024/25 winter, with surveys completed on 4th November, 12th December, 28th January and 21st February 2025. During the 2024/2025 surveys, a core study area of 500m was also surveyed to further inform the assessment of potential disturbance impacts on waterbirds (See Figure 11-9). During the December and January surveys, the coastline adjacent to the Site to within 500m was surveyed for roosting/foraging waterbirds by the surveyor.

The objective of these surveys was:

- To assess the potential usage of the Site by waterbirds during the winter months as an *ex-situ* site; and
- To determine the composition, numbers, frequency, and heights of species in flight over the Site of the Proposed Development, if any, in order to inform decisions on potential disturbance to flight-lines of birds commuting to/from roost sites and/or between feeding sites as a result of the construction of the proposed buildings.

The survey methodology follows the non-breeding bird survey guidance published by the Bird Survey & Assessment Steering Group (2022) '*Bird Survey Guidelines for assessing ecological impacts'.* Each survey consists of a combination of walked transects of the Site (being walked at a slow, ambling pace, stopping to scan priority habitat/features where appropriate) and vantage point observation from fixed points, as required. The flight-line survey component consists of vantage point observation by a

surveyor using binoculars and identification guides where necessary to identify all target species in flight over the Site.

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All surveys were undertaken using:

- Opticron 8x42 binoculars (or equivalent).
- Opticron 20x Telescope (or equivalent).
- Agreed survey methodology.
- A4 map of the survey area.

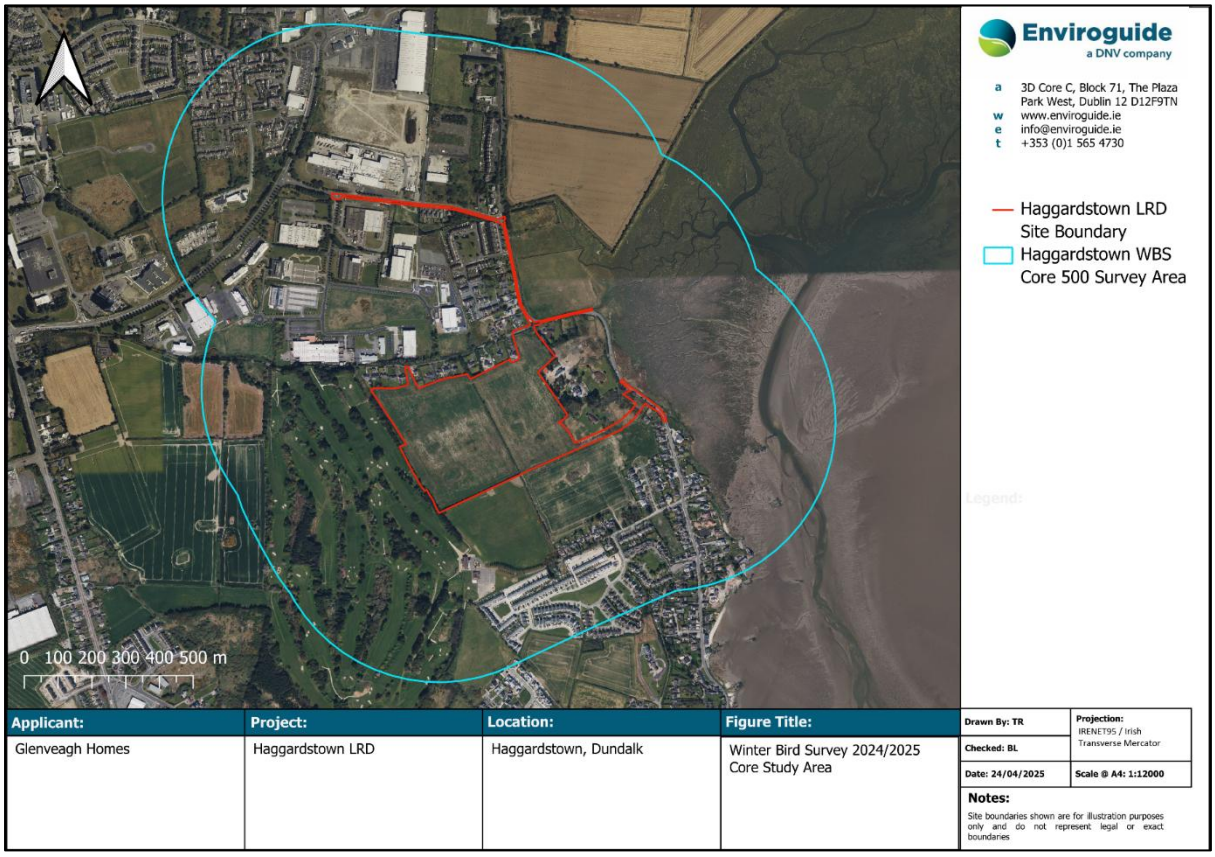

Figure 11-9 Winter Bird Survey 2024/2025 Core Study Area

11.4.6.4 Bat Surveys

11.4.6.4.1 Potential Bat Roost Assessment

Potential Bat Roost (PBR) and commuting/foraging habitat suitability surveys were conducted by LG during the day of the 17th of February 2023 and 14th February 2025.

Daytime inspections were undertaken of all of the trees and structures within the survey area in order to assess features that may provide suitable bat roost habitat. Inspections were undertaken visually, from the ground, with the aid of a strong torch beam where required. Trees and structures within the survey area were assessed for Potential Roost Features (PRFs) which were used to determine their potential bat roost value as per the Bat Conservations Trust's '*Bat Surveys for Professional Ecologists: Good Practice Guidelines'* (Collins, 2023).

11.4.6.4.2 Habitat Suitability Assessment

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The Site was also assessed in relation to potential bat foraging habitat and potential bat commuting routes. Bat habitats and commuting routes identified were considered in relation to the wider landscape to determine landscape connectivity for local bat populations through the examination of aerial photographs as per Collins (2023).

Additionally, the National Biodiversity Data Centre (NBDC) maps landscape suitability for bats based on Lundy et al. (2011). The index ranges from 0 to 100 with 0 being least favourable and 100 most favourable for bats (highest scores in Ireland currently approx. 58.556). The scores are divided into five qualitative categories of suitability, namely:

- 0.0000000 - 13.000000: **Low**
- 13.000001 - 21.333300: **Low – Medium**
- 21.333301 - 28.111099: **Medium**
- 28.111100 - 36.444401: **Medium – High**
- 36.444402 - 58.555599: **High**

11.4.6.4.3 Dusk Transect and Activity Surveys

Three dusk transect activity bat surveys were conducted on the 25th May, 13th June and 21st June 2023. A further bat activity survey was conducted on the 7th of October 2024 to determine whether or not any significant changes to bat activity at the Site have occurred, although bat survey data is valid for a period of two years provided no significant changes have occurred to the habitats on Site within that period, as is the case here (CIEEM, 2019). Survey methodologies for the activity surveys followed those of Collins (2016) and the updated Collins (2023). Surveys in 2023 were undertaken in the period May to September. Surveys in March, April or October, are possible if weather conditions allow as was the case for the 2024 transect survey conducted in October.

All surveys were carried out by two fully qualified Enviroguide ecologists. Surveyors were equipped with full spectrum Elekon Bat Logger M2 bat detector(s), along with a powerful L.E.D. torch and head torches. The aim of the activity surveys was to determine if bats were present on Site, and if so, to monitor their behaviours such as feeding, commuting, or roosting. The survey comprised of a walked transect around the Site with particular attention being given to linear features within the Site. Echolocations were recorded and saved by the Elekon Batlogger for more detailed species analysis using BatExplorer analytical software.

The transect surveys followed a predetermined approach consisting of a set of transect routes separated by a number of predetermined stopping points where the surveyors spent a period of 6 minutes stationary and recording activity (See Figure 11-10). The transects were walked in an anti-clockwise direction, with the order of which stopping point the surveyors started at on each of the survey date changed. This combination of stopping points and walked transects will allow any hotspots in bat activity along the various field boundaries at the Site to be captured and compared and indicates areas of particular importance to the local bat population.

To comply with best practice guidelines, dusk transect surveys began 15 minutes before sunrise and were sustained for a minimum of 2 hours. Weather conditions and the time of year were suitable for bat surveys. The weather conditions for are described fully in Table 11.2 with the total survey effort described in Table 11.3.

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Figure 11-10 The transect approach followed during dusk bat surveys at the Site (Source: Enviroguide)

11.4.6.4.4 Emergence Surveys

Emergence Surveys were conducted of two low roost suitability structures present on Site; a disused pumphouse in the north-west of the Site and a temporary storage container located in the east of the Site, on the evening of the 30th May 2023. Two surveyors equipped with high powered torches and Elekon M2 handheld bat detectors carried out the surveys, with one surveyor located at each structure for the duration of the survey. The surveyors examined the interior of the structures prior to commencing the surveys which were conducted facing the main entrance/egress point to each structure. The surveys started at 21:25 (sunset was 21:44) and ended at 23:30.

Table 11-2 Bat Survey Weather Conditions

Date	Survey Type	Weather at Start	Weather at Finish
25th May 2023	Dusk	Wind: Beaufort 1 Precipitation: Dry Temperature: 15°C	Wind: Beaufort 1 Precipitation: Dry Temperature: 12°C

30th May 2023	Emergence	Wind: Beaufort 1 Precipitation: Dry Temperature: 12°C	Wind: Beaufort 1 Precipitation: Dry Temperature: 9°C
13th June 2023	Dusk Transect	Wind: Beaufort 1 Precipitation: Dry Temperature: 16°C	Wind: Beaufort 1 Precipitation: Dry Temperature: 13°C
21st June 2023	Dusk Transect	Wind: Beaufort 1 Precipitation: Dry Temperature: 14°C	Wind: Beaufort 1 Precipitation: Dry Temperature: 11°C
7th October 2024	Dusk Transect	Wind: Beaufort 1 Precipitation: Dry Temperature: 14°C	Wind: Beaufort 1 Precipitation: Dry Temperature: 13°C

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Table 11-3 Bat Survey Effort

Date	Survey Type	Sunset Time	Start Time	Finish Time	Surveyors
25th May 2023	Dusk Transect	21:37	21:25	00:32	LG & SOB
30th May 2023	Dusk Emergence	21:44	21:25	23:30	LG & BM
13th June 2023	Dusk Transect	21:58	21:46	00:30	BM & SOB
21st June 2023	Dusk Transect	22:02	21:51	00:26	BM & SOB
7th October 2024	Dusk Transect	19:00	19:00	21:25	LG & BS

11.4.6.4.5 Bat Survey Data Analysis

Analysis and results were compiled by Enviroguide ecologist SC. Echolocation data was recorded by the bat detector(s) on Site and were later analysed using Elekon's BatExplorer software (Version 2.1.11.2). BatExplorer allows bat calls to be observed both audibly and on a sonograph to determine species identification. Each recording was manually identified to species level using species identification guides such as Russ (2012). *Myotis* species (Daubenton's bat (*M. daubentonii*), Whiskered bat (*M. mystacinus*), and Natterer's bat (*M. nattereri*)) were identified to genus level and considered as a single group (*Myotis* spp.) due to the difficulty in distinguishing individual species based on echolocation parameters alone. Common pipistrelle (*Pipistrellus pipistrellus*) and Soprano pipistrelle (*Pipistrellus pygmaeus*) are distinguished based on having peak frequencies of ~46 kHz and ~55 kHz respectively.

Each recording is comprised of a sequence of bat calls/pulses and is noted as a bat pass (*n*). A bat pass represents a recording of a bat in the vicinity of the surveyor. Bat passes are representative of bat activity, and not individual bats. Some bats such as the *Pipistrelle* species repeatedly fly along a linear feature or circle an abundant feeding area. It is possible that a series of bat passes could represent a

singular bat and therefore this measurement is more accurate as a representative of bat activity and not individual bats.

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11.4.6.5 Amphibian Surveys

As detailed within the Amphibian Survey Report (Gandola, 2025) in Appendix 11.3 of this EIAR, standard survey methods and minimum survey effort appropriate for detecting amphibians i.e., a minimum of four visits with diurnal and nocturnal visual encounter searches and dip netting, were employed. The Site was assessed on 25/02/2025, 10/03/2025, 24/03/2025 and 01/04/2025.

All pools and flooded areas of standing water were inspected visually and, where deep enough, netted. Any natural or artificial refugia present on site were inspected where possible. All surveys were conducted under optimal weather conditions for native amphibians with a minimum of a seven (7) day interval between surveys. This was to ensure that all parts of the Site had an equal opportunity to be appraised under optimal survey conditions (i.e., all potentially important landscape features were surveyed during the onset of the amphibian breeding season). All sightings of a focal species were recorded on a Garmin 60CSx GPS unit or suitably equipped smart phone.

11.4.6.6 Other Fauna

During the course of all surveys at the Site of the Proposed Development, cognisance was taken of other species of fauna that might use the Site. These will be assessed where applicable.

11.4.7 Ecological Assessment

This Chapter has been undertaken in accordance with the methodology set out in '*Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*' (CIEEM, 2024); and with reference to the National Roads Authority *'Guidelines for Assessment of Ecological Impacts of National Road Schemes'* (NRA, 2009) and the Environmental Protection Agency (EPA) '*Guidelines on the information to be contained in Environmental Impact Assessment Reports'* (EPA, 2022) and BS 42020:2013 '*Biodiversity: Code of practice for planning and development*' (BSI, 2013).

The evaluation of significant impacts should be based on available scientific evidence. Based on the precautionary principle, if the available information is not sufficient, then a significant impact may be assumed likely to occur.

11.4.7.1 Evaluation of Ecological Features

The value of the ecological features, i.e., the habitats and species present or potentially present, was determined using the ecological evaluation at different geographical scales (NRA, 2009), presented in Appendix 11.2. This evaluation scheme, with values ranging from locally important to internationally important, seeks to provide value ratings for habitats and species present that are considered ecological receptors of impacts that may ensue from a proposal. Based on best practice (CIEEM, 2024), any features considered to be less than of local value are not assessed within this Chapter.

11.4.7.2 Impact Assessment

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As per the NRA guidelines, impact assessment is only undertaken of Key Ecological Receptors (KERs). The assessment of the potential impact of the Proposed Development on the identified KERs was carried out with regard to the criteria outlined in the EPA Guidelines (EPA, 2022), presented in Chapter 1 of this EIAR. These guidelines set out a number of parameters that should be considered when determining which elements of the Proposed Development could constitute impact or sources of impacts. These include:

- Positive, neutral or negative effect;
- Significance;
- Extent;
- Probability;
- Duration;
- Timing;
- Frequency; and
- Reversibility.

The impact assessment process considers both direct and indirect impacts: direct ecological impacts are changes that are directly attributable to a defined action, e.g. the physical loss of habitat. Indirect ecological impacts are not directly attributable to an action, but which affect ecological resources through effects on an intermediary ecosystem, process, or feature, e.g., the creation of roads which cause hydrological changes, which, in the absence of mitigation, could lead to a significant impact on a sensitive habitat.

11.4.7.3 Assessment of Cumulative Effects

Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location. Cumulative effects can occur where a Proposed Development results in individually insignificant effects that, when considered in combination with effects of other proposed or permitted plans and projects, can result in significant effects on an ecological receptor.

Relevant plans and policies (see Appendix 11.1) were reviewed to identify any potential for negative cumulative effects with the proposed development. Additionally, existing planning permissions from the past five years (from 2020 onwards) within the ZOI of the Proposed Development were reviewed, with particular focus on potential cumulative effects on the identified KERs. Long-term developments were also considered where applicable.

11.4.7.4 Avoidance, Mitigation, Compensation and Enhancement Measures

Where potentially significant adverse effects have been identified, the mitigation hierarchy has been applied, as recommended in the CIEEM Guidelines. The mitigation hierarchy sets out a sequential approach beginning with the avoidance of adverse effects where possible, the application of mitigation measures to minimise unavoidable effects and then compensation for any remaining effects. Once avoidance and mitigation measures have been applied residual effects are then identified along with any necessary compensation measures, and incorporation of opportunities for enhancement. When seeking mitigation or compensation solutions, efforts should be consistent with

the geographical scale at which an effect is significant. For example, mitigation and compensation for effects on a species population significant at a county scale should ensure no net loss of the population at a county scale. The relative geographical scale at which the effect is significant will have a bearing on the required outcome which must be achieved.

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It is important for the Biodiversity Chapter of the EIAR to clearly differentiate between avoidance, mitigation, compensation and enhancement and these terms are defined here as follows:

- Avoidance is used where an effect has been avoided, e.g., through changes in scheme design. In practice, avoidance measures are typically implemented during the design stage via discussions and re-design (e.g., avoiding a sensitive habitat by relocating a building). Avoidance measures are therefore rarely reported within a Biodiversity Chapter of an EIAR, which focuses on assessing the final design.
- Mitigation is used to refer to measures to reduce or remedy a specific negative effect *in-situ*.
- Compensation describes measures taken to offset residual effects, i.e. where mitigation *in-situ* is not possible.
- Enhancement is the provision of new benefits for biodiversity that are additional to those provided as part of mitigation or compensation measures, although they can be complementary.

11.4.8 Consultation

Pre-application consultation was had with Louth County Council as part of the LRD process. An S247 meeting was held on the 27th of November 2024 and an S32 meeting was held on 5th March 2025. The pre-application comments and recommendations received from Louth CoCo over the course of the LRD planning process have informed this EIAR Chapter. A submission (dated 4th January 2023) received from the National Parks and Wildlife Service of the Department of Housing, Local Government and Heritage in relation to previous application at the Site (Planning ref: 2360476) has also been taken into account in this Chapter.

11.5 Difficulties Encountered

An extensive search of available datasets for records of rare and protected species within proximity of the Proposed Development has been undertaken as part of this assessment. However, the records from these datasets do not constitute a complete species list. The absence of species from these datasets does not necessarily confirm an absence of species in the area.

No significant limitations of the field surveys and desk-based work completed to date were encountered which would prevent robust conclusions being drawn as to the potential impacts of the Proposed Development. All surveys were conducted during the appropriate period as per the relevant best practice guidelines.

11.6 Baseline Environment

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11.6.1 Hydrology, Geology and Hydrogeology

The Site of the Proposed Development is within the Newry, Fane, Glyde and Dee catchment, the Castletown_SC_020 sub-catchment, and the HAGGARDSTOWN_010 river sub-basin (EPA, 2025).

There are no EPA recognised rivers or streams draining into the Proposed Development Site according to the EPA mapping resource (EPA, 2025). The nearest EPA recognised stream to the Site is the MARSHES_UPPER (IE_NB_06H080570), a 1st order stream located adjacent to part of the long linear section of the Site that runs north along the R172 to join up with the local water mains. This waterbody is mapped as starting just east of the road, but may be culverted underneath it, from developed lands to the west. This stream flows east for ca.600m before it drains into the Inner Dundalk Bay transitional waterbody (IE_NB_040_0100). WFD status for the MARSHES_UPPER stream has been modelled as Poor for the assessment period 2016-2021 while the stream's risk of not meeting its Water Framework Directive (WFD) objectives is currently under review (EPA, 2025). The Inner Dundalk Bay transitional waterbody has been assessed as having *Moderate* status for the assessment period 2016-2021 and is *At risk* of not meeting its WFD objectives.

The Site of the Proposed Development is situated on the Louth groundwater body (IEGBNI_NB_G_019), which is classified as having *Good* status (WFD Status 2016-2021). The aquifer type in the area is *Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones* (Pl). The groundwater vulnerability across the Site is mapped as having *Extreme* vulnerability to contamination from human activity, with areas of *Rock at or near Surface or Karst* in the west and north-east of the Site (GSI, 2025).

Corine 2018 land cover at the Site comprises predominantly *Agricultural Area's* with small areas of *Artificial Surfaces* along the R172 road east of the Site (EPA, 2025). The soils and geology at the site are described and assessed in Chapter 9 – Land Soils and Geology of this EIAR and summarised as follows:

- The soils beneath the main site area are mapped as till derived chiefly from Lower Palaeozoic rocks of the Acid Brown Earths, Brown Podzolics soil group within the category of deep well drained mineral (mainly acidic) (IFS Soil Code: TLPSsS) (GSI, 2025);
- The soils beneath the portion of the site where the eastern site boundary extends toward the Dundalk estuary (i.e., at the entrance to the Proposed Development), are mapped as beach sands and gravels (IFS Soil Code: MarSands) (GSI, 2025).
- The soils beneath the portion of the site extending along the R172 Blackrock Road and Finnabair Crescent are mapped as Irish Sea till of the Surface water Gleys, Ground water Gleys soil group within the category mineral poorly drained (mainly acidic) (IFS Soil Code AminPD) and made ground (IFS Soil Code: Made) (GSI, 2025).

The Waterbody Status for groundwater, coastal, transitional and river water bodies relevant to the Site as recorded by the EPA (2025) in accordance with European Communities (Water Policy) Regulations 2003 (SI no. 722/2003) are provided in Table 11-4.

Table 11-4 WFD Risk and Water Body Status.

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Waterbody Name	Water body; EU code	Location from Site	Distance from Site (km)	WFD water body status (2016-2021)	WFD 3rd cycle Risk Status	Hydraulic Connection to the Site
Transitional Water Bodies						
Inner Dundalk Bay	IE_NB_040_0100	East	c.0.03	Moderate	At risk	Yes, receives groundwater and surface water flow from the site. Also receives treated effluent from the Proposed Development via the Dundalk WWTP.
Castletown Estuary	IE_NB_040_0200	North	c. 2.75	Poor	At Risk	Yes, receives treated effluent from the Proposed Development via the Dundalk WWTP.
River Water Bodies						
HAGGARDSTOWN_010	IE_NB_06H080570	North	c. 0.01 / approximately 0.15	Poor	Review	Yes, receives surface water drainage from Finnabair Crescent (i.e., where the connection to the existing 600mm UE foul sewer is proposed)
Groundwater Bodies						
Louth Groundwater Body	IEGBNI_NB_G_019	Underlying	N/A	Good	Not at Risk	Yes, underlying the site
Coastal Water Bodies						
Outer Dundalk Bay	IE_NB_040_0000	Southeast	c.3.05	High	Not at Risk	Yes, downstream of Inner Dundalk Bay and Castletown Estuary transitional waterbodies.

11.6.2 Designated Sites

11.6.2.1 Relevant European Sites

All European sites with potential to be affected by the proposed development have been identified and fully assessed in the AA Screening Report (Stage 1 AA) and subsequent Natura Impact Statement (NIS) (Stage 2 AA) accompanying this submission under separate cover (Enviroguide, 2025a & 2025b respectively).

The AA Screening identified two European sites to be at risk of potential significant adverse effects as a result of the Proposed Development, namely Dundalk Bay SAC (000455) and Dundalk Bay SPA (004026), located to the east of the Site. The AA Screening concluded as follows:

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> *"…In conclusion, upon the examination, analysis and evaluation of the relevant information and applying the precautionary principle, it is concluded by the authors of this report that the possibility **cannot be excluded** that the Proposed Development will have a significant effect on any of the European sites listed below:*
>
> - *Dundalk Bay SAC (000455)*
> - *Dundalk Bay SPA (004026)"*

The above conclusions were reached as a result of the presence of surface water, groundwater, air, and human impact pathways, which could not be screened out. As such, an NIS was prepared which details the mitigation measures required to negate any likely significant effects on these European sites such that no significant effects are likely to occur once the recommended mitigation is put in place. The NIS concluded as follows:

> *"This NIS has concluded that, once the avoidance and mitigation measures are implemented as proposed, the Proposed Development will not have an adverse effect on the integrity of the above European sites, individually or in combination with other plans and projects. Where applicable, a suite of monitoring surveys have been proposed to confirm the efficacy of said measures in relation to ensuring no adverse impacts on the habitats of the relevant European sites have occurred.*
>
> *As a result of the complete, precise and definitive findings in of this NIS, it has been concluded, beyond reasonable scientific doubt, that the Proposed Development will have no significant adverse effects on the QIs, SCIs and on the integrity and extent of Dundalk Bay SAC (000455) and Dundalk Bay SPA (004026). Accordingly, the Proposed Development will not adversely affect the integrity of any relevant European site."*

11.6.2.2 Other Designated Conservation Areas

With regards to the consideration of other designated conservation areas or sites, it is noted that a designated site will only be at risk from likely significant effects where a Source-Pathway-Receptor (S-P-R) link of note exists between the proposed development and the designated site. All designated sites considered using the S-P-R method (excluding European sites) are listed in Table 11-5 and shown in Figure 11-10.

The Dundalk Bay pNHA and Ramsar sites are all linked to the Site via hydrological/hydrogeological, air and human pathways. Local groundwater and surface waters in the area eventually drain to the Inner Dundalk Bay transitional waterbody, which contains areas of these designated sites in proximity to the Site. The Construction Phase of the proposed development could lead to dust and disturbance related impacts within Dundalk Bay. The conclusions detailed in the preceding section relating to

effects on European sites also applies by proxy to Dundalk Bay pNHA and the Dundalk Bay Ramsar site, which overlap with Dundalk Bay SAC and SPA, and are designated for the same reasons (i.e., wetland habitats and waterbird species). However, their assessment is also detailed in this Chapter for clarity.

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The distances and lack of S-P-R impact pathways between the Site and any further designated sites are deemed sufficient to exclude the possibility of significant effects arising from: emissions of noise, dust, pollutants and/or vibrations emitted from the Site during the Construction Phase; increased traffic volumes during the Construction and Operational Phase and associated emissions; potential increased lighting emitted from the Site during Construction and Operational Phase; and increased human presence at the Site during Construction and Operational Phase.

Table 11-5 Designated sites considered with the Source-Pathway-Receptor (S-P-R) method to establish notable links between the sources of effects arising from the Proposed Development and any relevant designated sites.

Site Name/ Code	Qualifying Interests (*= priority habitats)	Distance to Site	Potential Pathway to receptors
Proposed Natural Heritage Areas (pNHA)			
Dundalk Bay pNHA	Dundalk Bay, Co. Louth is a very large open, shallow sea bay with extensive saltmarshes and intertidal sand/mudflats, extending some 16 km from Castletown River on the Cooley Peninsula in the north, to Annagassan/Salterstown in the south. The bay encompasses the mouths and estuaries of the Rivers Dee, Glyde, Fane, Castletown, and Flurry.	Adjacent/Within Project Boundary – Small portions of the pNHA are within the Proposed Development redline boundary.	Direct hydrological, hydrogeological, and air / land pathways. Potential disturbance of SCI bird species. Indirect recreational usage pathway. **Please see AA Screening and NIS for further details**
Ramsar			
Dundalk Bay Ramsar site	Summary taken from the Dundalk Bay Ramsar Information Sheet (Ramsar, 2022): The site is designated as a SAC under the EU Habitats Directive, as it contains representative and unique examples of coastal and marine habitats and natural wetland types within the Atlantic biogeographic region. The site is designated SPA under the EU Birds Directive due to the presence of nationally and internationally important populations of species listed on Annex I of the Birds Directive and/or regularly occurring migratory waterbirds. Under this designation, the wetland habitat is also protected as a resource for the regularly-occurring migratory waterbirds that utilise it. The area of the SPA is more extensive than the Ramsar site and includes the shallow permanent marine waters of the bay. The extensive estuaries, intertidal sand and mud flats support the largest concentration of wintering waterbirds on the east coast (regularly in excess of 50,000). The coastal and marine habitats host rich faunal communities of bivalves molluscs, marine worms and crustaceans	Adjacent to the east of the Proposed Development.	Direct hydrological, hydrogeological, and air / land pathways. Potential disturbance of SCI bird species. Indirect recreational usage pathway. **Please see AA Screening and NIS for further details**

	providing a key food resource for wintering waterbirds (including waders, gulls, waterfowl) which feed in the intertidal area of Dundalk Bay. As well as providing food the extensive saltmarsh areas are used as high-tide roosts by waterbirds. At night the site is used by roosting geese and swans. The shallow open waters of the bay provide foraging habitat for gulls, sea duck, mergansers and grebes.		

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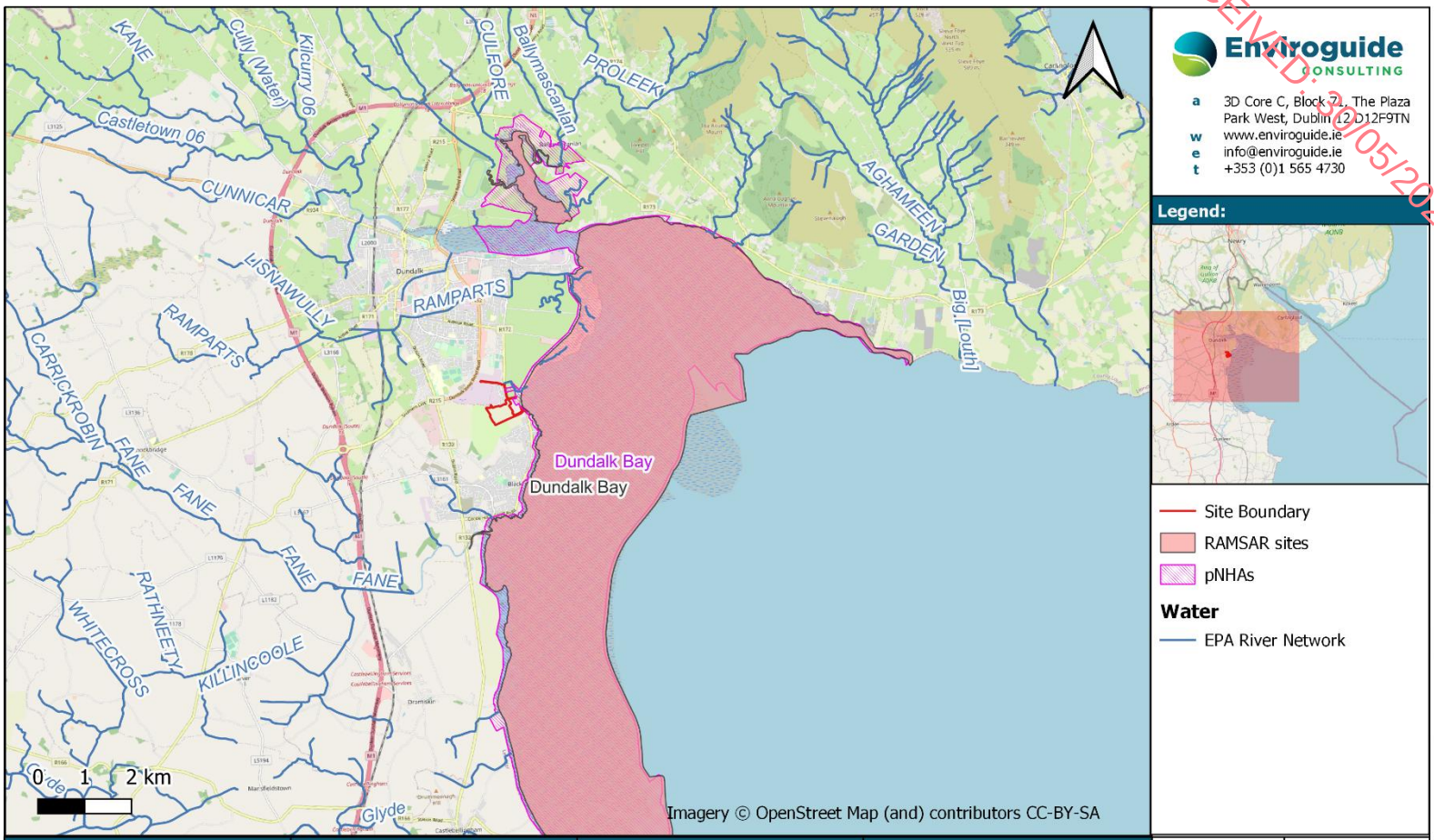

Figure 11-11 Proposed Natural Heritage Areas & Ramsar Sites within the vicinity of the proposed Development Site (Source: Enviroguide).

11.6.3 Habitats

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11.6.3.1 Dry Meadows & Grassy Verges (GS2)

The main body of the Site is made up of several agricultural fields, currently in an unmanaged state (See Figures 11-12 & 11-13). The fields comprise of tall sward, rank tussocky grassland, with small pockets of Bramble (*Rubus fructicosus).* Tussocky grasses are dominant, with species such as Yorkshire fog (*Holcus lanatus*) abundant. The herb component consisting of Broad-leaved dock (*Rumex obtusifolius)* and Willowherb (*Epilobium sp.).* Lower growing species include Creeping buttercup (*Ranunculus repens),* Ribwort plantain (*Plantago lanceolata)*, Cleavers (*Gallium aparine)* and Dandelion (*Taraxacum officinale).* Nettles (*Urtica dioica)* were also present along the field margins. Moss cover is also present in areas where the sward is low. Unfarmed mounds are visible within the satellite imagery of the fields, particularly in the west of the Site. These topographical features supported either rank GS2 or Gorse (*Ulex europaeus)* scrub.

This habitat makes up the dominant ground cover at the Site and is largely unmanaged in nature. It therefore has the potential to provide habitat for pollinators and other fauna species e.g., birds, small mammals. This habitat is a common example of unmanaged agricultural land and exhibits limited floral diversity and as such it is considered to be of **local importance (Lower value).**

Figure 11-12 GS2 habitat in the west and centre of the Site.

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Figure 11-13 GS2 habitat in the eastern portion of the Site.

11.6.3.2 Wet Grassland (GS4) & Marsh (GM1)

Wet grassland habitat was recorded in the north-west of the Site where water drains from the higher sections of field to the lower ground towards the golf course, where a ditch runs north-south and outside of the Site's redline boundary. The grassland here supports species adapted to wetter ground such as Soft rush (*Junchus effusus),* Silverweed (*Potentilla anserina*) and Horsetail (*Equisetum sp*).

In the south-east of the Site the lands slopes to the east towards the coast. The ground here resembled waterlogged rank grassland verging on *Marsh (GM1)* and is presumed to be influenced tidally by Dundalk Bay to the east, and by an unnamed stream described as a 'drainage conveyance channel' (IE Consulting, 2025). A mix of grasses and species such as Yellow Iris (*Iris pseudacorus),* Meadowsweet (*Filipendula ulmaria*)*,* Horsetail, Dock (*Rumex sp.*) and Great Willowherb (*Epilobium hirsutum*) were recorded within this eastern wet area. Cuckooflower (*Cardamine pratensis*) was also recorded. The wet grassland transitions to marsh in the easternmost section of the Site, where the proposed main entrance is to be located (Figure 11-15).

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Figure 11-14 Wet Grassland (GS4) habitat in the east of the Site, transitioning to Marsh (GM1) habitat towards the eastern Site boundary.

Figure 11-15 Marsh (GM1) habitat present in the east of the Site.

The areas of wet grassland habitat at the Site are located at its western and eastern margins and, although they provide some variety to the grassland habitats provided at the Site, GS4 habitats are limited in their extent and is considered to be of **local importance (Lower value).**

The marshy area in the east of the Site is small in size and maps the path of an unnamed stream alongside the Site side of the R172. This habitat is not considered to be rare in the area, however due to its association and hydrological linkage with the swamp section of Dundalk Bay SAC located to the

north of the proposed main entrance to the Site and west of the R172, it is considered to be of **local importance (Higher value).**

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11.6.3.3 Scrub (WS1)

This habitat is present in several forms at the Site (Figure 11-16):

1. In places where the GS2 habitat at the Site is dominated by patches of tall herb species such as Dock, Willowherb, Thistle (*Cirsium sp.),* and bramble. In some places these stands reach heights of ca.1.5-2m in height and provide good cover for local fauna;
2. In marginal areas where hedgerow habitats have encroached into the fields from the outer boundaries of the Site. Largely dominated by bramble and gorse; and
3. In distinct stands of gorse located in clumps in the west, south and east of the Site.

This habitat provides cover for birds and small mammals at the Site and likely supports nesting birds during the spring/summer months. Scrub is fairly common and is therefore considered to be of **local importance (Lower value).**

Figure 11-16 Scrub (WS1) habitat present in the west of the Site; comprised of gorse thickets and tall sward ruderal patches.

11.6.3.4 Wet Willow-alder-ash-Woodland (WN6)

A small scrubby section of ca.40m x 10m of this habitat borders the eastern boundary of the Site, within the area of marsh by the R172 regional road (Figure 11-17). This habitat overlaps with some gorse scrub present to its south and the wet grassland to its west. This area of trees was waterlogged during the February and May 2023 walkovers with Yellow Iris, Meadowsweet, Greater willowherb, Meadow buttercup (*Ranunculus acris*) dominating the ground flora. Young multi-stem Alder (*Alnus glutinosa*) is the main tree species present here.

This habitat is present in a very small area located partially within the redline boundary. Although small in size, due to its association and hydrological linkage with the marsh habitat in this part of the Site, as well as the swamp section of Dundalk Bay SAC located to the north of the proposed main entrance to the Site and west of the R172, it is considered to be of **local importance (Higher value).**

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Figure 11-17 Wet alder woodland (WN6) located in the east of the Site.

11.6.3.5 Immature Woodland (WS2)

A band of this habitat lies in the east of the Site, along the boundary of an existing neighbouring property where young Beech (*fagus sylvatica)* and Oak (*Quercus sp.),* trees have been planted (Figure 11-18). These trees are largely outside the redline boundary and are being retained as part of the landscape plan for the Proposed Development. Although small in size and immature in age, these trees provide a linear habitat corridor at the Site and are considered to be of **local importance (Higher value).**

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Figure 11-18 Immature woodland habitat in the east of the Site.

11.6.3.6 Mixed Broadleaf/ Conifer Woodland (WD2)

Sections of mature woodland are present along parts of the Site's eastern and north-eastern boundary; outside of the Site boundary as part of private lands. Species include mature Sycamore (*Acer pseudoplatanus),* Beech, and Ash (*Fraxinus excelsior).* This habitat is considered to be of **local importance (Higher value)** due to its maturity and the habitat it provides to local fauna.

11.6.3.7 Hedgerows (WL1),Treelines (WL2) and Stone Walls (BL1)

Hedgerows (WL1) habitat makes up the majority of the field boundaries at the Site. *Treelines (WL2)* habitat is present in the north-west of the Site as Leyland cypress (*Cupressus × leylandii)* and Poplar (*populus sp.),* and in the south-west as a line of Scots Pine (*Pinus sylvestris)* within the adjacent golf course lands (Figure 11-19).

Some of the boundary vegetation in the west of the Site occurs in tandem with *Stone Walls (BL1)* habitat; along the boundary with the golf course (Figure 11-20). Treelines and hedgerows were comprised largely of Hawthorn (*Crataegus monogyna),* Bramble, Gorse, Elder (*Sambucus nigra)* and some Wych elm (*Ulmus glabra)* in the north of the Site. Sections of ornamental hedgerows form the boundary between neighbouring private gardens and the Site and comprise species such as Leyland cypress. Understorey species include grasses, Cleavers, Nettle and Ivy (*Hedera sp.).*

These linear vegetated and stone wall habitats provide wildlife corridors around the Site for local fauna, linking lands to the east with the Site and the wooded areas of the golf course to the west. As such, these habitats are considered to be of **local importance (Higher value).**

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Figure 11-19 Treeline (left image) and hedgerow (right image) habitat in the west and south-west of the Site respectively.

Figure 11-20 Overgrown Stone wall (BL1) habitat along part of the western Site boundary.

11.6.3.8 Buildings and Artificial Surfaces (BL3) & Spoil and Bare Ground (ED2)

Areas of BL3 and ED2 habitat are present in the form of site haul roads and areas of disturbed ground present in the north and east/ south-east of the main Site area where some earthworks have taken place (Figures 11-21 & 11-22). These recently created human-made habitats support minimal vegetation and are of **no significant ecological value** in their current state.

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Figure 11-21 BL3 habitat in the form of a haul road in the north of the Site (viewed facing east).

Figure 11-22 ED2 bare ground habitat present in the east and south-east of the main Site area (viewed facing north).

11.6.3.9 Artificial Pond (FL8)

A small area of ponding has developed in the south-east of the Site, along the route of the main Site access road to the R172. The pond is located at the margin of the wet grassland habitat located at the low point in the south-east of the Site (Figure 11-23 & 11-24) and was likely formed by plant machinery movement in the past as evidenced by overgrown vehicle tracks. This habitat is recent in origin and

small in size and as such is not considered to be rare or notable in of itself although it was noted to support frogs during the amphibian surveys conducted in spring 2025 (see Section 11.6.4.5.2). The pond supported evidence of eutrophication with heavy algal growth. However, *Callitriche stagnalis*, *Ranunculus sp.*, *Potamogeton sp.* were identified with the latter species found in only the deepest part of the pond (30-40cm). As a habitat it is therefore considered to be of **local importance (Low value).** Amphibians are assessed separately in Section 11.6.4 of this Chapter.

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Figure 11-23 Area of FL8 pond habitat located at margin of wet grassland area in the south-east of the Site (viewed facing east).

Figure 11-24 Close up view of the pond in the south-east of the Site

11.6.3.10 Habitats of note outside of the Site Boundary

An area of *Phragmites* swamp is known to be located to the east of the main Site area and outside of the Site's redline boundary. This area of habitat is located within private ownership and is also designated as part of the Dundalk Bay SAC.

The Department Applications Unit (DAU) of the Department of Housing, Local Government and Heritage provided a submission (dated 4th January 2023) regarding the previous LRD application at the Site (Reg Ref. 2360476, ABP Ref. 319077), and noted the following regarding this section of habitat:

> *"The area of the SAC inland of the R172 is included in the Natura site because, though the habitats developed in it, mainly Phragmites reed swamp, are not Qualifying Interests (QIs) for the SAC, they represent a more natural transition from marine to terrestrial habitats than is evident elsewhere along other nearby sections of the landward boundary of this site and therefore add to the SAC's scientific and conservation value. The Phragmites swamp part of the SAC is fed by a stream, which arising in an area of marsh and wet woodland on the inside of the R172 where the entrance to the development site is to be located, then runs north parallel to this road into the swamp."*

This area of *Phragmites* swamp is therefore assessed as part of the AA and NIS that accompany this application under separate cover and is included here for clarity only as it is referenced in various sections of this Chapter. This area in question is shown in Figure 11-25 below for reference.

Figure 11-25 The area of *Phragmites* swamp within the Dundalk Bay SAC to the east of the Site highlighted in yellow.

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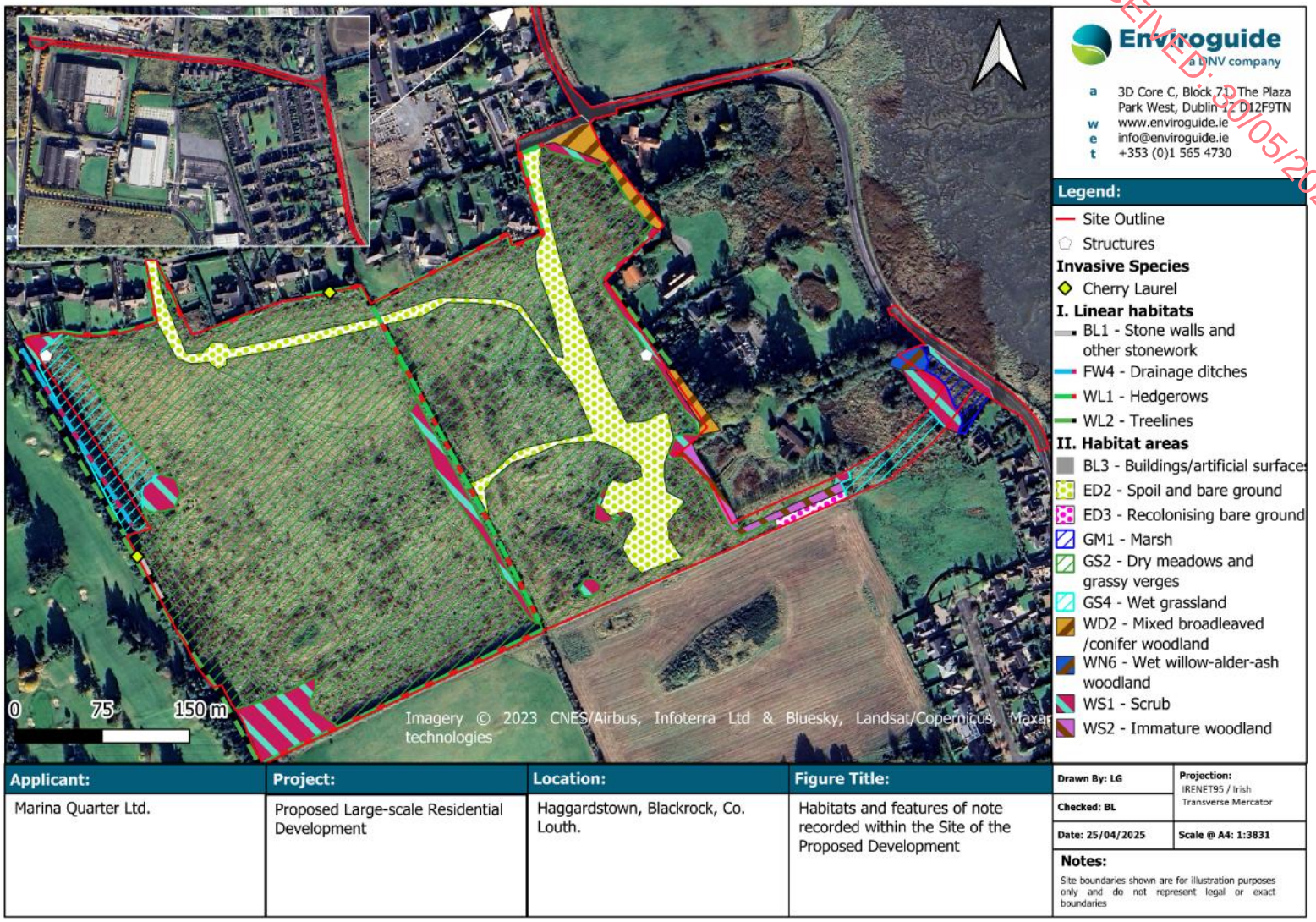

Figure 11-26 Habitat Map of the Site

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11.6.4 Species and Species Groups

11.6.4.1 Flora

11.6.4.1.1 Rare and Protected Flora

No species of protected flora have been historically recorded within the relevant tetrads and no such species were recorded at the Site of the proposed development during the surveys of same.

11.6.4.1.2 Invasive Flora

Japanese Knotweed (*Fallopia japonica*) is the only invasive species recorded within the NBDC tetrads J00S and J00R (last recorded in tetrad J00R in 2017).

An invasive alien species survey was undertaken at the Site in July 2021 by INVAS Biosecurity (INVAS, 2021). This survey recorded no evidence, at that time, of any Invasive Alien Plant Species as listed on the 'Third Schedule' of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.1.477 of 2011) or the Invasive Alien Species Regulation (EU) 1143/2014 being present on the Site. Cherry laurel (*Prunus laurocerasus*) and Buddleja (*Buddleja davidii*) were detected along the Site boundaries. Russian vine (*Fallopia baldschuanica)* was recorded in a nearby housing estate. All three species can be locally problematic plants but are not included on any legislative lists or regulations and can be carefully managed as part of general site clearance works, where necessary.

One high[1] impact invasive flora species were recorded at the Site during ecological walkovers conducted by Enviroguide in 2023; Cherry Laurel, located at various locations along hedgerows to the north and west of the Site (Figure 11-27). These plants are located along the boundary between the application site and neighbouring property.

Figure 11-27 Cherry Laurel recorded along the western and northern boundaries of the Site (Left and right images respectively).

[1] Impact status based on the 2013 Invasive Species in Ireland risk assessment. See report: Kelly, J., O'Flynn, C., and Maguire, C. 2013. Risk analysis and prioritisation for invasive and non-native species in Ireland and Northern Ireland. http://invasivespeciesireland.com/wp-content/uploads/2013/03/Risk-analysis-andprioritization-29032012-FINAL.pdf

No species of plant listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 were recorded at the Site of the Proposed Development during Site surveys.

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11.6.4.2 Birds

11.6.4.2.1 Desk Study Results

Birds recorded within the tetrad J00S containing the Site within the last 20 years, as per NBDC datasets, are listed in Table 11-6. Those listed as *Red* and as *Amber* are highlighted as per the latest *Birds of Conservation Concern Ireland* list (Gilbert et al. 2021). Three *Red* listed species and six *Amber* listed species were identified from within the last 20 years.

Table 11-6 Bird species recorded in tetrad J00S (NBDC)

Common name	Scientific name	BoCCI	Database	Date of Last Recorded Sighting
Little Egret	*Egretta garzetta*	Green	Birds of Ireland	07/11/2018
Great Crested Grebe	*Podiceps cristatus*	Amber	Bird Atlas 2007 - 2011	31/12/2011
Goosander	*Mergus merganser*	Amber	Bird Atlas 2007 - 2011	31/12/2011
Goldeneye	*Bucephala clangula*	Red	Bird Atlas 2007 - 2011	31/12/2011
Moorhen	*Gallinula chloropus*	Green	Birds of Ireland	30/05/2018
Pheasant	*Phasianus colchicus*	N/A	Birds of Ireland	05/02/2019
Shelduck	*Tadorna tadorna*	Amber	Birds of Ireland	20/05/2019
Eurasian Curlew	*Numenius arquata*	Red	Birds of Ireland	07/11/2018
Sanderling	*Calidris alba*	Green	Bird Atlas 2007 - 2011	31/12/2011
Whooper Swan	*Cygnus cygnus*	Amber	Birds of Ireland	01/02/2015
Eurasian Sparrowhawk	*Accipiter nisus*	Green	Birds of Ireland	11/07/2018
Robin	*Erithacus rubecula*	Green	Birds of Ireland	02/02/2019
Blackbird	*Turdus merula*	Green	Birds of Ireland	12/05/2019
Mistle Thrush	*Turdus viscivorus*	Green	Birds of Ireland	13/05/2018
Hedge Accentor (Dunnock)	*Prunella modularis*	Green	Birds of Ireland	12/05/2019
House Sparrow	*Passer domesticus*	Amber	Birds of Ireland	13/06/2019
Great Tit	*Parus major*	Green	Birds of Ireland	02/05/2018
Coal Tit	*Periparus ater*	Green	Birds of Ireland	19/05/2019
Magpie	*Pica pica*	Green	Birds of Ireland	12/05/2019
Blackcap	*Sylvia atricapilla*	Green	Birds of Ireland	12/02/2019
Chaffinch	*Fringilla coelebs*	Green	Birds of Ireland	04/04/2019
European Goldfinch	*Carduelis carduelis*	Green	Birds of Ireland	10/11/2018
Bullfinch	*Pyrrhula pyrrhula*	Green	Birds of Ireland	19/05/2019
Hooded Crow	*Corvus cornix*	Green	Birds of Ireland	07/04/2019
Starling	*Sturnus vulgaris*	Amber	Birds of Ireland	06/04/2019
Swift	*Apus apus*	Red	Birds of Ireland	11/07/2022
Blue Tit	*Cyanistes caeruleus*	Green	Birds of Ireland	02/02/2019
Long-tailed Tit	*Aegithalos caudatus*	Green	Birds of Ireland	03/03/2019

Common name	Scientific name	BoCCI	Database	Date of Last Recorded Sighting
Wren	*Troglodytes troglodytes*	Green	Birds of Ireland	10/11/2018
Woodpigeon	*Columba palumbus palumbus*	Green	Birds of Ireland	22/04/2019
Common Buzzard	*Buteo buteo*	Green	Birds of Ireland	03/10/2018
Long-eared Owl	*Asio otus*	Green	Birds of Ireland	03/05/2018

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11.6.4.2.2 Field Survey Results

11.6.4.2.2.1 Breeding Birds

A total of 43 species were recorded over the course of the 2023 and 2025 breeding bird surveys; 29 species were recorded on 20th April 2023, 29 species were recorded on the 8th May 2023, 30 species were recorded on the 29th May 2023; and a total of 33 species were recorded during the breeding bird surveys conducted on 18th of April and the 8th of May 2025.

These species are listed in Table 11-7 below along with their noted breeding activity at the Site.

Table 11-7 Bird species recorded during the breeding bird surveys conducted at the Site during 2023 and 2025 seasons.

Species	Scientific name	BoCCI Status	Dates recorded	Breeding Activity
Blackbird	*Turdus merula*	Green	20th April 2023 8th May 2023 29th May 2023 18th April 2025 8th May 2025	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Blackcap	*Sylvia atricapilla*	Green	20th April 2023 8th May 2023 18th April 2025 8th May 2025	Possible breeder. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat
Blue Tit	*Cyanistes caeruleus*	Green	20th April 2023 8th May 2023 29th May 2023 18th April 2025 8th May 2025	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Bullfinch	*Pyrrhula pyrrhula*	Green	20th April 2023 8th May 2023	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Chaffinch	*Fringilla coelebs*	Green	20th April 2023 8th May 2023 29th May 2023 18th April 2025 8th May 2025	Possible breeder. Species observed in breeding season in suitable nesting Habitat
Chiffchaff	*Phylloscopus collybita*	Green	20th April 2023 8th May 2023 29th May 2023	Possible breeder. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat

Species	Scientific name	BoCCI Status	Dates recorded	Breeding Activity
			8th May 2025	
Collared Dove	*Streptopelia decaocto*	Green	8th May 2023 29th May 2023	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Coal Tit	*Periparus ater*	Green	18th April 2025	Possible breeder. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat
Dunnock	*Prunella modularis*	Green	20th April 2023 8th May 2023 29th May 2023 18th April 2025 8th May 2025	Probable. Pair observed in suitable nesting habitat in breeding season
Feral Pigeon	*Columba livia domestica*	Unclassified	20th April 2023 8th May 2025	Non-breeder. Flyovers.
Goldcrest	*Regulus regulus*	Amber	20th April 2023 29th May 2023	Possible breeder. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat
Goldfinch	*Carduelis carduelis*	Green	8th May 2023 29th May 2023 18th April 2025 8th May 2025	Confirmed. Recently fledged young.
Great Tit	*Parus major*	Green	8th May 2023 29th May 2023 8th May 2025	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Hooded Crow	*Corvus cornix*	Green	20th April 2023 8th May 2023 29th May 2023 18th April 2025 8th May 2025	Probable breeding. Pair observed in suitable nesting habitat in breeding season
House Martin	*Delichon urbicum*	Amber	29th May 2023	Non-breeding. Flyovers and feeding over the Site.
House Sparrow	*Passer domesticus*	Amber	20th April 2023 8th May 2023 29th May 2023 8th May 2025	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Jackdaw	*Corvus monedula*	Green	20th April 2023 8th May 2023 29th May 2023 18th April 2025 8th May 2025	Confirmed. Recently fledged young (2023). Possible breeder in 2025. Species observed in breeding season in suitable nesting Habitat.
Kestrel	*Falco tinnunculus*	Red	20th April 2023	Possible breeder. Hunting over the site but unlikely to be breeding on the Site.
Lesser Redpoll	*Acanthis flammea*	Green	8th May 2023	Non-breeder. Flyover.
Linnet	*Linaria cannabina*	Amber	20th April 2023 8th May 2023 29th May 2023 18th April 2025	Probable breeding. Pair observed in suitable nesting habitat in breeding season

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Species	Scientific name	BoCCI Status	Dates recorded	Breeding Activity
			8th May 2025	
Long-tailed Tit	*Aegithalos caudatus*	Green	20th April 2023 18th April 2025	Possible breeder. Species observed in breeding season in suitable nesting Habitat
Magpie	*Pica pica*	Green	20th April 2023 8th May 2023 29th May 2023 18th April 2025 8th May 2025	Confirmed. Recently fledged young (2023). Possible breeder in 2025. Species observed in breeding season in suitable nesting Habitat.
Meadow Pipit	*Anthus pratensis*	Red	20th April 2023 8th May 2023 29th May 2023 18th April 2025 8th May 2025	Confirmed. Recently fledged young (2023). Probable breeder in 2025. Pair observed in breeding season in suitable nesting Habitat.
Mistle Thrush	*Turdus viscivorus*	Green	20th April 2023 8th May 2023 18th April 2025 8th May 2025	Confirmed. Recently fledged young (2023). Possible breeder in 2025. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat.
Pheasant	*Phasianus colchicus*	Unclassified	20th April 2023 29th May 2023 18th April 2025 8th May 2025	Possible breeder. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat
Pied Wagtail	*Motacilla alba yarrelli*	Green	18th April 2025	Possible breeder. Species observed in breeding season in suitable nesting Habitat.
Raven	*Corvus corax*	Green	8th May 2023 8th May 2025	Probable breeding. Pair observed in suitable nesting habitat in breeding season (2023). Possible breeder in 2025. Species observed in breeding season in suitable nesting Habitat.
Redwing	*Turdus iliacus*	Red	20th April 2023	Non-breeding. Species observed but suspected to be still on migration
Reed Bunting	*Emberiza schoeniclus*	Green	29th May 2023 8th May 2025	Possible breeder in 2023. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat. Probable breeding in 2025. Pair observed in suitable nesting habitat in breeding season.
Robin	*Erithacus rubecula*	Green	20th April 2023 8th May 2023 29th May 2023 18th April 2025 8th May 2025	Confirmed. Recently fledged young (2023). Probable breeding in 2025. Pair observed in suitable nesting habitat in breeding season.
Rook	*Corvus frugilegus*	Green	20th April 2023 8th May 2023 29th May 2023	Probable breeding. Pair observed in suitable nesting habitat in breeding season

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Species	Scientific name	BoCCI Status	Dates recorded	Breeding Activity
			18th April 2025 8th May 2025	
Sedge Warbler	*Acrocephalus schoenobaenus*	Green	29th May 2023 8th May 2025	Possible breeder. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat
Snipe	*Gallinago gallinago*	Red	20th April 2023	Non-breeding. Species observed but suspected to be still on migration.
Song Thrush	*Turdus philomelos*	Green	20th April 2023 8th May 2023 29th May 2023 18th April 2025 8th May 2025	Confirmed. Recently fledged young (2023). Adult carrying food in 2025
Starling	*Sturnus vulgaris*	Amber	20th April 2023 8th May 2023 29th May 2023 18th April 2025 8th May 2025	Probable breeding (2023). Pair observed in suitable nesting habitat in breeding season Adult carrying food in 2025.
Stonechat	*Saxicola torquatus*	Green	8th May 2023 29th May 2023 18th April 2025 8th May 2025	Confirmed. Recently fledged young (2023). Probable breeding in 2025. Pair observed in suitable nesting habitat in breeding season.
Swallow	*Hirundo rustica*	Amber	20th April 2023 8th May 2023 29th May 2023 18th April 2025 8th May 2025	Non-breeder. Foraging over the Site.
Treecreeper	*Certhia familiaris*	Green	20th April 2023	Possible breeder. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat
Whitethroat	*Sylvia communis*	Green	8th May 2023 29th May 2023 8th May 2025	Possible breeder. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat
Woodpigeon	*Columba palumbus*	Green	20th April 2023 8th May 2023 29th May 2023 18th April 2025 8th May 2025	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Wren	*Troglodytes troglodytes*	Green	20th April 2023 8th May 2023 29th May 2023 18th April 2025 8th May 2025	Confirmed. Recently fledged young.
Willow Warbler	*Phylloscopus trochilus*	Amber	29th May 2023 18th April 2025 8th May 2025	Possible breeder. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat

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Species	Scientific name	BoCCI Status	Dates recorded	Breeding Activity
Yellowhammer	*Emberiza citrinella*	Red	8th May 2023 29th May 2023	Probable breeding. Pair observed in suitable nesting habitat in breeding season

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Five red listed species were recorded over the course of 2023 and 2025 surveys (Kestrel, Meadow Pipit, Snipe, Redwing and Yellowhammer). Due to the lack of suitable breeding habitat, it is unlikely that Kestrel breed on the Site and instead use it as a feeding ground. Snipe weren't found to be breeding on the Site and the record on the 20th of April was likely to be a late wintering bird from Dundalk Bay.

The hedgerow along the eastern Site boundary (53.977985, -6.369197) was very productive for breeding birds compared to the western hedgerow which supported a much lower density of birds. Many species such as Song Thrush, Robin, Wren, Magpie and Jackdaw all exhibited fledged young in this hedgerow. Treecreeper, Bullfinch, Goldcrest and Long-tailed Tits were all also recorded in this area.

The western hedgerow (53.975846, -6.375366) supported less bird activity, however, fledged Mistle Thrush young were recorded along this boundary. Possibly the same Blackcap was recorded singing in this area on two dates. Blackbirds, Robins, Wrens, Dunnocks, Chiffchaff and Woodpigeon were also frequently recorded, but in much lower numbers than the eastern hedgerow. Willow Warbler was also recorded singing along this boundary.

The central hedgerow (53.977387, -6.371866) supported Linnets, and it is likely that they bred during the spring, however, this could not be confirmed. Yellowhammers were present at the southern end of this hedgerow also on two occasions (8th May and 29th May 2023). This hedgerow supported more common species such as Dunnock. A Whitethroat was also recorded along this hedgerow on two dates. House Sparrow, Sedge Warbler and Starling were all recorded along this hedgerow.

The marshy area to the east of the Site (53.977171, -6.365147) supported little activity on all visits. Apart from a single late wintering Snipe in 2023, there were no species of note recorded in this area. The area did have a high density of Great Tits and Dunnock with Lesser Redpoll recorded on one occasion in 2023 (8th May). Linnet and Starling were the only amber listed species found here.

Both the western and eastern fields held Meadow Pipits which were confirmed breeding in the area during the final breeding bird survey of 2023 when recently fledged juveniles were recorded. Stonechats bred at the southern end of the eastern field also (53.976860, -6.369937). A female Kestrel was observed hunting over the northern end of the western field on the 20th April, however, this bird wouldn't have been breeding within the red line boundary due to lack of suitable nesting habitat. Linnets were recorded frequently in the eastern field as well as the central hedgerow. The Sedge Warbler, instead of singing from the marshy area, chose an area of rough grassland at the southwestern end of the west field (53.975715, -6.373868). Swallows and House Martins were recorded flying around and feeding over the Site but due to lack of breeding habitat these are considered to be a non-breeders.

The northern boundary along the houses was only productive for the more common garden birds such as House Sparrow, Starling, Blackbird, Song Thrush, Blackcap and Wren, although Goldcrests were found in the conifer trees along the northern boundary in 2023, immediately north-east of the central hedgerow (53.978218, -6.372336).

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The Site is considered to be of **local importance (Higher value)** to breeding birds due to the number of species recorded and the presence of 5 red-listed species within or over the Site. The Site evidently provides suitable foraging and nesting habitat for the majority of species recorded; through its various hedgerows and treeline boundaries and rank grassland, as 37 out of 43 species recorded were either confirmed, probable or possible breeders.

11.6.4.2.2.2 Non-breeding (Wintering) Birds

The Site at Haggardstown, Dundalk, Co. Louth supported only one target waterbird species on the Site during the winter bird surveys; a Common Snipe (*Gallinago gallinago*) which was flushed on 07/12/2022 and a single Snipe recorded on 21/02/2025.

The surveys confirmed very little usage of the Site of the Proposed Development by species listed as SCIs for nearby SPAs i.e., waterbirds. Over the course of the two winters surveyed, waterbird species other than Gulls noted in flight over the Site included four Lapwing (*Vanellus vanellus*) on 02/11/2022 and one Oystercatcher *(Haematopus ostralegus)* on 07/12/2022, and 10-20 Oystercatcher on 28/01/2025 (See Table 11-8).

Common Snipe (BoCCI Red-listed) was recorded on one occasion during both winter survey periods and is likely to have been resting on the Site. Snipe were not recorded in any other areas of the Site or on any of the other survey visits in 2022/2023 or 2024/2025. It is very likely that these birds have arrived from further afield to spend the winter in Ireland. During the winter months, up to one million Snipe arrive in Britain and Ireland before departing to breeding grounds in the summer. Most of these birds come from Iceland as well as birds from Scandinavia, to as far east as Russia. Common Snipe is not directly listed as a QI for Dundalk Bay SPA (004026) but would form part of the wetland and waterbird QI.

The relatively common and widespread Meadow pipit (*Anthus pratensis*) which is listed on the Birds of Conservation Concern in Ireland (BoCCI) Red List (2020-2026) (Gilbert, Stanbury & Lewis, 2021) due to a long-term declining population trend was frequently encountered during surveys, which is to be expected in most areas of suitable fallow ground in Ireland. Grey Wagtail (*Motacilla cinerea*) (BoCCI Red-listed) was also recorded on one occasion during the 2024/2025 winter period. It is worth noting that this bird is red-listed during the breeding season only, is an altitudinal migrant, and is associated with upland areas during the breeding season for which it is red-listed.

Several waterbird species were recorded off Site, many of which were recorded foraging within the areas of Dundalk Bay SPA which lie within 500m of the Site redline boundary. Of note were observations of BoCCI Red-listed Curlew (*Numenius arquata*), Lapwing, Oystercatcher and Redshank (*Tringa totanus*) which were seen to be resting and foraging in an area of partially flooded wet grassland c.60-100m north of the Site (See Figure 11-28).

Due to the recorded presence of wintering waterbirds using lands within 300m of the Proposed Development (disturbance range for waterbirds as per Cutts et al., 2009), specifically the proposed construction works along the R172 (bus stop installation and services), there is the potential for wintering waterbirds to be disturbed by these works in the absence of mitigation. Wintering waterbirds are therefore considered to be of **local importance (Higher value)** in this assessment.

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Table 11-8 Haggardstown LRD Winter Bird Survey Observations 2024/ 2025.

GIS MAP CODE	Date	Species common name	Scientific name	Conservation Status BoCCI	Conservation Status EU Birds Directive Annex I	No. Recorded
CU 001	12/12/2024	Curlew	*Numenius arquata*	Red	-	6
CU 002	28/01/2025	Curlew	*Numenius arquata*	Red	-	14+
DN 001	28/01/2025	Dunlin	*Calidris alpina*	Red	-	50+
GL 001	04/11/2024	Grey wagtail	*Motacilla cinerea*	Red	-	1
L 001	28/01/2025	Lapwing	*Vanellus vanellus*	Red	-	26
L 002	28/01/2025	Lapwing	*Vanellus vanellus*	Red	-	24
OC 001	28/01/2025	Oystercatcher	*Haematopus ostralegus*	Red	-	160+
OC 002	28/01/2025	Oystercatcher	*Haematopus ostralegus*	Red	-	21
OC 003	28/01/2025	Oystercatcher	*Haematopus ostralegus*	Red	-	120+
RK 001	12/12/2024	Redshank	*Tringa totanus*	Red	-	1
RK 002	28/01/2025	Redshank	*Tringa totanus*	Red	-	16
SN 001	21/02/2025	Snipe	*Gallinago gallinago*	Red	-	1
HG 001	28/01/2025	Herring gull	*Larus argentatus*	Amber	-	12
PB 001	28/01/2025	Light-bellied Brent Goose	*Branta bernicla*	Amber	-	137
SU 001	28/01/2025	Shelduck	*Tadorna tadorna*	Amber	-	11
MP 001	04/11/2024	Meadow pipit	*Anthus pratensis*	Red	-	1
MP 002	04/11/2024	Meadow pipit	*Anthus pratensis*	Red	-	1
MP 003	04/11/2024	Meadow pipit	*Anthus pratensis*	Red	-	1
MP 004	12/12/2024	Meadow pipit	*Anthus pratensis*	Red	-	1

GIS MAP CODE	Date	Species common name	Scientific name	Conservation Status BoCCI	Conservation Status EU Birds Directive Annex I	No. Recorded
MP 005	12/12/2024	Meadow pipit	*Anthus pratensis*	Red	-	4
MP 006	12/12/2024	Meadow pipit	*Anthus pratensis*	Red	-	1
MP 007	12/12/2024	Meadow pipit	*Anthus pratensis*	Red	-	1
MP 008	12/12/2024	Meadow pipit	*Anthus pratensis*	Red	-	1
MP 009	12/12/2024	Meadow pipit	*Anthus pratensis*	Red	-	1
MP 010	12/12/2024	Meadow pipit	*Anthus pratensis*	Red	-	2
MP 011	12/12/2024	Meadow pipit	*Anthus pratensis*	Red	-	1
MP 012	28/01/2025	Meadow pipit	*Anthus pratensis*	Red	-	5
MP 013	28/01/2025	Meadow pipit	*Anthus pratensis*	Red	-	1
MP 014	21/02/2025	Meadow pipit	*Anthus pratensis*	Red	-	1
MP 015	21/02/2025	Meadow pipit	*Anthus pratensis*	Red	-	1
MP 016	21/02/2025	Meadow pipit	*Anthus pratensis*	Red	-	1
MP 017	21/02/2025	Meadow pipit	*Anthus pratensis*	Red	-	1
BZ 001	04/11/2024	Buzzard	*Buteo buteo*	Green	-	1
BZ 002	28/01/2025	Buzzard	*Buteo buteo*	Green	-	1
SH 001	28/01/2025	Sparrowhawk	*Accipiter nisus*	Green	-	1

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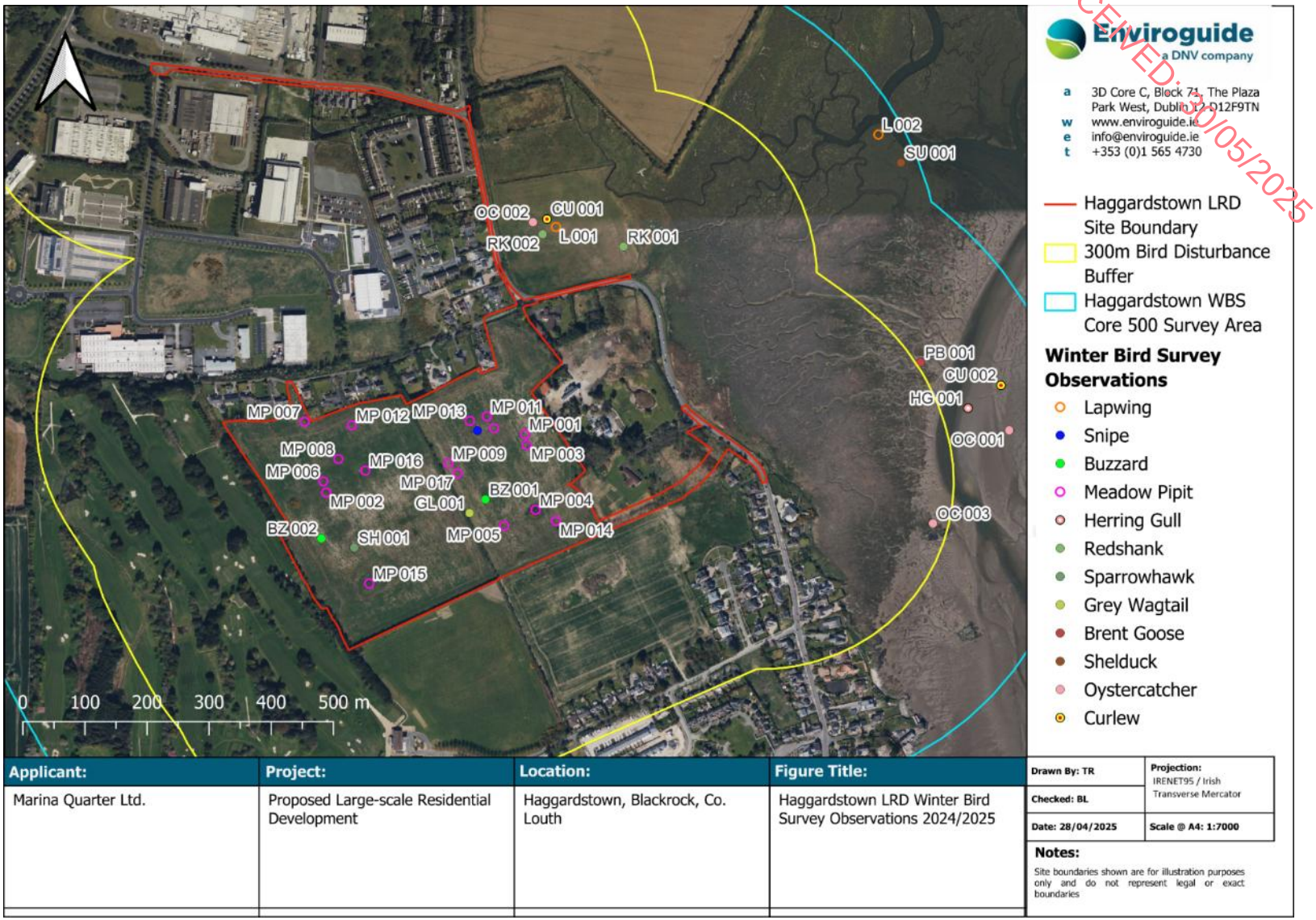

Figure 11-28 Winter Bird Survey Observations 2024/2025 with 300m noise disturbance buffer as per Cutts et al (2009).

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11.6.4.3 Non-volant Mammals

11.6.4.3.1 Desk Study Results

Four native and two invasive non-volant mammals have been recorded within the relevant tetrads (**Table 11-9**).

Regarding otter records in the area, information received from the NPWS as part of a previous LRD planning application (Planning ref: 2360476) is noted. As part of their role as a statutory consultee, the Department Applications Unit (DAU) of the Department of Housing, Local Government and Heritage provided a submission (dated 4th January 2023) regarding the previous LRD application at the Site. The DAU noted in their submission that the NPWS had a record of an otter killed along the R172 in November 2023. The DAU recommended a request for further information (RFI) at the time relating to otter usage of the R172 and the *Phragmites* swamp area to the east of the Site and north of the proposed main entrance to the Site from the R172. An otter survey of this area was conducted as requested with the results detailed in Section 11.6.4.3.2.1.

Table 11-9 Native and non-native mammal records returned from a search of the NBDC tetrad containing the Site (J00S).

Common name	Scientific name	Date of Last Record	Title of Dataset	Designation/Legal Status
Native Species				
Irish Hare	*Lepus timidus subsp. hibernicus*	13/09/2018	Mammals of Ireland 2016-2025	Wildlife Acts
Eurasian Pygmy Shrew	*Sorex minutus*	13/08/2018	Mammals of Ireland 2016-2025	Wildlife Acts
Red Fox	*Vulpes vulpes*	20/08/2018	Mammals of Ireland 2016-2025	*Not Protected*
Common Dolphin	*Delphinus delphis*	31/12/2017	IWDG Cetacean Strandings Database	EU Habitats Directive Annex IV; Wildlife Acts
Invasive Species				
European Rabbit	*Oryctolagus cuniculus*	12/05/2018	Mammals of Ireland 2016-2025	Medium Impact Invasive Species
Eastern Grey Squirrel	*Sciurus carolinensis*	16/09/2018	Mammals of Ireland 2016-2025	High Impact Invasive Species; Regulation S.I. 477

11.6.4.3.2 Field Survey Results

Mammal trails were recorded along the various boundaries of the Site, however some of these are likely the result of dogs and walkers, as dog prints were observed. Smaller trails linked the Site with the golf course to the west. No signs of badger e.g., latrines, snuffle holes, setts, were recorded at the Site, despite thorough inspections of the various scrubby areas, field boundaries and the distinctive

gorse mound habitat scattered across the Site. Red Fox are ubiquitous in the Irish countryside and may frequent the Site.

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Within one mound covered in rank grassland and located in the south-west of the Site, small tunnel entrances (approx. 3-5cm in diameter) and spoil heaps were recorded. These may be indicative of rat *Rattus sp.,* activity at the Site. No signs of European Rabbit were recorded at the Site.

No signs of pygmy shrew (*Sorex minutus)* were recorded, however the Site supports suitable habitat present for this species and for hedgehog (*Erinaceus europaeus)* in the form of the various areas of scrub and hedgerow it supports. No signs of Irish hare *(Lepus timidus hibernicus)* were recorded, however the Site does support suitable habitat for this species, and it has been known to use the golf course to the west.

11.6.4.3.2.1 Otter Survey Results

No signs of otter (*Lutra lutra*) were recorded within the Site during the surveys of same and there is limited suitable habitat for otter within the Site itself. The marsh and wet woodland areas in the east of the Site revealed no evidence of otter usage e.g., mammal paths through the marsh vegetation, holts, couches, spraints or paw prints.

The results of the otter survey conducted in February 2024 of the R172 road to the north and east of the Site are shown in Figure 11-33. The survey carried out 14th February 2025 reconfirmed the results of the 2024 survey with a spraint again located in the same location as the previous survey (See Figure 11-232).

During this survey, the surveyor noted that the northern and eastern edges of the road comprise of grassy verges and ditches, along with sparse gappy hedgerows and barbed wire fencing i.e., highly permeable throughout (See Figure 11-29). The southern and western side of the same stretch of the R172 comprised partially of stone wall to the north of the swamp, and hedgerow along the swamp's eastern boundary with the R172; again, permeable along the majority of its length. Two prominent breaks in the hedgerow were also present at the bend of the R172 (See Figure 11-29). Mammal trails were recorded at various sections of the swamp's eastern hedgerow boundary although no signs of otter were observed e.g., prints, spraints etc

Figure 11-29 Example of gappy hedgerow north of R172 (left) and main break in hedgerow allowing access to *Phragmites* swamp at bend in R172 (right).

The overgrown drainage ditch on the northern side of the R172 was surveyed for otter with the surveyor following this feature to the east towards the coast. Just at the bend of the R172 a berm exists along where the grassy verge then slopes down to the coast. A culvert exists below this berm with a small stream running out into the salt marsh (See Figure 11-30). This culvert connects to the *Phragmites* swamp to the west and was observed to be clear and unobstructed with approximately 3cm of water running along its cobbled base. An otter spraint was recorded on the bank beside the opening to culvert, with remains of crustacean present within (See Figure 11-31).

Figure 11-30. Culvert connecting to swamp underneath R172 (Spraint location shown in red).

Figure 11-31 Otter spraint recorded by entrance to culvert in February 2024.

Figure 11-32 Otter spraint recorded at the same location by entrance to culvert in February 2025.

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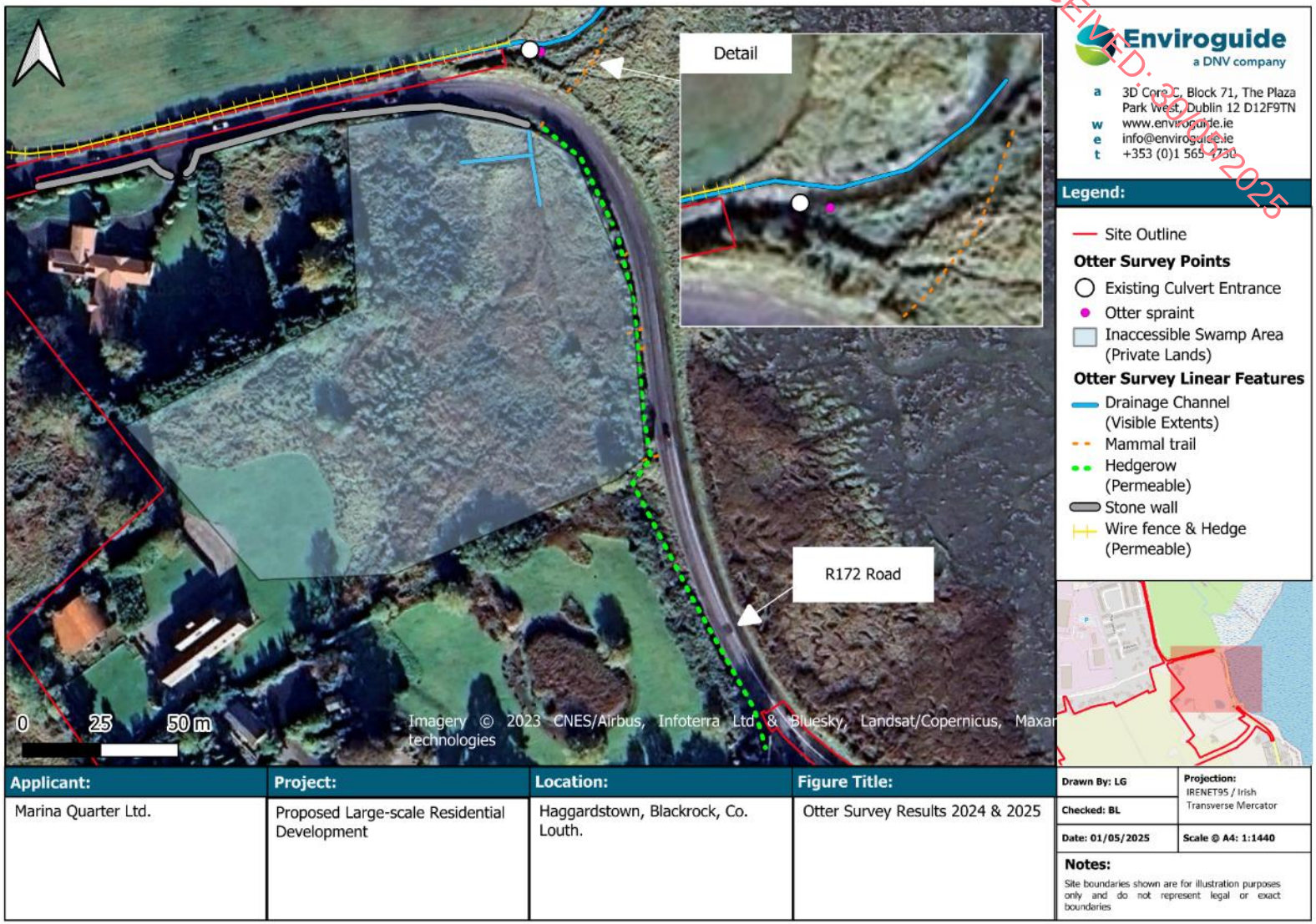

Figure 11-33. Image showing the results of the Otter survey conducted at the Site in February 2024 and reconfirmed in February 2025.

11.6.4.3.2.2 Regarding Previous DAU Commentary

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The DAU in their submission (dated 4th January 2023) regarding the previous LRD application at the Site (Reg Ref. 2360476, ABP Ref. 319077), raised matters about the potential for increased mortality of otter as a result of the Proposed Development, noting that an otter had been killed along the R172 as recently as November 2023. The DAU recommended RFI relating to otter usage of the R172 and the *Phragmites* swamp area to the east of the Site and north of the proposed main entrance to the Site from the R172.

The DAU state on pg.4 of their submission:

"…If evidence of a definite otter crossing point is found along the road, it might then be possible, with the permission of landowners adjacent to the proposed development, to install an otter underpass under the road by means of a pipe or culvert to minimize otter road casualties in this area in future."

This application was prepared on the understanding that otters use the areas along the R172, as evidenced by the 2023 otter road death noted within the DAU's submission. The verges of either side of the road along the swamp are permeable and animals including otter could therefore cross at any location. The presence of an otter spraint by the existing culvert opening may indicate that otter already use the culvert to access the swamp, as well as potentially crossing the road above ground. The culvert between the northern drainage channel and the swamp is understood to form a direct route between these areas, and as noted during the otter survey it appears to be running clear and unobstructed, although survey access to the southern end of the culvert was not possible due to it being within private lands.

The utility of a new otter underpass is considered and dismissed below. No otter underpass is proposed within this application. None is considered necessary or appropriate.

Based on the results of the otter surveys, the most appropriate place for an otter pass is believed to be at the location of the existing culvert connecting the swamp and the northern drainage channel. This point of the bend provides the most direct route from the drainage channel to a prominent break in the swamp's hedgerow. The presence of the existing culvert at this location would, if improved, provide this function for local otters, however otters will also cross the road above ground if they choose to (as evidenced by the 2023 road death). This location is outside of the Proposed Development's redline boundary and, in part, within private lands.

The potential for an otter underpass at the proposed main entrance in the east of the Site was also considered, however it is deemed that this is not practical for the following reasons:

- The main entrance is located south along the R172 and 200m away from the bend of the R172 (the most appropriate crossing point).
- Otters would need to be directed south along the R172 to the proposed main entrance location and then directed via the new underpass to the Site of the Proposed Development.
- Otters are far more likely to cross the R172 further to the north at the bend where the existing swamp culvert is located. For an underpass at the proposed main entrance to the Site to be in anyway useable by the otters, fencing would be required the length of the

R172 between the new underpass and possibly Bóthar Maol to the north-west (a length of potentially 500m) to guide otters down to the new underpass.

- Regardless of the above, there is also no direct connectivity between the Site of the Proposed Development and the *Phragmites* swamp within private lands to the north once the otter cross at this new underpass at the proposed main entrance to the Site. A culvert under the private driveway to the adjacent private lands east of the Site exists, however, if useable by otters this would direct them into the private garden and not directly to the swamp.

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The inclusion of an otter pass within the redline boundary of the Proposed Development (i.e., at the location of the proposed main entrance) is therefore deemed impractical and would not provide a useable alternative for otters crossing the R172 to reach the *Phragmites* swamp along its landwards side.

11.6.4.4 Bats

11.6.4.4.1 Desk Study Results

All bat species occurring in Ireland are listed on Annex IV of the Habitats Directive, and as such are afforded strict protection from harm and disturbance. Three species of bat have been recorded within the relevant tetrad, namely:

- Brown Long-eared Bat (*Plecotus auritus*)
- Soprano Pipistrelle (*Pipistrellus pygmaeus*)
- Leisler's bat or 'Lesser Noctule' (*Nyctalus leisleri*)

The overall habitat suitability index for bats is 34.11 (Medium-High) for the relevant tetrads as per Lundy et al. (2011) (Table 11-10).

Table 11-10 Landscape suitability index based on Lundy et al. (2011) at the Proposed Development Site. Data from NBDC.

Bat Species	Common name	Suitability index
All Bats	-	34.11
Pipistrellus pygmaeus	Soprano Pipistrelle	47
Plecotus auritus	Brown Long-eared bat	43
Pipistrellus pipistrellus	Common Pipistrelle	49
Rhinolophus hipposideros	Lesser Horseshoe bat	0
Nyctalus leisleri	Leisler's bat	48
Myotis mystacinus	Whiskered bat	35
Myotis daubentonii	Daubenton's bat	36
Pipistrellus nathusii	Nathusius's Pipistrelle	8
Myotis nattereri	Natterer's bat	41

11.6.4.4.2 Field Survey Results

11.6.4.4.2.1 Potential Bat Roost and Habitat Suitability Assessment

Trees

All of the trees at the Site were assessed for the bat roosting potential as per Collins (2023). The majority of the trees at the Site were observed as having negligible roost potential, due to their bushy structure and lack of PRFs. All trees/hedgerow sections marked for removal at the Site supported negligible roost potential due to potential roost features (PRFs) not being present.

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Buildings/structures

A container structure located in the east of the Site supported low roost potential due to it being open to the elements and easily accessible by bats. The structure was of thin metal and full of discarded furniture and debris. A small pumphouse structure with a corrugated roof is present in the north-west of the Site. This structure was accessed and showed no signs of usage by roosting bat e.g., droppings or live or dead bats. The structure was accessible and could be used by roosting bats (low roost potential). Emergence surveys were subsequently carried out on both structures as detailed below. The structures in question are shown in Figure 11-34 below.

Figure 11-34 The pumphouse (left) and container (right) present at the Site and inspected for bat roost potential.

Habitat Suitability

The hedgerows and treelines on Site were considered to offer moderate foraging and commuting suitability to bats given the high degree of connectivity of the Site to the surrounding landscape (Collins, 2023). The rank grassland fields that make up the Site are surrounded by mature hedgerow, treelines and woodland edge habitats, that link up with those of the Dundalk Golf Course to the west, the mature private gardens to the east and the agricultural fields to the south.

11.6.4.4.2.2 Emergence Surveys

The emergence surveys recorded no bats emerging from or entering either of the target structures. The following bat species were recorded in the vicinity of both structures during the emergence survey:

- Common pipistrelle
- Soprano pipistrelle
- Leisler's Bat

- Brown Long-eared bat
- *Myotis spp.*

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Pumphouse

The surveyor located at the pumphouse structure in the north-west of the Site observed bats commuting above the Site in that area from 21:48 (4 minutes after sunset), with a Leisler being the first bat observed. Bats were observed throughout the night commuting along the boundary between the Site and the golf course to the west, and the private garden to the north. Foraging activity was also noted around the surveyor. Common and soprano pipistrelle and Leisler's bat were recorded throughout the survey. Brown Long-eared bat was recorded commuting past at 22:50 and again at 23:15. An unidentified *Myotis* bat was recorded twice; at 22:44 and 23:34.

Container

The surveyor at the container in the east of the Site recorded lower levels of activity but had the same set of species as at the pumphouse. The first bat recorded was a commuting Leisler's bat at 21:51 (7 minutes after sunset). Leisler's bat was recorded again at 21:57. Common pipistrelle was recorded commuting past at 22:09, 22:44 and 22:47. Soprano pipistrelle was recorded commuting past on one occasion at 22:27. Brown Long-eared bat was recorded once commuting past the structure at 23:14. Two unidentified *Myotis* passes were recorded at 23:14.

11.6.4.4.2.3 Dusk Transect Surveys

The results of the four dusk transect surveys conducted at the Site over the course of May and June 2023 and October 2024 are shown in Figure 11-35 & Figure 11-36, and the numbers of each species recorded at each time count location are provided in Table 11-12 and Table 11-13.

As would be expected, activity was largely associated with the vegetated boundaries of the Site. Activity hotspots were observed at the following locations:

- Point 2: The north-western corner of the Site, where bats were noted to forage and commute along the trees separating the Site from the golf course and the private residence to the north;
- Point 3: The south-western corner of the Site, where bats were observed foraging and commuting between the Site, the golf course and the field to the south.
- Point 6: The southern end of the central north-south hedgerow that splits the Site. Bats likely forage and commute along the southern hedgerow boundary between Point 3 and Point 6, and up along the central hedgerow to Points 5 and 11, although little activity was recorded along this feature.
- Point 7: The highest level of activity was recorded at this location in the marshy eastern portion of the Site. Bats foraged along the mature conifer treeline associated with the residence to the south-east, and were also observed flying in a north-south direction over the marshy area and gorse scrub. Bats were also recorded along the transects between Point 7 and Point 8 and appear to forage and commute down the existing wooded avenue where the proposed main entrance to the Proposed Development will be. Common and Soprano pipistrelles were the most abundant species present on all nights, with occasional Leisler activity also recorded.

- Although activity was relatively low at Point 9 on all nights in 2023, the transect between Points 8 and 9 supported good levels of Soprano pipistrelle activity on the 25th May and of Common and Soprano pipistrelles in October 2024, with bats foraging back and forth along the mature woodland edge in the north-east of the Site. A single Brown Long-eared bat was recorded at point 8 during the 2024 survey and is likely associated with the wooded areas in the private gardens to the east of the Site.

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Occasional activity was recorded over the open fields e.g., at Point 10, with Leisler and Soprano Pipistrelle recorded. Very little activity was noted along the northern field boundaries of the Site. These were generally short, highly maintained garden hedges and may not have supported the same levels of insect prey as the wilder native boundaries of the Site, and/or may be subject to higher levels of lighting from the residential properties.

It can be summarised that there is a commuting/foraging corridor for bats along the western and southern treelines and hedgerows, with bats observed moving from within the Site to the adjacent golf course and fields. In the east of the Site, the marshy area and its associated scrub and adjacent mature conifer treeline appear to provide a feeding resource for local bats, with high levels of activity recorded at Point 7 and along the immature woodland strip that leads down this area. Bats have good linear commuting/foraging habitat here that links the residence to the east and the fields to the south-east, with the marshy area and mature woodland located within the private lands to the north of the main entrance way, and east of the main body of the Site. The Site likely forms part of a wider network of bat foraging habitat along with the surrounding lands, with good habitat connectivity observed.

Table 11-11 Table showing the number of bats by species recorded at each timed count location over the course of the three dusk surveys conducted in 2023.

25/05/2023				13/06/2023			21/06/2023			
Count Point no.	**P. pip**	**P. pyg**	**N. leis**	**P. pip**	**P. pyg**	**N. leis**	**P. pip**	**P. pyg**	**N. leis**	**Total no. Bats**
1	-	-	-	-	-	1	-	-	-	1
2	-	1	2	-	4	-	-	3	-	10
3	-	6	3	-	3	-	-	3	-	15
4	-	-	-	-	-	-	-	-	-	-
5	-	1	5	-	-	-	-	-	-	6
6	-	4	6	-	-	-	-	7	-	17
7	1	6	-	34	4	-	-	2	2	49
8	-	-	2	-	1	-	-	-	-	3
9	-	7	-	1	-	-	-	-	-	8
10	-	-	2	-	1	-	-	-	-	3
11	-	4	-	-	-	-	-	-	-	4

Table 11-12 Table showing the number of bats by species recorded at each timed count location during the 2024 dusk transect survey.

Count Point no.	P. auritus	P. pip	N. leis	P. pyg	Grand Total
1	-	-	-	-	-

2	-	-	-	1	1
3	-	-	-	-	-
4	-	-	-	-	
5	-	-	-	-	-
6	-	1	-	-	1
7	-	38	-	4	42
8	1	11	-	16	28
9	-	27	1	6	34
10	-	-	-	-	-
11	-	-	-	-	-
Grand Total	**1**	**77**	**1**	**27**	**106**

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11.6.4.4.2.4 Summary of Bat Survey Results

No bats were observed emerging from either of the low roost potential structures surveyed on the 30th May 2023. A total of 5 bat species/species groups were recorded during the surveys. Bats use the western and south-western field boundaries as a commuting foraging route, linking in with the adjoining lands. The southeastern section of the Site provides foraging and commuting habitat in the form of marsh, grassland and scrub, with good connectivity with the mature woodland along the Site's eastern and north-eastern boundaries. Some limited activity was recorded along the central north-south hedgerow but activity along the northern boundary of the Site was minimal.

The Site is considered to be of **local importance (Higher value)** to local bat populations, with the Site observed as providing suitable foraging and commuting habitat; through its various connected hedgerows and treeline boundaries and area of wetland habitat in the east of the Site. The effects on bats relating to hedgerow loss and retention is discussed in Section 11.8.2.3.

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Figure 11-35 Map displaying the combined results of the three 2023 dusk bat surveys conducted at the Site (Source: Enviroguide).

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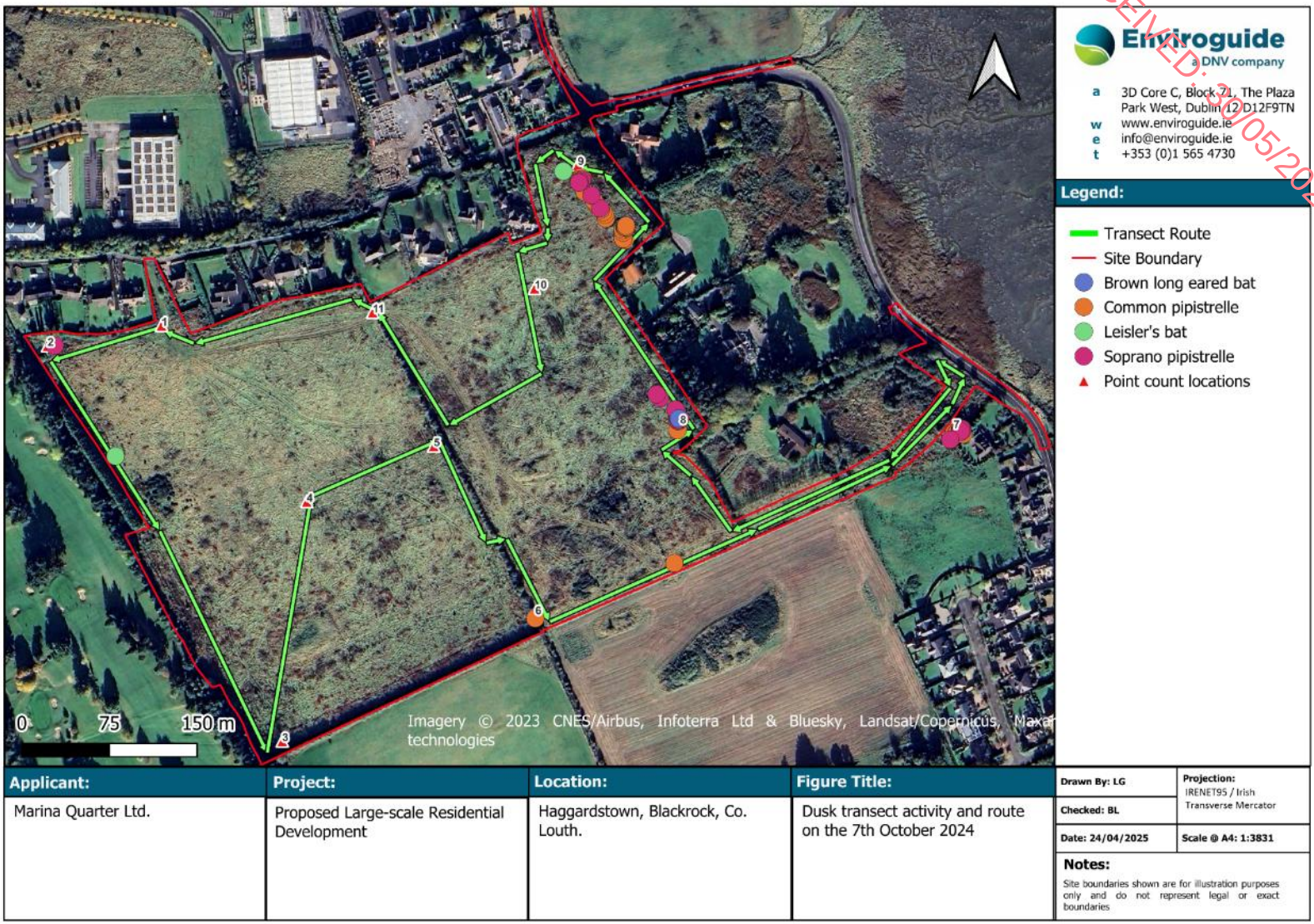

Figure 11-36 Map displaying the results of the 2024 dusk bat survey conducted at the Site (Source: Enviroguide)

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11.6.4.5 Amphibians & Common Lizard

11.6.4.5.1 Desk Study Results

Only Common Frog (*Rana temporaria*) has been recorded within the relevant tetrads, last recorded in 2018. This species is protected under the Wildlife Acts and Annex V of the Habitats Directive.

11.6.4.5.2 Field Survey Results

No Evidence of these species groups was found at the Site during the various walkover surveys carried out to date. There is suitable breeding habitat present for Common frog in the form of the marshy area in the south-east of the Site and the small pond recorded in this area. As such, targeted amphibian surveys were conducted during suitable conditions on four dates between February and April 2025.

As noted within the Amphibian Survey Report in Appendix 11.3 (Gandola, 2025), evidence of a small resident breeding population of the Common frog was obtained within a ponding area to the south-east of the site. The smooth newt (*Lissotriton vulgaris)* was not detected in any of the surveyed habitats or waterlogged features on-site.

While the pond habitat is currently the only known area capable of sustaining any amphibian populations, this habitat is likely to be ephemeral in nature and capable of only supporting a small resident population as evidenced by the low spawn clump count (n=17). Most, if not all, of the other "wet" features- generally flooded excavations and heavy machine rutting, were ephemeral in nature and had disappeared by the final survey.

The wet, grassy south-eastern "arm" of the site initially appeared to offer marginally suitable habitat for amphibians and potentially also common lizards, however our surveys revealed that this suitability is likely to be superficial. Due to the presence of Common frog on Site, this species will be assessed further in this Chapter.

Common Lizard (*Lacerta vivipara)* or Viviparous lizards are widespread and can be found in a range of habitat types. They reach highest densities in bog, heath and coastal habitats and the margins of coniferous woodlands. They also tend to be common in a range of grassland habitats, particularly those not subject to heavy grazing pressure, and can make use of gardens, other suitable features in built-up areas and post-industrial sites (NRA, 2009). No observations of lizard were made during the Site surveys carried out on four dates between February and April 2025 (Gandola, 2025). The Site provides limited potential lizard habitat and is isolated between highly maintained golf course lands to the west, residential lands to the north and arable agricultural land to the south. The Site itself was maintained under arable crop production until recently and therefore it is unlikely to support a significant population of lizards. However, as a precaution and due to the presence of suitable habitat, this species will be assessed further.

11.6.5 Evaluation of Ecological Features

Designated sites, habitats and the flora and/or fauna which have the potential to utilise habitats within the immediate area of the Proposed Development, or for which records exist in the wider area, have been evaluated in Table 11.13 for their conservation importance.

Table 11-13 Evaluation of Designated Sites, Habitats, Flora and Fauna recorded within the Site and the surrounding area. KERs assessed further in this Chapter are shown in green.

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Designated sites/Species/Habitats	Evaluation	Key Ecological Receptor (KER)	Rationale
Designated sites			
Dundalk Bay Ramsar site	International importance	Yes	These sites have been assessed by proxy in the AA Screening and NIS that accompany this application under separate cover. No likely significant adverse effects envisaged after mitigation measures are put in place
Dundalk Bay pNHA	National importance	Yes	
Habitats			
Dry Meadows and Grassy Verges (GS2)	Local importance (Lower Value)	No	This habitat is the result of a recent lack of management of arable land. Grass and ruderal dominant with limited species diversity.
Wet Grassland (GS4)	Local importance (Lower Value)	No	Limited sections of these habitats at the Site and they are common in the area.
Marsh (GM1)	Local importance (Higher Value)	Yes	Limited sections of this habitat at the Site, however, connectivity with swamp section of Dundalk Bay SAC to the north.
Scrub (WS1)	Local importance (Lower Value)	No	A fairly common habitat of some local ecological value.
Wet Willow-alder-ash Woodland (WN6)	Local importance (Higher Value)	Yes	A small section of young alder wet woodland, partly within the Site's redline boundary. Limited occurrence of this habitat at the Site, however, connectivity with swamp section of Dundalk Bay SAC to the north.
Immature Woodland (WS2)	Local importance (Higher Value)	Yes	Planted oak and beech trees that from a woodland corridor in the south-east of the Site.
Mixed broadleaf/conifer woodland (WD2)	Local importance (Higher Value)	Yes	Mature woodland located along the Site's eastern boundary.
Hedgerows (WL1),Treelines (WL2) and Stone Walls (BL1)	Local importance (Higher Value)	Yes	Well established treelines and hedgerows present along the various field margins at the Site. These provide habitat corridors linking the golf course to the west, to the coastal area to the east of the Site.
Artificial Pond (FL8)	Local importance (Lower Value)	No	Small area of ponding caused by machinery tracks in recent past. Not deemed to be of note or rare in and of itself.

Built ground (BL3) and Spoil and bare ground (ED2)	Minimal ecological value	No	Recently disturbed land in the north and east of the Site. No vegetation supported and not deemed to be of ecological value.
Fauna			
Breeding bird assemblage	Local importance (Higher Value)	Yes	Good numbers of species recorded breeding with five red-listed species also using the Site.
Wintering waterbird assemblage	Local importance (Higher Value)	Yes	Some occasional usage of the Site by wintering waterbirds may occur, however minimal usage observed during the 2022/23 and 2024/25 winter surveys and lands are largely unsuitable as *ex-situ* habitat. Potential for disturbance impact to waterbirds using the shore in the vicinity of the Proposed Development. Effects on wintering waterbirds has been assessed by proxy in the AA Screening and NIS that accompany this application under separate cover. No likely significant effects envisaged after mitigation measures are put in place.
Non-volant mammals	Local importance (Higher Value)	Yes	Suitable habitat for smaller mammals such as Irish Hare, Hedgehog and Pygmy shrew in meadow, scrub and hedgerows. No signs of badger or otter at the Site, however otter spraint recorded to the north-east of the Site and otter known to be present in the vicinity of the R172 near the Site.
Bat assemblage	Local importance (Higher Value)	Yes	Five species of bat recorded within the Site during surveys in May & June 2023. Good activity recorded along boundaries of the Site and established commuting/foraging corridors are evident.
Common Frog	Local importance (Higher Value)	Yes	Suitable breeding and foraging habitat present in wetter parts of the Site. Small frog population recorded using the east of the Site.
Viviparous Lizard	Local importance (Higher Value)	Yes	Some limited suitable habitat on Site in the form of the stonewall and scrub matrix. Considered further as a precaution.

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11.7 The 'Do Nothing' Scenario

Should the Proposed Development not go ahead, in the short-term the Site would continue as it is as unmanaged rank grassland. The Site would be expected to become gradually more biodiverse with time, however a lack of grazing or hay harvest would over time lead to succession to scrub and eventually woodland given enough time. The hedgerows and treelines would continue to provide foraging, roosting, and commuting habitat for birds, bats, and small mammals. It is noted, however, that the land in question is zoned for development; to be brought forward within the plan period, and therefore it is reasonable to assume that a similar residential development could be brought forward on the site and in such case similar effects as described above would be expected.

11.8 Potential Significant Effects

As per the relevant guidelines, likely effects have been assessed for KERs only, as listed in Table 11-13 the KERs identified as part of this EcIA are as follows:

- Dundalk Bay Ramsar site
- Dundalk Bay pNHA
- Marsh (GM1)
- Wet Willow-alder-ash Woodland (WN6)
- Immature Woodland (WS2)
- Mixed Broadleaf/Conifer Woodland (WD2)
- Hedgerows (WL1), Treelines (WL2) and Stone Walls (BL1)
- Small mammals i.e., Irish Hare, Hedgehog and Pygmy Shrew
- Breeding Bird Assemblage
- Wintering Bird Assemblage
- Bat Assemblage
- Common Frog and Viviparous Lizard

The following sections provide an assessment of the effects of the Proposed Development on local ecology. As per CIEEM (2018), where mitigation is fully integrated into the scheme and there is high confidence that it will be implemented, the significance of effects of the mitigated project are assessed. Where mitigation has not been integrated into the scheme, for example where it is necessary to include specific measures within a Construction Environmental Management Plan (CEMP), the potential effects are assessed in the absence of mitigation. The following is extracted from CIEEM (2018):

"*Presenting the results of the assessment 'with' and 'without' mitigation allows the need for mitigation and/or compensation to be clearly identified. Where mitigation is fully integrated into the scheme and there is high confidence that it will be implemented, it may be appropriate simply to assess the*

significance of effects of the mitigated project, with this assessment reflecting the likelihood of the incorporated measures being successful. Where there is any uncertainty, then the with/without mitigation approach to assessment described above should be used to ensure transparency".

In this instance, mitigation has been integrated into the surface water drainage of the Site (via SUDS), landscape plan and public lighting plan. As such, the impact of these plans is taken into account when assessing other relevant impacts (e.g., habitat loss).

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11.8.1 Demolition Phase

There will be minimal demolition works associated with the Proposed Development. A small pumphouse structure exists in the north-west of the Site and will be removed as part of the works. This structure is of low bat roost potential and no roosting activity was observed during the surveys of this structure (See Section 11.6.4.4.2 for further details). There is no potential for likely significant effects as a result of the demolition of this structure.

11.8.2 Construction Phase

The Proposed Development will see a change in land use from a complex of former arable fields bounded by hedgerows and dominated by grassland, to a large-scale residential development.

Potential Construction Phase impacts that could arise as a result of the Proposed Development include, but are not limited to, habitat loss or damage, habitat fragmentation, increases in noise and dust emissions, direct mortality or disturbance of protected species, runoff of sediment or other water borne pollutants into surface waterbodies and designated sites located downstream and light pollution.

It is considered that any negative impacts arising because of the Proposed Development can be readily mitigated through avoidance measures, the use of standard best practice construction measures, and biodiversity enhancement measures discussed in Section 11.9.5 that will be incorporated into the Proposed Development plan.

11.8.2.1 Spread of Invasive Species

One high impact invasive plant species was encountered at the Site (Cherry Laurel). This species is spread largely by birds who feed on its berry crop. As this species' presence at the Site is limited to two locations and along the boundaries with private lands, removal may not be necessary or possible. However, to prevent the introduction of invasives to the Site from external sources, good site biosecurity hygiene will be followed as detailed in Section 11.9.3.5. TII (2020) guidance *'The Management of Invasive Alien Plant Species on National Roads – Technical Guidance'* will be consulted with regards the treatment, removal and disposal of invasive flora at the Site if required.

11.8.2.2 Effects on Small Mammals

Irish Hare, Hedgehog and Pygmy shrew may utilise the grassland, scrub and hedgerow habitats at the Site. The Proposed Development may result in the injury/mortality of these species during the vegetation clearance works if carried out during the hibernation period for Hedgehog in particular.

This could result in **short-term, adverse, significant** effects to small mammals at the **local scale**, in the absence of mitigation.

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The proposed landscaping will result in the loss of existing grassland at the Site and its conversion to smaller sections of open space grassland, hardstanding and fenced garden habitat. This will result in a **permanent, adverse, moderate (not significant)** effect to small mammals at the **local scale**, through a loss of connectivity or access to areas of the Site to forage. The external boundaries of the Site will however, continue to provide habitat connectivity around the Site and into adjoining lands.

There will likely be noise disturbance to local fauna at the Site during the construction works. This will represent a **short-term, adverse, slight (not significant)** impact at the **local scale.**

11.8.2.3 Effects on Bats

The construction works will affect local bats through the loss of some sections of hedgerow, for example the north-south central hedgerow. This will be offset by the proposed landscaping at the Site including additional hedgerow planting. Please refer to Section 11.3.1.2 and the Site Landscape Plan prepared by Park Hood (Drawing 7742-L-2101) for details of the landscaping approach for the Site.

Although the provision of roads and pathways will fragment the north-south central hedgerow that runs through the middle of the site, this was found to be the linear feature with the least bat activity recorded along it during the dusk surveys. Additionally, this habitat will be enhanced with additional planting; widening it and providing a variety of habitats including wildflower meadow along its margins and hedgerow and tree planting along its length. It is noted that the road traffic is likely to be low frequency, slow residential traffic with a limited impact on bats, and so bats will likely continue to use it at the same, or above, the levels of activity observed during the surveys.

Commuting and foraging habitat will largely remain as it currently exists, with linear vegetation continuing to run along the Site's boundaries, providing habitat connectivity with the surrounding lands. The loss of agricultural grassland habitat will be offset by the provision of higher diversity planted habitats via the gardens and open space areas, and night-time lighting will be the main determining factor in terms of how much habitat is accessible/lost to bats at the Site. Therefore, physical habitat loss represents a **permanent, adverse, slight (not significant)** effect on bats at the **local scale.**

11.8.2.4 Effects on Breeding Birds

Should any vegetation clearance take place within the breeding bird season (within period March 1st to August 31st inclusive), there is the potential for harm/mortality to nesting birds and their eggs/young. This would represent a **short-term, adverse, significant** effect to breeding birds at the **local scale** in the absence of mitigation.

The construction works will effect local birds through the loss of some foraging/nesting habitat in the form of small areas of hedgerow and the entirety of the rank grassland at the Site. This will be somewhat offset by the proposed landscaping at the Site including the provision of native wildflower meadow areas and additional tree and hedgerow planting, however the replacement of unmanaged grassland with hardstanding and amenity grassland, will reduce the nesting and foraging habitat available to some ground nesting bird species e.g., Meadow Pipit. The Proposed Development will

therefore have a **permanent, adverse, moderate (not significant)** effect on breeding birds at the **local scale**, through loss of some foraging/nesting habitat for some species.

There will be likely noise disturbance to local birds at the Site during the construction works. This will represent a **short-term, adverse, slight (not significant)** effect at the **local scale.**

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11.8.2.5 Effects on Wintering Birds

The Proposed Development entails the development of land in proximity to the Dundalk Bay coastline, with a proposed bus stop located along the R172 road. There is therefore the potential for disturbance effects (e.g., lighting, construction noise, visual stimulus) to roosting/foraging waterbird species along this stretch of coastline during the Construction Phase of the Proposed Development in the absence of mitigation. This could represent a **short-term, adverse, moderate (not significant)** effect at the **local scale** i.e., the stretch of coastline in immediate proximity to the areas of work.

11.8.2.6 Effects on Amphibians and Reptiles

Common Frog and Viviparous Lizard are noted as being of *Least Concern* in the NPWS 2011 Redlist (King et al., 2011), and Common Frog are noted as having *Favourable* status in NPWS (2019) due to their adaptability to land use changes and their widespread abundance.

As noted by the Amphibian specialist (Gandola, 2025), The use of heavy machinery in water-logged areas, or other areas where the water table is close to the surface, presents a risk that works could in fact increase the suitability of the Site via flooded excavations or machine track depressions for breeding amphibians, particularly common frogs. Therefore, caution is needed during the Construction Phase as any hollows or depressions created are likely to form suitable breeding habitats for the resident frog population due to the nature of the underlying topography, soil type, and hydrology.

Should works take place within the marshy south-eastern corner of the Site during the breeding period for amphibians such as Common Frog, there is the potential for mortality of young and adults. Should vegetation clearance be carried out at a during the hibernation period for lizard there is the potential for mortality if present. This would represent a **short-term, adverse, significant** effect to frog and lizard at the **local scale** in the absence of mitigation.

As noted by the Amphibian specialist (Gandola, 2025):

"*The long-term impact of this development at Haggardstown on any amphibian populations (known or unknown) that may exist onsite or on adjoining sites of this development is likely to be negligible with little to no long term negative impacts. This assessment is qualified by reasoning that the Dundalk Golf Course is likely offering better quality habitats for any resident amphibian populations and there is no barrier to dispersal from the proposed development site into the golf course.".*

11.8.2.7 Dust Related Effects

Due to the proximity of the Site to sensitive ecological receptors such as the Dundalk Bay coastline (including the pNHA and Ramsar Site), there is the potential for dust generated during the Construction Phase to deposit and adversely affect the ecology of these protected sites.

In terms of assessing the likelihood of Construction Phase dust at the Site leading to significant adverse effects on designated sites in Dundalk Bay, several factors must be considered: the type of development involved and its capacity to generate dust, the distance between the designated sites (the receptors) and the source of dust generation (the Site), and the intervening topography.

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According to Institute of Air Quality Management (IAQM) *Guidance on the Assessment of Mineral Dust Impacts for Planning* (IAQM, 2016), experience of the Working Group together with published studies and anecdotal evidence on the change in both airborne concentrations and the rate of deposition with distance, suggests that dust impacts will occur mainly within 400m of the operation, even at the dustiest of mineral sites. Adverse dust impacts from sand and gravel sites are uncommon beyond 250m and beyond 400m from hard rock quarries measured from the nearest dust generating activities. IAQM (2016) note that it is commonly accepted that the greatest impacts will occur within 100m of a source, and this can include both large (>30 µm) and small dust particles. The greatest potential for high rates of dust deposition and elevated particulate matter (PM10) concentrations occurs within this 100m distance.

IAQM note that their 2016 guidance applies to the operational phases of minerals developments e.g., quarries. Whilst these share some common features with construction sites, minerals sites can be on a significantly larger scale and last for longer periods of time. The IAQM's 2024 *Guidance on the assessment of dust from Demolition and Construction* (Holman et al. 2024) deals with construction dust assessment specifically and does not provide specific dust impact distances as such but assesses sensitivity to dust impacts at <20m and <50m for ecological features; impact zones far smaller than that of minerals sites as detailed in IAQM (2016).

In taking a precautionary approach, the 400m, 250m and 100m impact zones are used in this Chapter to assess the potential for construction dust related effects on Dundalk Bay designated sites. However, it should be noted that the Proposed Development is a construction project and not a long-term minerals extraction facility, and so its capacity for dust related effects will be much lower.

As can be seen in Figure 11-37, the Site of the Proposed Development is located adjacent to Dundalk Bay. The sensitive receptors in this case are therefore the Dundalk Bay pNHA/Ramsar Site, all of which are located to the east of the Site. Much of the main body of the Site of the Proposed Development (where the 'dustier' activities such as excavation etc., are likely to occur) is more than 400m from the coastline, with some parts of the Site (i.e., the northern services arm, the surface water outfall and main entrance and bus stop off the R172) within the 250m and 100m ranges. However, the bulk of the areas of these designated sites respectively are located beyond the 400m zone. What is important to note it that only a small amount of the pNHA and Ramsar site is located within the 100m zone where the IAQM note the greatest dust impacts are most likely to occur.

As noted by Holman et al. (2024), vegetation located near short-term construction works are likely to recover within a year of the stress caused by dust deposition having ceased. The Construction Phase for the Proposed Development is estimated to be 48 months which would be considered short-term in nature when compared with a quarry or infrastructure project. In addition, the surrounding topographical context of the Site and the receptors (in this case the Dundalk Bay pNHA/ Ramsar site) need to be considered. Holman et al. (2024) note that topography and natural barriers (e.g. woodland) will reduce airborne concentrations due to impaction. As mentioned, parts of the Site and the

designated sites in question are directly adjacent to each other, however these are discrete elements of the development that would not be expected to result in large quantities of dust generation, given the targeted and short-term nature of their construction (i.e., establishment of a main site access road, construction of a bus stop and installation of proposed outfall and site drainage and discharge infrastructure). The main body of the Site is largely separated from Dundalk Bay by mature trees, gardens and dwellings.

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Considering the above, it is deemed that effects as a result of Construction Phase dust deposition at Dundalk Bay pNHA and Ramsar site would be **short-term, adverse and slight (not significant)** in nature, at the **local scale** i.e., the areas of the designated sites within 100m of the Proposed Development, in the worst-case scenario and in the absence of suitable mitigation.

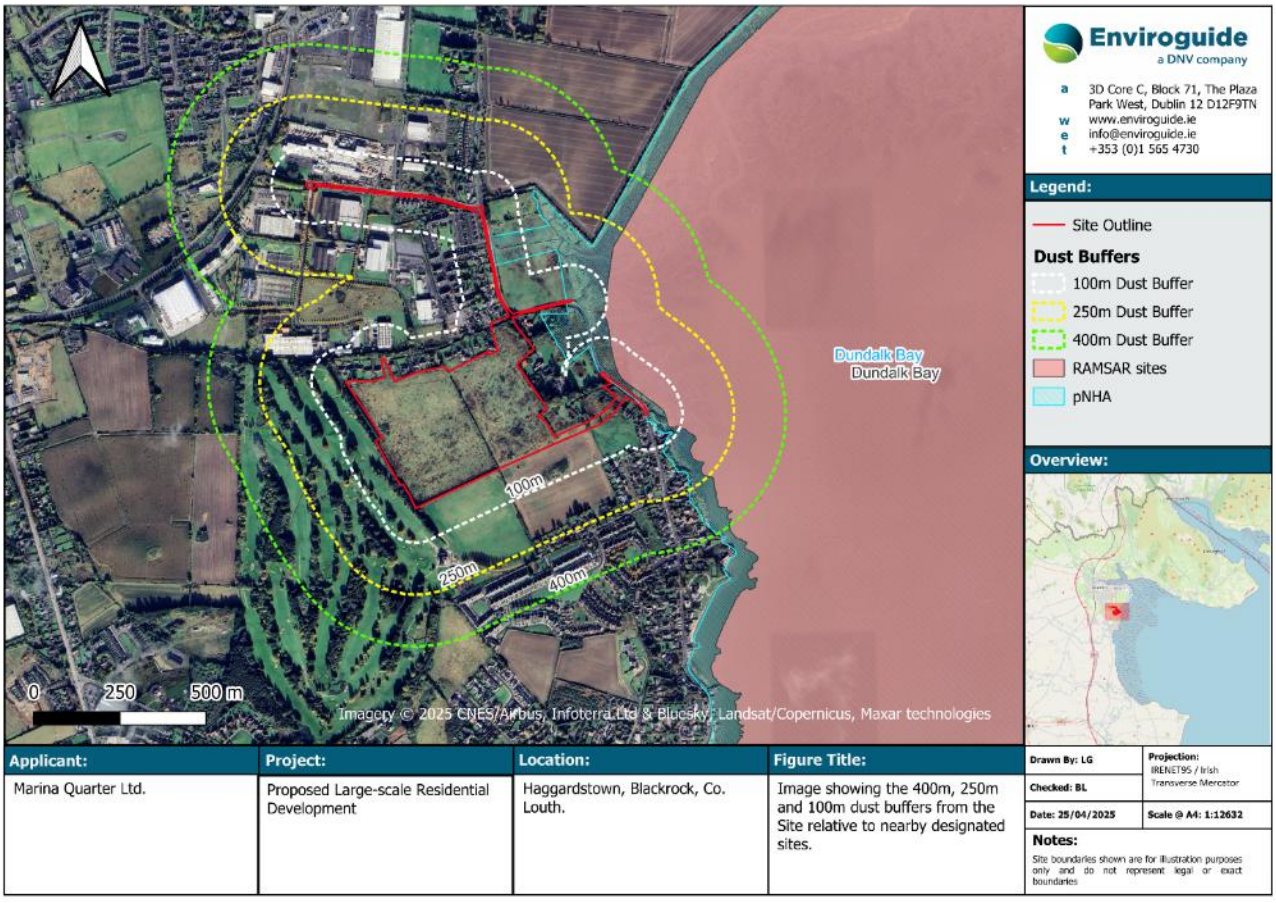

Figure 11-37 Image showing the 400m, 250m and 100m dust buffers from the Site relative to nearby designated sites.

11.8.2.8 Surface Water Related Effects

The installation of the surface water drainage infrastructure and headwall in the north-east of the Site, along the existing drainage channel that runs west-east along the northern boundary of the R172, could cause contaminated surface waters to discharge into the marginal habitats of Dundalk Bay (including pNHA and Ramsar site) in the absence of mitigation.

The eastern boundary of the Site, at the Proposed Development entrance off the R172, is an existing wetland with an unamend watercourse which discharges in a northerly direction parallel to the R172. Existing culverts have been constructed over the watercourse at the entrances to the dwellings along the R172. The installation of the proposed main access road in this marshy location, along with the potential construction of a bus stop along the eastern side of the R172, could result in contaminated surface waters entering Dundalk Bay pNHA/ Ramsar site in the absence of mitigation. These impacts are hard to quantify but in a worst-case scenario, they could lead to **short-term, adverse, significant** effects at the **local scale** i.e., the sections of the bay within the vicinity of the outfalls from the Site. These effects are addressed in detail in relation to the SAC/SPA within the NIS that accompanies this application under separate cover. Mitigation measures are provided in Section 11.9.3.1 below for clarity.

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11.8.3 Operational Phase

11.8.3.1 Surface Water Related Effects

The existing drainage channel located to the north-east of the main Site area will accommodate the main surface water discharge channel for the Proposed Development's operational drainage network. A proposed culvert links to this existing drainage channel which ultimately discharges into Dundalk Bay and to QI listed habitats for the SAC (1330 & 1410) to the immediate north-east of the R172. Operational surface waters could carry hydrocarbons, detergents and other harmful contaminants associated with an active residential development, into the bay via this drainage system and adversely affect ecological receptors such as the Dundalk Bay designated sites, in the absence of mitigation. These effects are hard to define but given the integrated SUDS measures that have been incorporated into the Proposed Development design, as per best practice, it is not envisaged that Operational Phase surface water has the potential to cause significant adverse effects to downstream sensitivities. As such, potential operational surface water effects are considered to be **permanent, neutral, imperceptible** in nature.

11.8.3.2 Disturbance of Wintering Waterbird Assemblages

The Proposed Development will result in an increase in population in the Blackrock/Dundalk area, with 502 residential units proposed. This equates to in an increase of 1,364 people in the area. An increase in local population could result in increased recreational usage of Dundalk Bay; resulting in knock on effects on the waterbirds that use this stretch of coastline as a result of associated increased recreational pressure.

The Dundalk Bay SPA supporting document (NPWS, 2011b) highlights a number of activities that are the source of disturbance impacts to waterbirds at the two subsites located along the stretch of coastline east of the Proposed Development, with both subsites subject to a moderate level of disturbance. For subsite 0Z495 Marsh South; 'Firing Range' was the main disturbance source for which a peak disturbance level was recorded. For 0Z496 Blackrock Corniche; 'Bathing & general beach recreation' and 'Wildfowling' elicited the highest disturbance scores.

The Proposed Development would not be expected to contribute significantly to the 'Firing Range' and 'Wildfowling' disturbance sources in the area, however, a contribution to the 'Bathing & general beach recreation' might be expected of a new residential development including families and children.

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Although there may be some contribution to a recreational usage of the bay as a result of a general increase in local population, it is not considered that this would be of a significant nature. There is no direct pedestrian access proposed between the Proposed Development and the bay containing the SPA. The R172 Blackrock Road provides a barrier between the Proposed Development and the shoreline, with habitats along the eastern side of the road comprising of a tall grassy verge and saltmarsh. New residents are far more likely to utilise more accessible/ suitable coastal areas for recreation to the north and south, rather than the saltmarshes and mudflats located directly to the east of the Site. Furthermore, there is a considerable portion of the centre of the Site zoned as open space, with a large park 'The Loakers Park' proposed. The majority of the recreational needs of the future residents would be expected to be met by this large landscaped open space provided 'on their doorstep'. This can be considered as embedded or 'designed-in' mitigation of any minor recreational pressure effects that might arise from the Proposed Development. As such, potential operational disturbance effects are considered to be **permanent, neutral, imperceptible** in nature.

11.8.4 Cumulative Effects

11.8.4.1 Existing Planning Permissions

Plans and projects in the surrounding area that could have the potential to result in cumulative impacts were reviewed from data sources including:

- An Bord Pleanála website, *http://www.pleanala.ie/* .
- EIA Portal, as provided by the Department of Housing, Planning and Local Government *https://housinggovie.maps.arcgis.com/apps/webappviewer/index.html?id=d7d5a3d48f104ecbb206e7e5f84b71f1*
- MyPlan.ie, as provided by the Department of Housing, Local Government and Heritage in conjunction with Irish Local Authorities. *https://myplan.ie/*

Any planning applications listed as granted or decision pending from within the last five years were assessed for their potential to act cumulatively with the Proposed Development and cause significant effects on nearby ecological receptors (Table 11-14). These developments are also listed in Chapter 19 of the EIAR. Long-term developments granted outside of this time period were also considered where applicable.

Potential cumulative effects are largely linked to loss of habitats to development and combined water quality degradation in Dundalk Bay in the absence of appropriate mitigation. With regard to the potential for likely significant effects at downstream European sites arising from foul water generated by the operation of the Proposed Development, this has been screened out in the AA Screening prepared for this application (Enviroguide, 2025a). It is noted that the Proposed Development in itself is unlikely to cause any likely significant effects to designated sites in Dundalk Bay as a result of operational foul water; due to there being sufficient remaining treatment capacity at the Dundalk WwTP (6,960 PE) as stated in the latest available AER for the facility (UÉ, 2023).

It is noted that UÉ are responsible for whether the receiving drainage infrastructure has the capacity to facilitate a proposed development and also for ensuring that public wastewater infrastructure is operating to a satisfactory level in terms of wastewater treatment. Once the receiving WwTP is operating effectively, there is no potential for likely significant cumulative effects involving foul water generated by the Proposed Development.

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Table 11-14 Assessment of potential in-combination effects of the Proposed Development and other developments in the vicinity of the Site.

Planning Ref	Description	Application Type	Decision	Comments
ABP 303891 and ABP 306503 24/102	142 no. apartments and associated site works	SHD	Permitted. EOD Permitted.	Under Construction. This permission expires 31st December 2026. No significant cumulative effects are envisaged. ABP confirmed an AA Screening was prepared for planning and screened out impacts to Dundalk Bay SAC/SPA.
ABP 303253 23/406	166 no. residential units, creche, completion of street network and link roads and associated site works	SHD	Permitted. EOD Permitted.	Under Construction. This permission expires 30th Sept 2025. No significant cumulative effects are envisaged. An NIS was prepared for planning which included mitigation measures to protect the water quality at Dundalk Bay SAC/SPA during the works
25/2	EOD of 304782 – an SHD comprising 483 no. units.	Extension of Duration	Refused 07/03/2025	This is located at the application Site. The previously granted development at the Site in question will be superseded by this current proposed application at the Site. This previous application was accompanied by a NIS which entailed the mitigation measures required to prevent any impacts to Dundalk Bay SAC/SPA. An NIS has been prepared for the current application and will accompany it under separate cover.
ABP 308135	257 no. residential units (163 no. houses, 94 no. apartments), childcare facility and associated site works	SHD	Granted 23/12/2020	Under construction. This permission will expire in Q1 2026. No significant cumulative effects are envisaged. An NIS was prepared for planning which included mitigation measures to protect the water quality at Dundalk Bay SAC/SPA during the works.
15/285 ABP 245454 20/981	4 blocks of student housing comprising 21 units, a total of 189 rooms, 127 room nursing home, training centre, parking and ancillary site works.		Permitted. EOD Permitted.	Under construction. This permission expires 24th January 2026. No significant cumulative effects are envisaged.
21/1032 ABP 311776	Construction of 29 residential units	Application	Granted 27/04/2023	Under Construction.

Planning Ref	Description	Application Type	Decision	Comments
	comprising 24 no. apartments in two blocks, 5 houses.			No significant cumulative effects are envisaged. An NIS was prepared for planning which included mitigation measures to protect the water quality at Dundalk Bay SAC/SPA during the works.
23/64, ABP 316990	Construction of 183 residential units and associated site works	LRD	Granted 03.05.2023	No significant cumulative effects are envisaged.
2360177	15 no. dwellings		Granted 06.06.2024	No significant cumulative effects are envisaged. AA Screening accompanied the application and screened out impacts to Dundalk Bay SAC/SPA.
2360113, ABP 318894	Demolition of dwelling with associated outbuildings for construction of 37 residential units with car parking, vehicular and pedestrian access along with all associated ancillary site works		Refused by LCC. Appealed. Decision Outstanding.	No significant cumulative effects are envisaged. AA Screening accompanied the application and screened out impacts to Dundalk Bay SAC/SPA.
22583	Resi development comprising c. 234 dwellings	S.34	Granted 17.02.2023	No significant cumulative effects are envisaged. An NIS was prepared for these planning applications which included mitigation measures to protect the water quality at Dundalk Bay SAC/SPA during the works.
22688		S.34	Granted 06.07.2023	
2360257		S.34	Granted 20.09.2023	
2460331		S.34	Granted 05.12.2024	No significant cumulative effects are envisaged. Planning Report from LCC notes no potential for significant effects on Dundalk Bay SAC/SPA.
2460512	Neighbourhood centre including retail, medical practice, pharmacy, café, dental and creche	S.34	Decision to Grant 10.03.2025	No significant cumulative effects are envisaged.
2460649	Resi development comprising 91 units	S.34	FI Requested 06.12.2024	No AA Screening submitted with the application and requested as FI by LCC. Significant cumulative effects are not envisaged. This development is located ca.1.8km to the south-west of the Proposed Development and separated by built land and green space.
2460737	Resi development comprising 80 units	S.34	FI Requested 24.01.2025	No AA Screening submitted with the application and not requested as FI by LCC. Significant cumulative effects are not envisaged. This development is located ca.1.8km to the south-west of the Proposed Development and separated by built land and green space.

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Planning Ref	Description	Application Type	Decision	Comments
2460785	Resi development comprising 85 units	S.34	FI Requested 07.02.2025	No AA Screening submitted with the application and requested as FI by LCC. Significant cumulative effects are not envisaged. This development is located ca.1.8km to the south-west of the Proposed Development and separated by built land and green space.
221000, ABP 318174	Demolition of derelict structure and construction of 39 dwellings and all associated site works	S.34	Granted 19.09.2024	No significant cumulative effects are envisaged. An NIS was prepared for this planning application which included mitigation measures to protect the water quality at Dundalk Bay SAC/SPA during the works.
2460033, ABP 321426	Construction of a discount supermarket with off-licence along with all associated site works	S.34	Granted by LCC. Appealed. Decision Outstanding.	No significant cumulative effects are envisaged. An NIS was prepared for this planning application which included mitigation measures to protect the water quality at Dundalk Bay SAC/SPA during the works.
2460037	Permission for the subdivision of ground floor unit 2 into two separated units	S.34	Granted 08.04.2024	No significant cumulative effects are envisaged. LCC concluded no likelihood of significant effects due to nature and small scale of the development.
2460114	Permission for A. The construction of a new material storage building (Area=2020m2, Height = 13.57m). B. Extension of yard to the West of the existing building. C. Removal of existing carpark area and replacement of same with construction of new carpark area to the North East and extension of carpark to the South East of Site. D. Alterations to site landscaping. E. All associated site development works	S.34	Granted 19.04.2024	No significant cumulative effects are envisaged. LCC concluded no likelihood of significant effects due to nature and small scale of the development.
2460675	Extension to Felda Health and Spa	Application	Decision Due Date 15.04.2025	No significant cumulative effects are envisaged. RFI has been requested by LCC, however the planners report concluded no likelihood of significant effects due to nature, location and scale of the development.
PT8LH154	Dundalk Active Travel Project along the	Part 8	Proceed 10.09.2024	No significant cumulative effects are envisaged. The works are focused along a

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Planning Ref	Description	Application Type	Decision	Comments
	Dublin Road from Xerox Junction (R132, R215 intersection) heading northwards to Riverside Walk for a length of c.2km			linear stretch of existing road and involve small-scale amendments. LCC Chief Executive Report confirms no likelihood of significant effects as detailed within the AA Screening Report for this Part 8 development.
PT8LH116	Inner Relief Road Active Travel Scheme to install high-quality segregated pedestrian and cycling infrastructure to improve safety and promote Active Travel along the R132 Inner Relief Road Dundalk from Xerox Junction (R132, R215 intersection) heading northwards to The Tain Bridge for a length of c.4km	Part 8	Proceed 10.09.2024	No significant cumulative effects are envisaged. The works are focused along a linear stretch of existing road to the north and north-west of the Proposed Development and the EcIA prepared noted minimal ecological sensitivities. LCC Chief Executive Report confirms no likelihood of significant effects as detailed within the AA Screening Report for this Part 8 development.
N/A	Uisce Éireann Coes Road Upgrade works to be completed by Q4 2029 – Q1 2030	Development by Statutory Undertaker	N/A	No significant cumulative effects are envisaged. It is noted that these upgrades are not within the purview or control of the applicant, and that UÉ are responsible for whether the receiving drainage infrastructure has the capacity to facilitate a proposed development. Once the receiving WwTP is operating effectively, there is no potential for likely significant cumulative effects involving foul water generated by the Proposed Development.
N/A	Dundalk Flood Relief Scheme	N/A	N/A	Limited information is available on the Dundalk FRS at this stage, however it is being subjected to AA, NIS and Ecological assessment based on the public consultation held in 2021 for the scheme (Floodinfo.ie website, 2025). Although unlikely to be significant there is the potential for cumulative effects on the surrounding environment involving the FRS and the Proposed Development in the absence of mitigation.
N/A	Dundalk Active Travel Project – Dublin Road (R132) Dundalk, Xerox Junction to Greengates	Part 8	Consultation Stage.	Consultation on Preliminary Design Proposals in Nov / Dec 2024. No significant cumulative effects are envisaged at this stage considering the works are to be focused along a linear stretch of existing road between Xerox junction and Greengates to the west of the Site.

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11.8.4.2 Relevant Policies and Plans

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The local policies and plans detailed above were reviewed and considered for possible in-combination effects with the Proposed Development. Each of these plans has undergone AA, and where potential for likely significant effects has been identified (e.g., in the case of the Louth County Development Plan), an NIS has been prepared which identifies appropriate mitigation. As such, it is considered that the plans and policies listed will not result in in-combination effects with the Proposed Development. The Louth County Development Plan 2021-2027 has directly addressed the protection of European Sites and biodiversity through specific objectives. The above listed plans are not being relied upon to rule out likely significant effects on European sites.

11.8.4.3 Summary of Cumulative Effects

The Proposed development will act in combination with other developments in the Blackrock area; through the general loss of semi-natural habitats to development. The Site and other agricultural lands in the surrounding area are zoned for residential development and so a future land-use change is to be expected. The Site itself was maintained under arable crop production until recently, and so the loss of the subsequent unmanaged rank grassland that has developed is not considered a significant loss of natural habitats. The Proposed Development has incorporated the important vegetative boundary habitat that surrounds and crosses the Site into its landscape design and has included areas of new meadow and shrub planting; and so, habitat connectivity with the surrounding lands (particularly Dundalk Golf Course to the west) will be maintained for local birds, bats, small mammals and pollinators/insects into the future. Therefore overall, it is not envisaged that the Proposed Development will act cumulatively with any other development to significantly affect local ecological receptors.

However, limited information is available on the Dundalk Flood Relief Scheme (FRS) at this stage. The project timeline given by the OPW indicates that the planning and development consent stage will run from Q3 2024 to end Q2 2026. It is noted that the scheme is being subjected to AA, NIS and Ecological assessment based on the public consultation held in 2021 for the scheme (Floodinfo.ie website, 2025), however these assessments and their results are not yet available on the FRS website at time of writing. Although unlikely to be significant given the lack of significant effects envisaged as a result of the Proposed Development, in taking a precautionary approach and given the lack of information available, there could be the potential for cumulative effects on the surrounding environment involving the FRS and the Proposed Development in the absence of mitigation e.g., through wintering bird disturbance along the coast should the construction of coastal flood defences be included in the FRS.

The scale and nature of these effects are difficult to describe given the lack of information available for the Dundalk FRS, however, the contribution to cumulative effects of disturbance to wintering birds along the coast associated with the Proposed Development would be short-term in nature given the nature of the works proposed along the R172 (bus stop installation and service connections), regardless of the duration of the Dundalk FRS works. In the worst-case scenario, the cumulative disturbance effect could therefore be moderate (not significant) to wintering birds should they be present, although short-lived.

The mitigation measures detailed in this Chapter and the NIS (Enviroguide, 2025a) will ensure that the Proposed Development does not contribute to any significant cumulative effects on the environment, including those associated with the Dundalk FRS if they occur.

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11.8.5 Summary

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

Table 11-15 Summary of Construction Phase Likely Significant Effects in the absence of mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Injury/ mortality to small mammals and breeding birds	Adverse	Significant	Local Scale	Likely	Short-term	Direct
Loss of habitat/ connectivity for small mammals and breeding birds	Adverse	Moderate (not significant)	Local Scale	Likely	Permanent	Direct
Noise disturbance to small mammals and breeding birds	Adverse	Slight (not significant)	Local Scale	Likely	Short-term	Direct
Commuting/ foraging habitat loss for bats	Adverse	Slight (not significant)	Local Scale	Likely	Permanent	Direct
Noise/ visual disturbance to wintering birds	Adverse	Moderate (not significant)	Local Scale	Likely	Short-term	Direct/ Cumulative
Injury/ mortality to Common frog and Lizard	Adverse	Significant	Local Scale	Likely	Short-term	Direct
Dust effects on Dundalk Bay pNHA and Ramsar Site	Adverse	Slight (not significant)	Local Scale (within 100m of the Proposed Development)	Possible	Short-term	Direct
Surface water quality reduction in downstream Dundalk Bay pNHA and Ramsar Site.	Adverse	Significant	Local Scale (the sections of the bay within the vicinity of the outfalls from the Site)	Possible	Short-term	Direct

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

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Table 11-16 Summary of Operational Phase Likely Significant Effects in the absence of mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Operational surface water effects downstream of the Proposed Development	Neutral	Imperceptible	Local Scale (the sections of the bay within the vicinity of the outfalls from the Site)	Likely	Permanent	Direct
Recreational Disturbance to Wintering Birds	Neutral	Imperceptible	Local Scale	Unlikely	Permanent	Direct

11.9 Mitigation Measures

11.9.1 Incorporated Design Mitigation

The Proposed Development includes several embedded design features that may act to avoid or mitigate negative effects that would likely occur in the absence of these features. However, as opposed to typical mitigation measures, the implementation of these features is integral to the design and completion of the Proposed Development, and as such the impact assessments are performed with consideration of these features as integrated parts of the Proposed Development. All considered embedded design features that may act to mitigate negative impacts on local ecology and environment are listed in Table 11-17.

Table 11-17 Embedded design features and their potential to act to avoid or mitigate negative effects on the local ecology and environment.

Embedded Design Feature	Avoidance / Mitigation Potential
SuDS: ▪ Bioretention areas ▪ Tree pits & unlined tree pit trenches ▪ Unlined permeable paving ▪ Filter drains ▪ Detention basins ▪ Attenuation tanks ▪ Petrol/oil separators ▪ Flow Control Devices ▪ Rainwater harvesting at the creche	The SUDS features included in the project design will ensure the surface water discharge from the Proposed Development is filtered and reduced to greenfield runoff rates. These features will be implemented as part of the surface water drainage design.
Landscape Design: ▪ Retention of majority of existing hedgerows	The planting of native and non-native tree/shrub species through the Site will provide new habitat and an increase in tree cover across what is currently an open agricultural site.

▪ Additional native shrub and tree planting throughout.	
Lighting Design: ▪ Bat sensitive lighting approach designed in coordination with an Ecologist.	The scheme has been designed so that lux levels along the vegetated boundaries of the Site have been minimised and limited to 0-1.5 lux and levels along the internal retained hedgerows minimised to 0-3 lux for the most part with light-spill of 5 lux occurring in limited instances where proposed pathways intersect the hedgerow. The luminaires selected are also of a warm lighting temperature of 3000k to minimise their impact to bats and other wildlife.

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11.9.2 Demolition and Construction Phase Mitigation

11.9.2.1 Mitigation 1: Robust Construction Environmental Management Plan (CEMP)

A CEMP based on the mitigation commitments presented in the various EIAR Chapters will be prepared for the Construction Phase.

A planning stage CMP has been prepared for submission with the planning application (DOBA, 2025b), which entails an Environmental Management Section. This outline document provides a framework for the contractor to develop further as the project moves into the Construction Phase.

The Construction Phase CEMP will collate and set out the environmental control measures required to minimise, and control adverse environmental impacts associated with the Proposed Development. It is intended that the CEMP will be a live document, which will capture all Construction Phase environmental mitigation measures included within the EIAR, NIS and any other measures which become apparent through the EIA consultation process and/or are prescribed through planning conditions etc. The CEMP will include enabling and decommissioning works.

- All construction and operations are to be carefully planned and implemented with a series of environmental management and control procedures. The CEMP will detail the general pollution prevention principles and measures which are to be implemented, water and sediment management measures to prevent pollution during the construction phase and measures to ensure the potential for pollution fuel, oil, chemicals and other construction materials is minimised.
- **The Contractor shall engage a suitably experienced ecologist, the Project Ecologist,** who will be a full member of a relevant professional institute such as CIEEM, have relevant experience in the management of ecological constraints during construction. The Project Ecologist shall be appointed sufficiently in advance of construction to arrange for any mitigation requirements to be incorporated into the CEMP and any site-specific method statements.
- In advance of commencement of the Construction Phase, the disused existing onsite well, securely located within a pump house in the north-western portion of the Site will be fully decommissioned by an experienced borehole specialist in accordance with relevant guidelines, *'Good practice for decommissioning redundant boreholes and wells'* (UK Environment Agency, 2012). This will ensure that redundant well is made both safe and structurally stable and will be suitably backfilled or sealed to prevent groundwater pollution and flow of water between different aquifer units.
- The construction management of the Site will take account of the recommendations of the Construction Industry Research and Information Association (CIRIA) guides '*Control*

of Water Pollution from Construction Sites' and *'Groundwater control - design and practice'* to minimise as far as possible the risk of pollution.

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- The Contractor shall take all necessary precautions **to prevent pollution or siltation of surface or groundwaters** from construction activities. The following management, control and mitigation measures will therefore be implemented:
    - Any groundwater temporarily dewatered during the construction of the attenuation basin, wastewater pumping station and any deep building foundations in localised areas in the eastern portion of the site will be treated via the installation of a temporary *in-situ* water treatment system;
    - This system will be designed and sized to ensure that all pumped groundwater water is treated prior to discharge to a selected onsite location (via a temporary soakaway).
    - The Contractor will be required to provide a site-specific dewatering plan, clearly setting out proposed excavation methodology, estimated dewatering rates, details of the proposed treatment system, and discharge location.
    - Surface water attenuation measures are to be designed which will not be overwhelmed by one-off adverse precipitation events.
    - Where practical, cut-off V drains will be utilised to divert water entering site and reduce the amount of water to be managed on-site. Attention will be given to the maintenance and protection of all drains and temporary channels to minimise scour and the mobilisation of suspended solids (e.g. lining with hessian or clean stone, check dams, silt fencing etc.).
    - Mud will be controlled at entry and exits to the site using wheel washes and/or road sweepers, and tools and plant will be washed out and cleaned in designated areas. Wheel washings will be contained and treated prior to discharge.
    - Runoff will be directed to and intercepted by temporary settlement lagoons. The size of the settlement lagoon will be determined from predicted flow rates and retention times based on sediment particle size and density.
    - Neither groundwater nor surface water runoff from the working areas will be permitted to discharge directly to the environment. Runoff generated within the site during construction will be filtered and treated to remove hydrocarbons and sediment. Total Suspended Solids (TSS), pH/EC and colour will be monitored daily and outlets from sedimentation ponds will incorporate a turbidity monitor with alarm at a high level.
    - Subject to consent, water that is unpolluted, aside from its silt content, may be pumped out over adjacent vegetated ground, where appropriate, with consideration given to groundwater level and saturation, wildlife importance and proximity to drainage channels.
    - In the event of surface water failing to meet the required standards water will be recirculated to the inlet of the sediment pond to provide further time for settlement. A penstock will be provided on the outlet from the sediment pond to control discharge from the site.

- The performance of the surface water drainage network will be maintained and monitored throughout the construction of the proposed development, noting that the proposed storm system will include permanent hydrocarbon separators.
- Where the Contractor utilises pumping to drain works areas, a back-up pump and generator must be provided on site for use in the event of the primary pump failing.
- Procedures are to be put in place to ensure the identification, remediation and correct reporting of any silt or other pollution incidents that may occur.

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- During localised construction works around the northern and eastern drainage channels (to facilitate the installation of the proposed 2no. outfalls/headwalls), any minor volumes of stripped soils will be stockpiled a minimum distance of 10m from each channel and will be appropriately covered. A temporary stormwater management system will be implemented by the Contractor.
- Areas will be designated where stockpiles will be established in order to facilitate the efficient transfers of material within the site. Stockpiles will be stabilised as soon as possible (e.g. sealed, closed over, seeded or covered using geotextile mats), and bunded by earth or silt fences at the toe to intercept silt-laden runoff during rainfall events.
- Appropriate working practices to avoid the repetitive handling of excavated substrates, minimise vehicle movements, limit the size, number and frequency of stockpiles, reduce the compaction and erosion of soils etc., and control the generation of dust. The implementation of a construction traffic management plan and controls on the locations of plant and materials will minimise the compaction and erosion of soil. Excavation is to be restricted during high winds and heavy rainfall to minimise dust generation and contaminated surface runoff.
- Excavated materials will be inspected for signs of possible contamination, such as staining or strong odours. Should any be noticed, substrates are to be segregated and samples analysed for contaminants to determine an appropriate means of disposal to licensed/permitted facilities appropriate for the waste classification.
- In order **to prevent any potential surface water/groundwater impacts via. release of hydrocarbon/chemical contaminants** the following standard measures will be implemented:
  - The Contractor will ensure all site personnel are trained in the handling of materials, the sensitive nature of the receiving environment, the drainage system and the consequences of accidental spillages.
  - Fuels, lubricants and hydraulic fluids for equipment used on the construction site, as well as any solvents, oils, and paints, will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to best codes of practice;
  - Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the proposed development for disposal or recycling;
  - Any spillage of fuels, lubricants or hydraulic oils will be immediately contained and the contaminated soil removed from the proposed development and properly disposed of;

- All site vehicles used will be refuelled in bunded and adequately sealed and covered areas in the construction compound area.
- Strict supervision of contractors will be adhered to in order to ensure that all plant and equipment utilised on-site is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the site. This will minimise the risk of groundwater becoming contaminated through site activity.
- All oil stored on site for construction vehicles will be kept in a locked and bunded area;
- Generators, pumps and similar plant will be placed on drip-trays to prevent contamination;
- All site vehicles used will be refuelled in bunded areas;
- All temporary construction fuel tanks will also be located in a suitably bunded area and all tanks will be double skinned. Relevant Material Safety Data Sheets along with oil absorbent materials will be kept on site in close proximity to any fuel storage tanks or bowsers during proposed site development works; and,
- All fuel/oil deliveries to on-site oil storage tanks will be supervised, and records will be kept of delivery dates and volumes.
- Fixed plant shall be self-bunded; mobile plant shall be in good working order, kept clean, fitted with drip trays where appropriate and subject to regular inspection. Drip trays will be covered, emptied regularly as required and disposed of off-site having regard for local waste management legislation.
- Spill kits and oil absorbent material shall be carried with mobile plant and located at vulnerable locations around the site to reduce the risk of spillages entering the sub-surface or groundwater environment; booms shall be held on-site for works near drains or dewatering points.
- Procedures are to be put in place to ensure the identification, remediation and correct reporting of any fuel, oil, chemical or other pollution incidents that may occur.

- In order **to prevent any potential surface water/groundwater impacts via. release of cementitious materials** the following measures will be implemented:
  - No mixing of concrete will be carried out on site. The measures detailed below will be employed where poured concrete is being used in the construction process;
  - The production, transport and placement of all cementitious materials will be strictly planned and supervised. Site batching/production of concrete will not be carried out on site and therefore these aspects will not pose a risk to the waterbodies present, namely any temporarily exposed groundwater, or local drainage channels, wetlands or Dundalk Bay;
  - Shutters will be designed to prevent failure. Grout loss will be prevented from shuttered pours by ensuring that all joints between panels achieve a close fit or that they are sealed;
  - Any spillages will be cleaned up and disposed of correctly;

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- Where concrete is to be placed by means of a skip, the opening gate of the delivery chute will be securely fastened to prevent accidental opening;
- Where possible, concrete skips, pumps and machine buckets will be prevented from slewing over water when placing concrete; and,
- Surplus concrete will be returned to batch plant after completion of a pour.
- The Contractor will dispose of all alkaline wastewaters and contaminated stormwater offsite having regard for local waste management legislation.

- The Contractor 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.
- 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).
- All material to be disposed of off-site to a facility licensed having regard for local waste management legislation. Where material is to be stockpiled on site prior to disposal, the Contractor will control all run-off to prevent contamination of surrounding watercourses (via silt-fencing etc.).
- The CEMP will include an Emergency Response Plan (ERP) based on the Contractor's Risk Assessment, to be reviewed and approved by the Project Ecologist. The ERP will include (but not limited to):
  - Training of relevant staff, including cover staff, in the implementation of the ERP and the use of spill kits;
  - Procedures to be undertaken in the event of the release of any sediment into a watercourse, or any spillage of chemicals, fuel, oil or other hazardous materials or wastes;
  - Procedures to be undertaken in the event of any non-compliance incidents with any permit or licence, or other such risks that could lead to a pollution incident, including flood risks;
  - The number, specification and location of all spill kits which shall be carried/kept on the site;
  - Information on clean-up and reporting procedures; etc.
- While it is expected that the site drainage system will be installed and commissioned early in the site construction programme and will therefore be operational for much of the Construction Phase, there will be a period of the construction phase during which the site drainage system will not be operational. The CEMP is required to cover this period and to deal with other issues during the Construction Phase.
- The lighting of the Construction Site during the hours of darkness will be limited to the minimum required for security purposes. Lights will be carefully directed only where they are required e.g., gates, plant, equipment etc. Light-spill will be controlled and lights will not be allowed to illuminate the various field boundary hedgerows and treelines at the Site. The contractor will ensure that a dark corridor is provided for commuting/ foraging

bats and other wildlife to move around the margins of the Site and the retained north-south central hedgerow during the night, for the duration of the Construction Phase.

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11.9.2.2 Mitigation 2: Pre-Construction Ecology Walkover

A suitably qualified Ecologist will be instructed to carry out an ecological walkover of the Site **a minimum of one month prior to the commencement of works** (including enabling works). These pre-commencement surveys will confirm whether any changes in the status of flora and fauna have occurred at or near the Site since the previous surveys were conducted and will advise further mitigation measures etc., as required. The results of these pre-commencement surveys will be provided to Louth CoCo prior to commencement of works on Site.

11.9.2.3 Mitigation 3: Waterbird Sensitive Construction Program

The CEMP will include a section setting out the construction programme and will include all the environmental control measures required to avoid disturbance to waterbird species, as set out below. The CEMP will also set out general measures to manage noise and vibration from construction activities that may be employed at the Site.

All rock breaking, blasting and other high-intensity construction activities as may be required within the site are to be programmed to take place outside the wintering season for coastal waterbird species (i.e. to **take place between May and September**) to ensure that disturbance to wintering species is avoided.

All discrete elements of Site construction close to the shore of Dundalk Bay (establishment of the main site access, construction of the bus stop and installation of proposed outfall and site drainage and discharge infrastructure in the north-east) are to be programmed to take place outside the wintering season for coastal waterbird species (i.e. to **take place between May and September**) to ensure that disturbance to wintering species is avoided.

It is noted that the above timing of works must also take into account the breeding bird season, and the breeding season for Common Frog, particularly during the works proposed as part of installing the main entrance to the Site. The works within this marshy, scrubby area of the Site will need to be conducted in a manner that minimise impacts to both breeding and wintering birds, as well as Common Frogs. For this Site, given the various ecological constraints, the preferred time for vegetation removal, site clearance and the works within the marshy area at the proposed main entrance, is **within the months of September and October** as detailed in Section 11.9.3.4 below.

11.9.2.4 Mitigation 4: Timing of Vegetation Clearance

To ensure compliance with the Wildlife Act 2000 as amended, the removal of areas of vegetation will not take place within the nesting bird season (March 1st to August 31st inclusive) to ensure that no significant impacts (i.e., nest/egg destruction, harm to juvenile birds) occur as a result of the Proposed Development. Where any removal of vegetation within this period is deemed unavoidable, a qualified ecologist will be instructed to survey the vegetation prior to any removal taking place. Should nesting birds be found, then the area of habitat in question will be noted and suitably protected until the ecologist confirms the young have fledged.

Table 11-18 provides guidance for when vegetation clearance is permissible. Information sources include The Herpetological Society of Ireland, British Hedgehog Preservation Society's *Hedgehogs and Development* and *The Wildlife (Amendment) Act, 2000*.

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The preferred period for vegetation clearance is **within the months of September and October**. Vegetation will be removed in sections working in a consistent direction to prevent entrapment of protected fauna potentially present (e.g., Hedgehog). Where this seasonal restriction cannot be observed, a check for active roosts and nests, as well as signs of amphibians and Lizards, will be carried out immediately prior to any Site clearance by an appropriately qualified ecologist and repeated as required to ensure compliance with legislative requirements.

Table 11-18 Seasonal restrictions on habitat/vegetation removal. Red boxes indicate periods when clearance/works are not permissible.

Ecological Feature	January	February	March	April	May	June	July	August	September	October	November	December
Breeding Birds	Vegetation clearance permissible **(Sept - Feb)**		Nesting bird season. No clearance of vegetation unless confirmed to be devoid of nesting birds by an ecologist. **(Mar - Aug)**						Vegetation clearance permissible **(Sept - Feb)**			
Bats	Tree felling to be avoided unless confirmed to be devoid of bats by an ecologist. **(Jan - Aug)**								Preferred period for tree-felling **(Sep - Oct)**		Tree felling to be avoided unless confirmed to be devoid of bats by an ecologist **(Nov - Dec)**	
Hibernating mammals (e.g., Hedgehog, Pygmy Shrew)	Mammal hibernation season. No clearance of vegetation unless confirmed to be devoid of hibernating mammals by an ecologist. **(Jan - Mar)**			Vegetation clearance permissible **(Apr - Oct)**							Mammal hibernation season. No clearance of vegetation unless confirmed to be devoid of hibernating mammals by an ecologist. **(Nov - Dec)**	

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Ecological Feature	January	February	March	April	May	June	July	August	September	October	November	December
Amphibians	Habitat clearance permissible **(Jan - Feb)**		Amphibian breeding season (estimated). No habitat destruction (Ponds, drainage ditches) unless confirmed to be devoid of tadpoles and other signs of amphibians. **(Mar - June)**				Habitat clearance permissible if devoid of tadpoles and signs of amphibians **(July - Dec)**					
Common Lizard	Lizard Hibernation Season No habitat clearance permissible unless confirmed to be devoid of hibernating lizard by an ecologist. **(November – March)**		Active period Habitat (Scrub, old stone walls) clearance permissible **(Early March - October)**									Lizard Hibernation Season No habitat clearance permissible unless confirmed to be devoid of hibernating lizard by an ecologist. **(November – March)**

11.9.2.5 Mitigation 5: Invasive Species and Biosecurity Measures

No species of plant listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 were recorded at the Site during site surveys. As such, no significant risk of impacts relating to the spread of invasive plant species exists at the Site. Nevertheless, efforts should be made to remove such plants and minimise any risk of spread offsite. The potential exists for site operatives and machinery to result in the inadvertent spread of non-native plant species on site, should clothing, plant and machinery be contaminated with seed or fragments of such species prior to entry on site.

Transport Infrastructure Ireland (2020) guidance '*The Management of Invasive Alien Plant Species on National Roads – Technical Guidance*' will be consulted with regards the treatment, removal and disposal of invasive flora at the Site.

Biosecurity Measures

The following measures will be adhered to, to avoid the introduction or dissemination of invasive species to and from the Site of the Proposed Development site.

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For the Construction Phase the contractor will prepare a project specific IAPS standard operating procedure document, in advance of work commencement. The document should be prepared by an IAPS specialist and should cover the bio-security measures to be taken, including the maintenance of records, to screen for the introduction of IAPS onsite, and to enable their tracing if such an introduction occurs; and to ensure no transmission of IAPS offsite. These measures to include:

- Validation that all machinery / vehicles are free of IAPS, prior to their first introduction to site.
- Certification from the suppliers that all imported soils and other fill/landscaping materials are free of IAPS
- A regular schedule of site inspections across the IAPS growing seasons, for the duration of the construction works programme.
- Validation that all machinery / vehicles are free of IAPS, prior to leaving the Site.
- Appropriate and effective site biosecurity hygiene to ensure that no IAPS are transmitted off-site for the duration of the Proposed Works.

11.9.2.6 Mitigation 6: Protection of Small Mammals

As best-practise all construction-related rubbish on site e.g., plastic sheeting, netting etc. will be kept in a designated area and kept off ground level so as to prevent small mammals such as Hedgehogs from entrapment and death.

Trenches/pits must be either covered at the end of each working day or include a means of escape for any animal falling in e.g., a plank or objects placed in the corner of an excavation. (Species such as badgers will continue to use established paths across a site even when construction work has started).

Any temporarily exposed open pipe system will be capped in such a way as to prevent animals gaining access as may happen when contractors are off site.

11.9.2.7 Mitigation 7: Tree Protection

Protective tree fencing in compliance with BS 5837:2012 *'Trees in relation to design, demolition and construction – Recommendations'* will be erected prior to any Construction works being undertaken to prevent damage to the canopy and root protection areas of existing trees at the Site. The fencing should be signed off by a qualified arborist prior to Construction to ensure it has been properly erected. No ground clearance, earthworks, stock-piling or machinery movement will be undertaken within these areas.

The project Arborist will be instructed prior to commencement on Site; to ensure that appropriate tree protection measures are in place. These measures will entail robust fencing around the root protection zones of all trees and hedgerows being retained on Site.

An adequate level of signage will also be provided to highlight 'no work zones' and ensure that Site creep and damage to retained habitats does not occur. The vegetated margins of the Site and the main central north-south hedgerow are important habitats for birds, small mammals and bats at the

Site. These must be sufficiently protected for the duration of the Construction Phase to ensure they remain effective habitat corridors. The project Arborist, the project Ecologist and the Site Manager will work together to ensure these habitats are protected for the duration of the project.

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11.9.2.8 Mitigation 8: Noise Control

Short-term increases in disturbance levels as a direct result of human activity and through increased generation of noise during the Construction Phase can have a range of impacts depending upon the sensitivity of the ecological receptor, the nature and duration of the disturbance and its timing.

Noise generated during the Construction Phase of the Proposed Development could cause temporary disturbance to a number of faunal species in the vicinity of the Site of the Proposed Development. To minimise this disturbance, the following measures will be implemented:

- Selection of plant with low inherent potential for generating noise.
- Siting of plant as far away from sensitive receptors as permitted by site constraints.
- Avoidance of unnecessary revving of engines and switch off plant items when not required.
- Keep plant machinery and vehicles adequately maintained and serviced.
- Proper balancing of plant items with rotating parts.
- Keep internal routes well maintained and avoid steep gradients.
- Minimise drop heights for materials or ensure a resilient material underlies.
- Where noise originates from resonating body panels and cover plates, additional stiffening ribs or materials should be safely applied where appropriate.
- Limiting the hours during which site activities likely to create high levels of noise are permitted.
- Appointing a site representative responsible for matters relating to noise.
- Monitoring typical levels of noise during critical periods and at sensitive locations.

These measures will ensure that any noise disturbance to nesting birds or any other fauna species in the vicinity of the Site of the Proposed Development will be reduced to a minimum. Residual localised noise at the Site will be present during the construction works, however birds and mammals will move away from the source of noise disturbance and avoid the Site during noisy activities.

11.9.2.9 Mitigation 9: Hedgehog Highways

By creating a number of separate private dwellings and gardens at a Site, the land becomes fragmented and largely inaccessible to species such as Hedgehog, which like to roam each night in search of food (garden pests e.g., slugs). This can easily be fixed by ensuring that the boundaries and barriers within and surrounding the Site i.e., garden fencing, railings and gates, are permeable for Hedgehogs. This can be achieved by:

- the use of fence panels with 13 x 13 cm holes at ground level (Hedgehog holes),
- leaving a sufficient gap beneath gates and leaving brick spaces at the base of brick walls.

A variety of fence suppliers stock specific hedgehog-friendly fencing options, which can be easily incorporated at little or no additional cost.

Hedgehog highways will be incorporated into the backgarden fences of the various dwellings at the Site of the Proposed Development, as well as the fencing along the vegetated outer boundaries of the Site. This will ensure habitat fragmentation for hedgehogs at the Site is minimised and will ensure habitat connectivity between the Site and the golf course and lands surrounding the Site is maintained.

Including details of hedgehog-friendly features in the new homeowner's welcome pack will raise awareness and prevent homeowners from reversing these features, for instance blocking fence holes.

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Figure 11-38. Examples of Hedgehog Highways that could be incorporated into the Proposed Development.

11.9.2.10 Mitigation 10: Protection of Common Frog

Based on the recommendations made within the Amphibian Survey Report (Gandola 2025) in Appendix 11.3, to mitigate the against colonisation of the construction zone by amphibians, excavation works will begin after the dispersal period of the current year's cohort of young amphibians (i.e, **excavation works will be completed between the period of September and early Februar**y).

A suitably qualified and licenced Ecological Clerk of Works will be retained for the duration of the construction phase of the development.

The contractor will ensure that the wetland habitats and any temporary waterlogged features are not inadvertently allowed to offer suitable breeding habitat for frogs for prolonged periods of times. This includes leaving heavy machinery tracks and typical construction endeavours (e.g., percolation test pits, excavations for footings etc.) uncovered. Therefore, all excavation works will be completed as soon is feasible, or at least covered with sheeting to prevent access by wildlife. Where possible, heavy machine depressions will be smoothed out. The specific aim of appropriate mitigation at this Site will be to ensure that the construction works do not make the Site more favourable to any amphibian populations that may exist either on-site or on the adjoining golf course.

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If feasible, and deemed advisable by the Ecological Clerk of Works (ECoW) based on site conditions at the time of works, an appropriate exclusion barrier to prevent entry and divert any amphibians away from the works area within the marshy area may also offer increased certainty that the site retains an "amphibian free" status. Any installed fencing will be accompanied by an accompanying precautionary survey by the ECoW to ensure that amphibians are not present prior to the initiation of clearance works. This ensures animals will not be locked into the works area.

In the event that amphibians (of any life stage) are detected, they will be captured and translocated outside of the Site's redline boundary by the ECoW. Immature or adult frogs or newts will be moved beyond the exclusion fence whereas tadpoles and spawn will be translocated to the nearest suitable waterbody within 1-2km distance. The area of wetland marsh adjacent and to the north of the Site's eastern access road will be sufficient.

If any habitats, waterbody or flooded depressions need to be drained or pumped to facilitate works, it will be done under the supervision of a suitably experienced ecologist/ ECoW to ensure that no amphibians or their larvae are present before the habitat is infilled or otherwise destroyed. Mechanical pumps will be fitted with a fine mesh screen in order to negate the chances of frogs or their larvae being sucked into the impeller mechanism. All capture and translocation works should the be required will be undertaken immediately in advance of site clearance works and under specific licence from National Parks and Wildlife Service.

11.9.3 Operational Phase Mitigation

There is no Operational Phase mitigation required as part of the Proposed Development.

11.9.4 Enhancement Measures

11.9.4.1 Log-pile Hibernacula for Invertebrates and fauna

Piles of logs and other woody vegetation arising from the proposed tree felling will be left in suitable secluded corners/margins of the Site as advised by the Project Ecologist; to provide habitat for Common Frog, Lizard and small mammals such as Hedgehog and Pygmy Shrew. These areas of woody debris will also benefit local invertebrate species through provision of shelter and food sources.

11.9.4.2 Planting and Landscaping

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Due to the sensitive nature of the Site's location in close proximity to Dundalk Bay SAC, it is recommended that commercially available wildflower seed not be used to seed wildflower meadow areas proposed at the Site.

In cases such as this, the wildflower areas will be allowed to naturally reseed and regenerate through the local seed bank; via re-use of the existing topsoils at the Site and natural colonisation by local wildflower seed. Alternatively, local wildflower seed can be harvested from the locality and used in the landscaping of the Site. The seed in and preparation of wildflower areas at the Site will be advised by a suitable qualified Ecologist as part of a Biodiversity Monitoring Plan to be prepared for the Site.

11.9.4.3 Low-intervention Hedgerow Management Approach

The existing hedgerows proposed to be retained within the Site and along its outer margins, along with any reinstated hedgerows, will be managed in a way that maximises the ecological value they provide at the Site, with habitat connectivity maintained along the margins of the Site; connecting it in with the wider field boundary network in the area.

This connectivity is vital for wildlife such as birds, bats, mammals and insect pollinators in a human landscape such as that which will be provided by the Proposed Development. Additionally, by managing hedgerows and treelines in a more natural way, they will provide more in terms of biodiversity; through increased plant diversity, increase provision of food resources and higher quality shelter to wildlife inhabiting and commuting through the area.

For the hedgerows running along the outer margins of the Site, the following management approach is proposed to maximise their biodiversity value and offset the loss of any sections of existing hedgerows at the Site. Should planning be granted, a **Hedgerow Management Plan** will be prepared by a suitably qualified ecologist; for the hedgerows at the Site. This management plan will include the following, with a focus on maintaining these hedges in as natural a state as possible to maximise their ecological value:

- The hedgerows located along the outer boundaries of the Site will, as much as is practicable, link up with each other. The provision of an almost continuous vegetative margin around the Site; through planted native hedgerows and trees, will maintain habitat connectivity with the surrounding environment.
- Hedgerows will be maintained with a **natural meadow strip of 1-2m** at their base wherever possible. Hedges with plenty of naturally occurring flowers and grasses at the base support will provide higher quality habitat for local wildlife using the hedges.
- The 1-2m strip at the base of the hedgerow will be cut on a reduced mowing regime to encourage wildflower growth and maximise the value of the hedgerow for pollinators. A **two-cut management approach** is ideal for suppressing coarse grasses and encouraging wildflowers. Cut the hedgerow basal strip **once during February and March** (this is before most verge plants flower and it will not disturb ground-nesting birds). Cut the verge **once again during September and October** (this slightly later cutting date allows plants that were cut earlier in the year time to grow and set seed).

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- N.B. Raising the cutter bar on the back cut will lower the risk to amphibians, reptiles and small mammals.
- Hedgerows, where possible, will be allowed to reach at least 2.5m in height, and should be **trimmed in an A-shape**; maintaining a wider base to compliment the natural meadow strip at their base. Existing hedgerows being retained at the Site that are taller than 2.5m should be retained as is and pruned lightly as required.
- Where hedgerow trimming needs to occur delay trimming as late as possible – until **January and February** as the surviving berry crop will provide valuable food for wildlife. The earlier this is cut; the less food will be available to help birds and other wildlife survive through the winter. Any hedgerow cutting will be done outside of the nesting season and due consideration of the Wildlife Act 1976 (as amended) needs to be taken.
- Where possible, cut these outer boundary hedgerows on a minimum **3-year cycle** (cutting annually stops the hedgerow flowering and fruiting), and cut in rotation rather than all at once - this will ensure some areas of hedgerow will always flower (Blackthorn in March, Hawthorn in May etc.).
- Where they occur naturally, Bramble and Ivy will be allowed grow in hedgerows, as they provide key nectar and pollen sources in summer and autumn.

Methods to Avoid

Hedgerows will not be over-managed. Tightly cut hedges mean there are fewer flowers and berries, thus reducing available habitats, feeding sources and suitable nesting sites.

Hedgerows will not be cut between March 1st and August 31st inclusive. It is both prohibited (except under certain exemptions) and very damaging for birds as this is the period they will have vulnerable nests containing eggs and young birds. Red-listed bird species Yellowhammer (recorded on Site) in particular nest up until the end of August.

DO NOT use pesticide/ herbicide sprays or fertilisers near hedgerows as they can have an extremely negative effect on the variety of plants and animals they support.

11.9.4.4 Bat Boxes

A set of 10 bat boxes will be erected at the Site, with 5no. each proposed along the western and north-eastern boundaries of the Site; on suitably mature trees, under the guidance of the Project Ecologist. These areas were noted to support mature trees and good levels of bat activity during the surveys. The provision of new roosting opportunities at the Site will act to enhance the bat usage of the Site. If trees are located within lands outside the ownership of the applicant, consultation with/permission from the neighbouring landowner (e.g., Dundalk Gold Club) may be required prior to erecting bat boxes. Should no suitably sized trees be present within the Site, pole mounted 'Rocket Boxes' will be installed under the guidance of the Project Ecologist/ ECoW (the south-western and north-western corners of the Site may be particularly suitable).

11.9.4.5 Bird boxes

A set of 10 bird boxes will be installed at the Site. These boxes will be a mix of open-fronted and hole entrance boxes; which will cater for a number of different species. The bird boxes will be erected on suitably sized trees around the Site, as advised by the Project Ecologist.

11.10 Residual Impact Assessment

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

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. Potential residual effects from the Proposed Development were assessed as part of this environmental assessment.

In summary, the construction mitigation measures detailed in this Chapter (e.g., timing of vegetation clearance, pre-construction checks by an Ecologist), along with the design features to be adopted to minimise adverse effects to fauna at the Site, will be sufficient to reduce any identified potential effects to KERs associated with the Site to **'Slight (not-significant)'**, **'Not-significant'** or **'Imperceptible'**. Furthermore, there is a likelihood of some positive residual effects for species groups such as birds and pollinators in particular as a result of the proposed landscaping of the Site.

11.10.1 Summary of Post-mitigation Effects (Construction Phase)

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

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Table 11-19 Summary of Construction Phase Effects Post Mitigation

Likely Significant Effect	Quality	Significance	Duration	Type	Mitigation	Residual Effect
Injury/ mortality to small mammals and breeding birds	Adverse	Significant	Short-term	Direct	Mitigation 2: Pre-construction ecology walkover Mitigation 4: Timing of vegetation clearance. Mitigation 6: Protection of small mammals	Neutral, Imperceptible, Short-term
Loss of habitat/ connectivity for small mammals and breeding birds	Adverse	Moderate (not significant)	Permanent	Direct	Embedded mitigation: Increased tree planting included in the landscaping plan. Mitigation 9: Hedgehog highways	Adverse, Slight, Permanent.
Noise disturbance to small mammals and breeding birds	Adverse	Slight (not significant)	Short-term	Direct	Mitigation 8: Noise Control	Neutral, Imperceptible, Short-term
Commuting/ foraging habitat loss for bats	Adverse	Slight (not significant)	Permanent	Direct	Embedded mitigation: Increased tree planting included in the landscaping plan.	Neutral, Imperceptible, Permanent
Noise/ visual disturbance to wintering birds	Adverse	Moderate (not significant)	Short-term	Direct/ Cumulative	Mitigation 3: Construction Program.	Neutral, Imperceptible, Short-term
Injury/ mortality to Common frog and Lizard	Adverse	Significant	Short-term	Direct	Mitigation 2: Pre-construction ecology walkover Mitigation 10: Protection of Common Frog	Neutral, Imperceptible, Short-term
Dust effects on Dundalk Bay pNHA and Ramsar Site	Adverse	Slight (not significant)	Short-term	Direct	Mitigation 1: CEMP	Neutral, Imperceptible, Short-term
Surface water quality reduction in downstream Dundalk Bay pNHA and Ramsar Site.	Adverse	Significant	Short-term	Direct	Mitigation 1: CEMP	Neutral, Imperceptible, Short-term

11.10.2 Summary of Post-mitigation Effects (Operational Phase)

There are no significant residual effects on biodiversity anticipated regarding the operational phase of the Proposed Development.

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11.11 Risk of Major Accidents or Disasters

There is no likelihood of significant adverse effects on biodiversity within the Site or its environs as a result of a major accident or disaster involving the Proposed Development; a large-scale residential project comprising low-rise housing, associated infrastructure and landscaped areas. None of these aspects of the development are deemed to represent a risk of, or vulnerability to, major accidents or disasters that could adversely affect local biodiversity in a significant manner.

11.12 Worst Case Scenario

In a worst-case scenario, where the mitigation measures recommended were not adhered to or were to fail, the Proposed Development could lead to effects such as the harm/mortality of breeding birds if vegetation clearance were to take place during the nesting season, harm/mortality of small fauna e.g., frogs should pre-clearance checks not be carried out, short-term disturbance of wintering waterbirds if utilising the coastline adjacent the easternmost extents of the works, and construction pollution (e.g., sediment, contaminants etc.) of adjacent watercourses and wetland habitats.

11.13 Interactions

Interactions are dealt with in Chapter 16 of this EIAR.

11.14 Monitoring

11.14.1 Construction Phase Monitoring

During the Construction Phase, the following monitoring will be carried out by the construction contractor to ensure the implemented mitigation measures are maintained effectively:

- A suitably qualified ecologist will act as Ecological Clerk of Works (ECoW) and carry out the pre-construction surveys for KER species at the Site and work closely with the Site manager to ensure these species are protected for the duration of the works.
- A watching brief will be kept by the ECoW for the duration of the works for the presence of KER species that might be present at the Site
- Dust control measures will be checked on a weekly basis, and more often during dry weather, to ensure they remain effective. The R172 and its grassy verge located east of the main Site area will be checked for any potential dust impacts, and the dust control measures reviewed if impacts are noted.

- Surface water and groundwater protection measures (as described in Section 11.9.3.1) will be checked weekly to ensure they remain effective, and more often during moderate to heavy rainfall events as appropriate.
- The results of the above monitoring be made available to Louth CoCo on request and any remedial measures that are required based on the results of same will be agreed with the same if required.

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11.14.2 Operational Phase Monitoring

During the Operational Phase, the following monitoring will be carried out by the relevant designated person to ensure the implemented mitigation and enhancement measures are maintained effectively:

- A post construction check of the proposed public lighting will be carried out by a suitably qualified bat ecologist once the development is complete; to ensure that it is operating effectively and that impacts to bats through operational lighting at the Proposed Development are minimised and embedded mitigation has been successful. Where necessary the bat ecologist will make recommendations to address any problem areas for bats and lighting. The bat ecologist will furnish the Biodiversity officer/Parks Department of Louth CoCo with a report detailing the survey results and mitigation installed once complete.
- The standard necessary maintenance checks will be carried out to ensure all SUDS measures and the wastewater pumping station are operating correctly.
- A Biodiversity Monitoring Plan will be prepared by a suitably qualified Ecologist that will cover the post-construction monitoring of the efficacy of the proposed enhancement measures e.g., bird and bat boxes, hibernacula log-piles, naturally seeded wildflower meadows, low-intervention hedgerow management.
- Bird and bat boxes will be inspected annually for a period of 3 years as part of the BMP to assess whether these measures have been adopted by their respective species groups and for damage.

11.15 Summary of Mitigation and Monitoring

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

The results of the below monitoring be made available to Louth CoCo on request and any remedial measures that are required based on the results of same will be agreed with the same if required.

Table 11-20 Summary of Construction Phase Mitigation and Monitoring

Likely Significant Effect	Mitigation	Monitoring
Dust effects on Dundalk Bay pNHA and Ramsar Site.	Mitigation 1: CEMP	Dust control measures will be checked on a weekly basis, and more often during dry weather, to ensure they remain effective. The R172 and its grassy verge located east of the main Site area will be checked for any potential dust impacts, and the dust control measures reviewed if impacts are noted.

Likely Significant Effect	Mitigation	Monitoring
Surface water quality reduction in downstream Dundalk Bay pNHA and Ramsar Site.	Mitigation 1: CEMP	Surface water and groundwater protection measures will be checked weekly to ensure they remain effective, and more often during moderate to heavy rainfall events as appropriate
Injury/ mortality to small mammals, breeding birds, frogs and lizards.	Mitigation 2: Pre-construction ecology walkover Mitigation 4: Timing of vegetation clearance. Mitigation 6: Protection of small mammals Mitigation 10: Protection of Common Frog	A suitably qualified ecologist will act as ECoW and carry out the pre-construction surveys for KER species at the Site and work closely with the Site manager to ensure these species are protected for the duration of the works. A watching brief will be kept by the ECoW for the duration of the works for the presence of KER species that might be present at the Site.

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During the Operational Phase, the following monitoring in Table 11-21 will be carried out by the relevant designated person to ensure the embedded mitigation and enhancement measures proposed are maintained effectively.

Table 11-21 Summary of Enhancement and Embedded Mitigation and associated Monitoring

Enhancement Measure/ Embedded Mitigation	Responsible Party	Monitoring
Bat-sensitive Public Lighting Design Implementation	Project Ecologist	A post construction check of the proposed public lighting will be carried out by a suitably qualified bat ecologist once the development is complete; to ensure that it is operating effectively and that impacts to bats through operational lighting at the Proposed Development are minimised and embedded mitigation has been successful. Where necessary the bat ecologist will make recommendations to address any problem areas for bats and lighting. The bat ecologist will furnish the Biodiversity officer/Parks Department of Louth CoCo with a report detailing the survey results and mitigation installed once complete.
SUDS Measures	Engineer	The standard necessary maintenance checks will be carried out to ensure all SUDS measures and the wastewater pumping station are operating correctly.
Landscape and Ecology Enhancement Measures	Project Ecologist	A Biodiversity Monitoring Plan will be prepared by a suitably qualified Ecologist that will cover the post-construction monitoring of the efficacy of the proposed enhancement measures e.g., bird and bat boxes, hibernacula log-piles,

Enhancement Measure/ Embedded Mitigation	Responsible Party	Monitoring
		naturally seeded wildflower meadows, low-intervention hedgerow management.
Bat and bird boxes	Project Ecologist	Bird and bat boxes will be inspected annually for a period of 3 years as part of the BMP to assess whether these measures have been adopted by their respective species groups and for damage.

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11.16 Conclusion

It is considered that provided the mitigation measures proposed are carried out in full, there will be no significant adverse effect to any valued habitats, designated sites or individual or group of species as a result of the Proposed Development. The Proposed Development is considered to result in an overall slight positive effect to the biodiversity of the site via the landscaping plan, which proposes the retention and incorporation of the majority of existing treelines and hedgerows at the Site and a net increase in overall tree planting throughout the Site.

11.17 References and Sources

- Bat Conservation Trust. (2018). Bats and artificial lighting in the UK: bats and the built environment series. Guidance Note 08/2019. BCT, London.
- Bibby, C. J., Burgess, N. D. & Hill, D. A. (1992) Bird Census Techniques. Academic Press, New York.
- Bird Survey & Assessment Steering Group. (2022) Bird Survey Guidelines for assessing ecological impacts, v.1.0.0. https://birdsurveyguidelines.org
- CIEEM (2015) Guidelines for Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester, UK.
- CIEEM. (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester, UK.
- CIEEM (2024) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester, UK. Version 1.3 updated September 2024.
- Collins, J. (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Edition). The Bat Conservation Trust, London.
- Cutts, N. Phelps, A. & Burdon, D. (2009) Construction and Waterfowl: Defining Sensitivity, Response, Impacts and Guidance,
- Department of the Environment, Heritage and Local Government. (2010). Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. DEHLG, Dublin. (Rev. Feb 2010).
- Devlin, Z. (2021). The Wildflowers of Ireland. A Field Guide. (2nd Edition). Gill Books. Dublin.

- DOBA (2025a) Infrastructure Design Report - Lands at Haggardstown, Dundalk, Co. Louth. Marina Quarter Ltd. 2268-DOB-XX-SI-RP-C-0001.
- DOBA (2025b) Construction Environmental Management Plan (CEMP) - Lands at Haggardstown, Dundalk, Co. Louth. Marina Quarter Ltd.
- Enviroguide (2025a) Appropriate Assessment Screening for an LRD at Lands at Haggardstown, Dundalk, Co. Louth. On behalf of Marina Quarter Ltd.
- Enviroguide (2025b) Natura Impact Statement for an LRD at Lands at Haggardstown, Dundalk, Co. Louth. On behalf of Marina Quarter Ltd.
- EirGrid (2012). Ecology Guidelines for Electricity Transmission Projects. Prepared by Natura Environmental Consultants.
- EirGrid (2016). EirGrid Evidence Based Environmental Studies Study 5: Birds. Prepared by EirGrid plc with the assistance of RPS Group.
- EirGrid (2020). Ecology Guidelines for Electricity Transmission Projects. Available at : https://www.eirgridgroup.com/site-files/library/EirGrid/Ecology-Guidelines-for-Electricity-Transmission-Projects.pdf
- Environmental Protection Agency. (2022). Guidelines on the information to be contained in Environmental Impact Assessment Reports. Published by the Environmental Protection Agency, Ireland.
- Environmental Protection Agency. (2025). Environmental Protection Agency Online Mapping [ONLINE] Available at: http://www.epa.ie/ [Accessed April 2025].
- European Commission. (2000). Managing Natura 2000 Sites: The Provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. European Communities, Luxembourg.
- European Communities. (2002). Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. European Communities, Luxembourg.
- European Commission. (2019). Managing Natura 2000 Sites: The Provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1555085968125&uri=CELEX:52019XC0125(07).
- European Commission. (2021). Assessment of plans and projects in relation to Natura 2000 Sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC Brussels.
- Fossitt, J. (2000). A *Guide to Habitats in Ireland*. The Heritage Council, Kilkenny.
- Floodinfo.ie Website – Dundalk & Ardee Flood Relief Scheme. Accessed: May 2025. Available at: (https://www.floodinfo.ie/frs/en/dundalk/project-info/public-engagement/).
- Gauthreaux, S. A., and Belser, C. G. (2006). Effects of artificial night lighting on migrating birds. Pages 67–93 in C. Rich and T. Longcore, editors. Ecological consequences of artificial night lighting. Island Press, Washington, D.C., USA.
- Geological Survey Ireland. (2025). Geological Survey of Ireland website [ONLINE] Available at: http://www.gsi.ie/ [Accessed April 2025].
- Gilbert, G., Stanbury, A. and Lewis, L. (2021). Birds of Conservation Concern in Ireland 4: 2020–2026. *Irish Birds* 43: 1–22
- Holman et al (2024). IAQM Guidance on the assessment of dust from demolition and construction, Institute of Air Quality Management, London. Version 2.2.

RECEIVED: 30/05/2025

- IAQM (2016). Guidance on the Assessment of Mineral Dust Impacts for Planning. Institute of Air Quality Management, London.
- IE Consulting (2025) Site Specific Flood Risk Assessment. Client: Marina Quarter Ltd. Location: Haggardstown, Blackrock, Co. Louth. IE3047_Report_6382.
- Inland Fisheries Ireland. (2016). Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters. Available at: https://www.fisheriesireland.ie/documents/624-guidelines-on-protection-of-fisheries-during-construction-works-in-and-adjacent-to-waters/file.html
- Kelleher, C. and Marnell, F. (2006). Bat Mitigation Guidelines for Ireland. Irish Wildlife Manuals, No. 25. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.
- King, J.L., Marnell, F., Kingston, N., Rosell, R., Boylan, P., Caffrey, J.M., FitzPatrick, Ú., Gargan, P.G., Kelly, F.L., O'Grady, M.F., Poole, R., Roche, W.K. & Cassidy, D. (2011). Ireland Red List No. 5: Amphibians, Reptiles & Freshwater Fish. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.
- Lundy, M.G., Aughney, T., Montgomery, W.I., & Roche, N. (2011). Landscape conservation for Irish bats and species specific roosting characteristics. Bat Conservation Ireland.
- Marnell, F., Looney, D. & Lawton, C. (2019) *Ireland Red List No. 12: Terrestrial Mammals*. National Parks and Wildlife Service, Department of the Culture, Heritage and the Gaeltacht, Dublin, Ireland.
- NBDC. (2023). National Biodiversity Data Centre online mapping [ONLINE]. Available at: http://maps.biodiversity.ie/Map.aspx. [Accessed July 2023].
- NPWS. (2009). Proposed Natural Heritage Area Site Synopses Portfolio.
- NPWS. (2010). Circular NPW 1/10 & PSSP 2/10. Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities. Department of Environment, Heritage and Local Government.
- NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview. Unpublished NPWS report.
- NRA. (2009). Guidelines for Assessment of Ecological Impacts of National Road Schemes. National Roads Authority (now Transport Infrastructure Ireland), Dublin.
- NRA. (2010). Guidelines on The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (now Transport Infrastructure Ireland), Dublin.
- OPR (2021) Office of the Planning Regulator. Appropriate Assessment Screening for Development Management, OPR Practice Note PN01.
- O'Neill, F.H., Martin, J.R., Devaney, F.M. & Perrin, P.M. (2013). The Irish semi-natural grasslands survey 2007-2012. Irish Wildlife Manuals, No. 78. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Ireland.
- Park Hood (2025) Landscape Design Statement. Residential Development – Haggardstown, Co. Louth RPT 001.
- Ramsar Sites Information Service (2022). Ramsar Information Sheet (RIS) for Site no. 834, Dundalk Bay, Ireland. Published on 6 July 2022. Created by RSIS V.1.6 on - 6 July 2022. Available at: IE834RIS_2207_en.pdf (ramsar.org)

RECEIVED: 30/05/2025

- Smith, G.F., O'Donoghue, P., O'Hora, K. and Delaney, E. (2011). Best practice guidance for habitat survey and mapping. The Heritage Council, Kilkenny.
- TII (2020) The Management of Invasive Alien Plant Species on National Roads – Technical Guidance.
- Uisce Éireann (UÉ) (2023). Dundalk Wastewater Treatment Plant (D0053-01) – Annual Environmental Report, available at: https://www.water.ie/sites/default/files/2025-02/D0053-01_2023_AER.pdf [Accessed April 2025]
- Wright, M., Goodman, P & Cameron, T. (2010) Exploring Behavioural Responses of Shorebirds to Impulsive Noise. Wildfowl (2010) 60: 150–167.
- Wyse Jackson, M., FitzPatrick, Ú., Cole, E., Jebb, M., McFerran, D., Sheehy Skeffington, M. & Wright, M. (2016) Ireland Red List No. 10: Vascular Plants. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, Dublin, Ireland.

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Main Statement

Volume II

CHAPTER 12

Noise & Vibration

May 2025

McCutcheon Halley
CHARTERED PLANNING CONSULTANTS

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12 Noise and Vibration

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12.1 Introduction

This chapter of the EIAR provides a description and assessment of the likely impact of the proposed development from noise and vibration.

This chapter discusses the existing ambient noise levels at nearby sensitive receptors, the potential impacts of the proposed development on the existing ambient noise environment and the mitigation measures that may be employed to reduce or eliminate any potential impact.

It should be read in conjunction with the Population and Human Health, Biodiversity and Traffic Chapters of this EIAR and the Noise Impact Assessment (RSK, 2023) – Appendix 12-1.

12.2 Expertise & Qualifications

This chapter of the EIAR has been prepared by Wave Dynamics Limited an Acoustic Consultancy specialising in noise and vibration. The EIAR chapter was prepared by Cathal Reck | Acoustic Consultant, Cathal has experience of numerous similar planning stage EIAR assessments. Cathal's qualifications include; BSc (Hons) in Music Technology & Production, IOA Certificate of Competence in Environmental Noise Measurement. Cathal is a member of the Institute of Acoustics.

This report was peer reviewed by James Cousins, Managing Director | Principal Consultant with Wave Dynamics who has extensive experience in assessing noise and vibration from road and rail infrastructure on commercial and residential developments. James is an experienced consultant. His qualifications include; BSc (Hons) in Construction Management and Engineering, Pg Cert in Construction Law and Diploma in Acoustics and Noise Control (Institute of Acoustics) and an IOA Competence Cert in Building Acoustic Measurements. James is a member of both Engineers Ireland (MIEI) and the Institute of Acoustics (MIOA) and is the current SITRI Chairman. This section addresses the potential noise and vibration impact of the proposed Large-Scale Residential Development in Haggardstown, Co Louth.

12.3 Proposed Development

The proposed development is described in Chapter 2. The development generally comprises of 502 no. residential units, comprising 1, 2, 3 and 4 bed units in a mix of maisonettes, terraced and semi-detached units, with 1 no. detached bungalow unit; Creche building and all associated site and development works including landscaping and amenity areas, infrastructure and services, and new entrance from Blackrock Road, with additional pedestrian/cycle access from Bóthar Maol.

12.3.1 Aspects Relevant to this Assessment

Aspects of the proposed development and the surrounding area which are relevant to this assessment are as follows:

- Noise emissions arising during construction which may impact surrounding receptors;
- Cumulative noise impacts at surrounding receptors may arise where construction works coincide with other nearby construction works;

- Groundborne vibration arising during construction may impact surrounding structures;
- The proposed development may give rise to local increases in road traffic noise which may affect surrounding receptors;
- The proposed childcare facility may give rise to noise emissions affecting surrounding receptors;
- There is an onus on the applicant to ensure that internal living spaces at the proposed development, and noise levels at external amenity areas, meet relevant criteria; and
- In assessing internal and external amenity noise levels, it is necessary to consider existing traffic noise levels, as well as future changes in road traffic noise due to changing traffic volumes and altered road layouts.

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12.4 Methodology

This assessment will examine the likely impacts of sound pressure levels generated by the proposed development located at Haggardstown, Dundalk, Co. Louth. Noise calculations have been used to predict and assess the likely impact of facility operations on noise sensitive receptors.

For the purpose of the assessment 'sensitive receptors' terminology used describes any persons, locations or otherwise that may be susceptible to changes as a consequence of the proposed development. The primary noise impacts associated with the proposed development are likely to be due to:

- Site clearance works;
- Building construction works;
- Vehicles entering and existing the site;
- Plant and equipment; and
- Traffic along local road network.

The assessment of the noise and vibration impacts has been undertaken with reference to the most appropriate guidance documents relating to environmental noise and vibration which are set out within the relevant sections of this chapter. In addition to specific noise guidance documents, the following guidelines were considered and consulted for the purposes of this chapter:

- BS 8233:2014 Guidance on sound insulation and noise reduction for buildings.
- Louth County Council Draft Noise Action Plan 2024-2028.
- Louth County Council Noise Action Plan 2019.
- Environmental Protection Agency NG4: Guidance note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities.
- BS4142 2014 A1+ 2019 Methods for rating and assessing industrial and commercial sound.

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- ISO 1996-1:2016 Acoustics – Description, measurement and assessment of environmental noise – Part 1: Basic quantities and assessment procedures.
- BS 5228-1:2009+A1: Code of practice for noise and vibration control on construction and open sites – Noise.
- BS 5228-2:2009+A1: Code of practice for noise and vibration on construction and open sites – Vibration.
- ISO 1996-2:2017 Acoustics - Description, measurement and assessment of environmental noise Part 2: Determination of sound pressure levels.
- ISO 9613-1:1993 Acoustics - Attenuation of sound during propagation outdoors -- Part 1: Calculation of the absorption of sound by the atmosphere.
- ISO 9613-2:1996 Acoustics - Attenuation of sound during propagation outdoors -- Part 2: General method of calculation.
- BS7385: 1993: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration.
- DMRB-LA111: Noise and Vibration.
- Dept. of Housing, Planning and Local Government (DHPLG), 2018. Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment August 2018.

The noise and vibration study has been undertaken using the following methodology:

- A baseline environmental noise survey has been undertaken in the vicinity of the subject site in order to characterise the existing baseline noise environment and to assess the character of the existing noise.
- A review of the most applicable standards and guidelines has been conducted in order to set a range of acceptable noise and vibration criteria for the construction and operational phases of the proposed development.
- Predictive statistical calculations have been performed during the construction phase of the project at the nearest sensitive locations to the development site.
- Predictive modelling using SoundPlan 9.1 and statistical calculations have been performed to assess the potential impacts associated with the operational of the development at the most sensitive locations surrounding the development site; and
- Mitigation measures have been proposed to reduce, where necessary, the identified potential outward impacts relating to noise and vibration from the proposed development.

12.4.1 Desk Study

The noise assessment reviews all existing information relating to the site and its environs, which involves a desk-based study of the following:

- Baseline noise monitoring has been undertaken by RSK Ireland Limited (2023). Data collected from these surveys provides a baseline assessment for the site and is used to assess any future noise-related impacts of activities associated with the proposed development;
- An evaluation of the site and the surrounding area to assess certain changes that are likely to impact the surrounding environs;
- Identification of sensitive receptors for assessment (see Section 12.6); and
- *BS 5228 2009 +A1 2014 Code of practice for noise and vibration control on construction and open sites* with respect to the controlling noise and vibration impacts. In this instance, appropriate criteria relating to permissible construction noise levels are taken from Part one of the standard Noise.

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12.4.2 Assessment Criteria

12.4.2.1 Construction Phase - Noise

12.4.2.1.1 Louth County Council Draft Noise Action Plan 2024-2028

Louth County Council have not outlined specific construction noise limits within the Draft Noise Action Plans, therefore noise limits outlined in *BS5228-1:2009+A1 Code of Practice for Noise and Vibration Control on Construction and Open Sites - Part 1 Noise* have been adopted as the criteria for this project. BS5228-1 takes into consideration the impact of the ambient noise at the noise sensitive receptor as follows:

Table 12-1: BS5228 threshold levels.

Assessment category and threshold value period	Threshold value, in decibels (dB) (LAeq)		
	Category A1	Category B2	Category C3
Daytime (07:00hrs – 19:00hrs) and Saturdays (07:00hrs – 14:00hrs)	65	70	75
Evenings and weekends 4	55	60	65
Night-time (23:00hrs – 07:00hrs)	45	50	55

Note 1: Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.

Note 2: Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values.

Note 3: Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category B values.

Note 4: 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sunday.

12.4.2.2 Construction Phase – Vibration

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12.4.2.2.1 BS 5228-2 2009 A12014 Noise and Vibration Control of Open Sites

The Louth County Council Noise Action Plan 2024-2028 does not contain guidance relating to vibration limits. Best practice guidance is taken from *British Standard BS 5228:2009 + A1 2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites - Part 2 Vibration.*

The standard recommends that for a soundly constructed residential property and similar structures (in good repair), the threshold for minor or cosmetic (i.e. non- structural) damage should be taken as a Peak Particle Velocity (PPV) (in frequency range of predominant pulse) of 15mm/s at 4Hz increasing to 20mm/s at 15Hz and 50mm/s at 40Hz and above. Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of:

Table 12-2: Likely Construction Noise Impact.

Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of:			
Building Type	**Less than 15Hz**	**15 to 40Hz**	**40Hz and above**
Light framed structures/ residential buildings	15 mm/s	20 mm/s	50 mm/s

12.4.2.3 Operational Phase - Noise

12.4.2.3.1 Louth County Council Draft Noise Action Plan 2024 – 2028,

The Louth County Council Draft Noise Action Plan 2024 – 2028, does not included any specific noise limits with regard to operational noise of commercial premises. Guidance has been sought from other applicable standards for such noise limits, *EPA NG4 Guidance note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities* has been adopted and used throughout the assessment.

12.4.2.3.2 BS 4142:2014: Methods for Rating and Assessing Industrial and Commercial Sound.

BS4142 describes a method for the assessment of commercial, industrial and background noise to quantify its impact on persons outside of a residential dwelling. BS 4142 has become the de facto standard for compliance investigation. In addition to the specified broadband noise levels the standards provide objective and subjective methods for the assessment of the impulsivity and tonality of the noise sources. This allows for a penalty/ correction to be applied to the measured noise level of the source (L_{Aeq}) to give the rating level ($L_{Ar,T}$).

It considers the likelihood of complaints by considering the margin by which the noise in source the background noise level.

BS 4142 states that and exceedance of the noise source of the background noise by:

- +10 dB or more indicates that complaints are likely,
- + 5 dB is of marginal significance, and;

- The rating level is more than 10 dB below the measured background noise level, then this is a positive indication that complaints are unlikely.

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BS4142 outlines guidance for penalty corrections to be applied to the noise sources in question should the noise source have one of the following characteristics:

- The noise contains a distinguishable, discreet, continuous tone (whine, or hum);
- The noise contains distinct impulses (i.e. bangs),
- The noise is intermittent or:

The noise is irregular.

12.4.2.3.3 EPA NG4: Guidance note for Noise: License Applications, Surveys and Assessments in Relation to Scheduled Activities.

EPA NG4 outlines that noise attributable solely to onsite activities from a licenced premises should not exceed the following limits:

- Daytime (07:00hrs – 19:00hrs) – 55dB LAr,T
- Evening (19:00hrs – 23:00hrs) – 50dB LAr,T
- Night time (23:00hrs – 07:00hrs) – 45dB LAeq,T

> *During daytime and evening periods rigorous efforts should be made to avoid clearly audible tones and impulsive noise at all sensitive locations. A penalty of 5dB for tonal and/or impulsive elements is to be applied to the daytime and evening measured LAeq,T values to determine the appropriate rating level (LAr,T). In all cases, an assessment by a competent person will be required.*
>
> *During the night-time period no tonal or impulsive noise from the facility should be clearly audible or measurable at any NSL.*

12.4.2.4 Operational Phase – Vibration

There are no specific vibration criteria for buildings in Ireland. The vibration criteria for this project are based on *BS 5228-2:2009+A1:2014*, which provides guidance relating to the assessment of human response to vibration in terms of PPV. Table 12-3 below outlines the range of vibration values and the associated potential effects on humans.

Table 12-3: Project vibration criteria.

Vibration Level, PPV	Effect
0.14mm/s	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies. At lower frequencies people are less sensitive to vibration.
0.3mm/s	Vibration might be just perceptible in residential environments.

1mm/s	It is likely that a vibration level of this magnitude in residential environments will cause complaint.

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Vibrations typically become perceptible between 0.15mm/s to 0.3mm/s and may become annoying or disturbing at higher magnitudes. Higher levels of vibration are tolerated for single events or events of short duration, particularly during construction projects. For example, ground breaking or piling can typically be tolerated at vibration levels up to 2.5mm/s if adequate public relations are in place and timeframes are known.

12.5 Difficulties Encountered

No difficulties have been encountered while compiling this chapter.

12.6 Baseline Environment

The site is located in Haggardstown, a townland situated circa 1.3 kilometres north of Blackrock Village Centre, Co. Louth and circa 3 kilometres to the south of Dundalk Town Centre, Co. Louth.

The site is a greenfield site and is bound to the south by agricultural lands, to the west by Dundalk Golf Club, to the north by private properties and Bóthar Maol and finally to the east by private properties with a portion of the site bounding the Blackrock Road (R172).

Part of the site also extends north along the Blackrock Road (R172) and west along Finnabair Crescent – this is for the provision of service connections.

12.6.1 Noise Survey

An environmental noise survey was conducted by RSK Ireland Limited (2023) to quantify the existing noise environment. The survey was conducted in general accordance with *ISO 1996: 2017: Acoustics – Description and measurement and assessment of environmental noise*. Pre-existing noise levels were found to be typical of a rural location with relatively low baseline noise levels measured across the site. Specific details are set out below. A full copy of the ProPG Inward Noise Impact Assessment can be found in Volume 3 - Appendices.

The baseline survey completed previously is sufficient to inform the design for this chapter. The assessment is based on worst case noise impact using lower background noise levels, based on data from the TII (2017) the average rate of growth on Irish roads is 3.9%. Assuming linear growth of 3.9% over the next 10 years an increase in noise levels from road traffic of 3dB would be expected. Therefore, measurements taken in 2023 are likely to be very slightly lower than any taken in 2025 which leads to a worst-case assessment.

12.6.1.1 Measurement Locations

Unattended noise measurements were conducted at Location N1. Attended noise measurements were conducted at locations N2 – N6. The approximate noise measurement locations are shown in Figure 12-1.

Figure 12-1 Proposed Site Plan Showing Baseline Noise Monitoring Positions (Source: RSK Ireland Limited, 2023)

- Location N1: To the north-west of the site with the microphone positioned at ground floor level at a location representative of the proposed residential dwellings near the Dundalk Golf Course. This noise survey position comprised attended daytime monitoring;
- Location N2: At the north of the site with the microphone positioned at ground floor level at a location representative of a proposed development façade and proposed amenity space. This noise survey position comprised attended daytime monitoring;
- Location N3: To the North-East of the site with the microphone positioned at a location representative of the proposed development façade that is closest to the nearby main road (R172) and existing residents. This noise survey position comprised of attended daytime monitoring and unattended monitoring for an approximate 7-day period. Noise data, captured at this location is used as reference in order to estimate noise levels at the proposed development façade during both day and night-time periods;
- Location N4: At the south-west of the site with the microphone positioned at a location representative of the proposed development façade and proposed amenity space that is closest to the nearby main road (R172) and existing residents. This noise survey position comprised attended daytime monitoring;

- Location N5: At the centre of the site with the microphone positioned at ground floor level at a location representative of a proposed amenity space. This noise survey position comprised attended daytime monitoring; and
- Location N6: At the south-west of the site with the microphone positioned at ground floor level at a location representative of the proposed residential dwellings near the Dundalk Golf Course. This noise survey position comprised attended daytime monitoring.

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12.6.1.2 Survey Periods

Noise measurements were conducted over the source of the following periods:

Table 12-4 Attended Noise Survey Periods (Source: RSK Ireland Limited, 2023)

Period	Location	Date	Start Time	End Time
Daytime 07:00 – 23:00 hrs	N1	03-04 July 2023	03 July at 12:46	04 July at 12:36
	N2		03 July at 13:12	04 July at 13:07
	N3		03 July at 13:36	04 July at 13:36
	N4	11 July 2023	11 July 14:33	11 July at 17:11
	N5		11 July at 15:01	11 July at 17:36
	N6		11 July at 15:26	11 July at 18:00

Table 12-5 Unattended Noise Survey Periods (Source: RSK Ireland Limited, 2023)

Period	Location	Date	Start Time	End Time
Daytime 07:00 – 23:00hrs	N3	04 July – 11 July 2023	04 July at 14:07	11 July at 12:03
Night-time 23:00 – 07:00hrs	N3	04 July – 11 July 2023	04 July at 23:00	11 July 07:00

12.6.1.3 Weather

The weather during the unattended survey 4th to 11th July 2023 is summarised as followed (ref. https://www.met.ie/climate/available-data/daily-data) from the Dublin Airport met station).

Table 12-6 Weather Conditions (Source: RSK Ireland Limited, 2023)

Date	Period	Temperature (Degrees Celsius)	Precipitation	Wind Speed m/s	Wind Direction
04/07	Daytime	12-18	19:00 – 20:00	3-9	WSW
04-05/07	Night-time	9-12	No	4-6	WSW

Date	Period	Temperature (Degrees Celsius)	Precipitation	Wind Speed m/s	Wind Direction
05/07	Daytime	11-18	16:00 – 17:00	3-7	WSW
05-06/07	Night-time	11-15	No	2-4	SSW
06/07	Daytime	14-18	No	3-9	SSW
06-07/07	Night-time	17-18	No	2-6	SSE
07/07	Daytime	14-20	No	2-9	ESE
07-08/07	Night-time	14-19	No	2-8	SSE
08/07	Daytime	14-22	No	1-9	SSW
08-09/07	Night-time	8-16	No	1-4	ESE
09/07	Daytime	12-20	12:00 – 13:00	2-7	SSW
09-10/07	Night-time	12-15	No	1-4	ESE
10/07	Daytime	14-17	09:00 - 10:00 12:00 - 14:00 22:00 - 23:00	1-6	ESE
10-11/07	Night-time	13-14	11:00 – 12:00	2-4	WSW
11/07	Daytime	13-20	17:00 – 18:00	2-7	WNW

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In line with best management practice, periods of rain and elevated winds have been omitted from the study (RSK Ireland Limited, 2023).

12.6.1.4 Instrumentation

The noise measurements were undertaken using the following equipment:

Table 12-7 Survey Equipment (Source: RSK Ireland Limited, 2023)

Equipment	Type	Serial No.
Class 1 Sound Level Meter	Larson Davis LxT	0004726

Based on the RSK report the equipment used has a calibration history that is traceable to a certified calibration institution. The calibration of the sound level meter was field checked prior to commencing measurements and prior to removing the equipment from site upon completion. A calibration drift of -0.1dB was noted upon commencement of the survey and +0.1 upon survey completion. The sound level meter calibration certificates are available on request.

The sound level meter conformed to the Class 1 requirements of BS EN 61672-1:2013 '*Electroacoustics. Sound level meter, Specifications*'. The calibrator used conforms to the requirements of BS EN IEC 60942:2018 '*Electroacoustics. Sound calibrators*'.

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12.6.1.5 Measurement Parameters

The noise survey results are presented in decibels (dB), using the following parameters:

- **$L_{Aeq,T}$**: is the equivalent continuous sound level and is used to describe a fluctuating sound as a single value over the sample period (T);
- **$L_{AFmax,T}$**:The maximum A-weighted sound pressure level occurring within a specified time period (T). Measured using the "Fast" time weighting;
- **$L_{AF10,T}$**: Refers to those A-weighted noise levels in the top 10 percentile of the sampling interval; it is the level which is exceeded for 10% of the measurement period (T). It is used to determine the intermittent high noise level features of locally generated noise and usually gives an indicator of the level of road traffic. Measured using the "Fast" time weighting; and
- **$L_{AF90,T}$:** Refers to those A-weighted noise levels in the lower 90 percentile of the sampling interval (T). It is the level which is exceeded for 90% of the measurement period. It will therefore exclude the intermittent features of traffic and is used to describe a background level without contribution from intermittent sources.

All sound levels in the ProPG Assessment Report are expressed in terms of decibels (dB) relative to 2x10-5 Pa. Noise measurements use a reference time period (T) of 15-minutes.

12.6.1.6 Measurement Results

12.6.1.6.1 Location N1

Table 12-8 summarises the measured daytime noise levels at N1.

Table 12-8 Measured Noise Level at Location N1 (Source: RSK Ireland Limited, 2023)

Period	Date	Start Time	Measured Noise Levels (dB re. 2x10-5 Pa)				Notes
			LAeq	LAmax	LA10	LA90	
Daytime	03/07	13:12	46	63	48	41	Tree song and distant traffic
	04/07	11:42	48	64	51	41	
		13:07	42	61	45	37	

The daytime ambient noise levels were in the range of 44 to 48 dB $L_{Aeq,15min}$. Tree song and distant traffic were noted to be the dominant source of noise at this measurement position.

12.6.1.6.2 Location N2

Table 12-9 summaries the measured daytime noise levels at Location N2.

Table 12-9 Measured Noise Level at Location N2 (Source: RSK Ireland Limited, 2023)

Period	Date	Start Time	Measured Noise Levels (dB re. 2x10-5 Pa)				Notes
			LAeq	LAmax	LA10	LA90	
Daytime	03/07	13:12	46	63	48	41	Tree song and distant traffic
	04/07	11:42	48	64	51	41	
		13:07	42	61	45	37	

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The daytime ambient noise levels were in the range of 42 to 48 dB $L_{Aeq,15min}$. Tree song and distant traffic were noted to be the dominant source of noise at this measurement position.

12.6.1.6.3 Location N3

Attended Measurements

Table 12-10 summaries the measured daytime noise levels at Location N3.

Table 12-10 Measured Noise Level at Location N3 (attended survey) (Source: RSK Ireland Limited, 2023)

Period	Date	Start Time	Measured Noise Levels (dB re. 2x10-5 Pa)				Notes
			LAeq	LAmax	LA10	LA90	
Daytime	03/07	13:36	53	79	55	48	Distant road traffic
	04/07	12:07	49	70	51	45	
		13:36	48	66	50	44	

The daytime ambient noise levels were in the range of 48 to 53 dB $L_{Aeq,15min}$. Local road traffic was noted during the survey period.

Unattended Measurements

Table 12-11 summaries the unattended day and night-time noise levels at Location N3 over the full survey period 4th to 11th July 2023.

Table 12-11 Measured Noise Level at Location N3 between 4th July and 11th July 2023 (unattended survey) (Source: RSK Ireland Limited, 2023)

Period	Date	Start Time	Measured Noise Levels (dB re. 2x10-5 Pa)			
			LAeq	LAmax	LA10	LA90
Daytime	04/07	14:07 – 23:00	50	68	45	36
Night-time	04-05/07	23:00 – 07:00	42	68	42	34
Daytime	05/07	07:00 -23:00	49	68	51	44

Period	Date	Start Time	Measured Noise Levels (dB re. 2x10-5 Pa)			
			LAeq	LAmax	LA10	LA90
Night-time	05-06/07	07:00 -23:00	40	60	41	34
Daytime	06/07	23:00 – 07:00	51	81	51	45
Night-time	06-07/07	23:00 – 07:00	46	70	48	39
Daytime	07/07	07:00 – 23:00	50	71	51	45
Night-time	07-08/07	23:00 – 07:00	46	74	47	43
Daytime	08/07	07:00 – 23:00	50	77	50	44
Night-time	08-09/07	23:00 – 07:00	41	60	43	30
Daytime	09/07	07:00 – 23:00	50	96	49	41
Night-time	09-10/07	23:00 – 07:00	40	65	43	31
Daytime	10/07	07:00 – 23:00	48	65	50	43
Night-time	10-11/07	23:00 – 07:00	42	66	42	34
Daytime	11/07	50	64	53	46	

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The daily daytime ambient noise levels were in the range 48 to 51 dB $L_{Aeq,16hr}$. Distant road traffic, tree song and bird song were noted during the survey period.

The night-time ambient noise levels were in the range 40 to 46 dB $L_{Aeq,8hr.}$ Distant road traffic, tree song and bird song were noted during the survey period.

Figure 12-2 shows the time-history graph of daytime measured noise levels between 4th and 11th July 2023 at Location N3 and Figure 12-3 shows the time-history graph of night-time measured noise levels.

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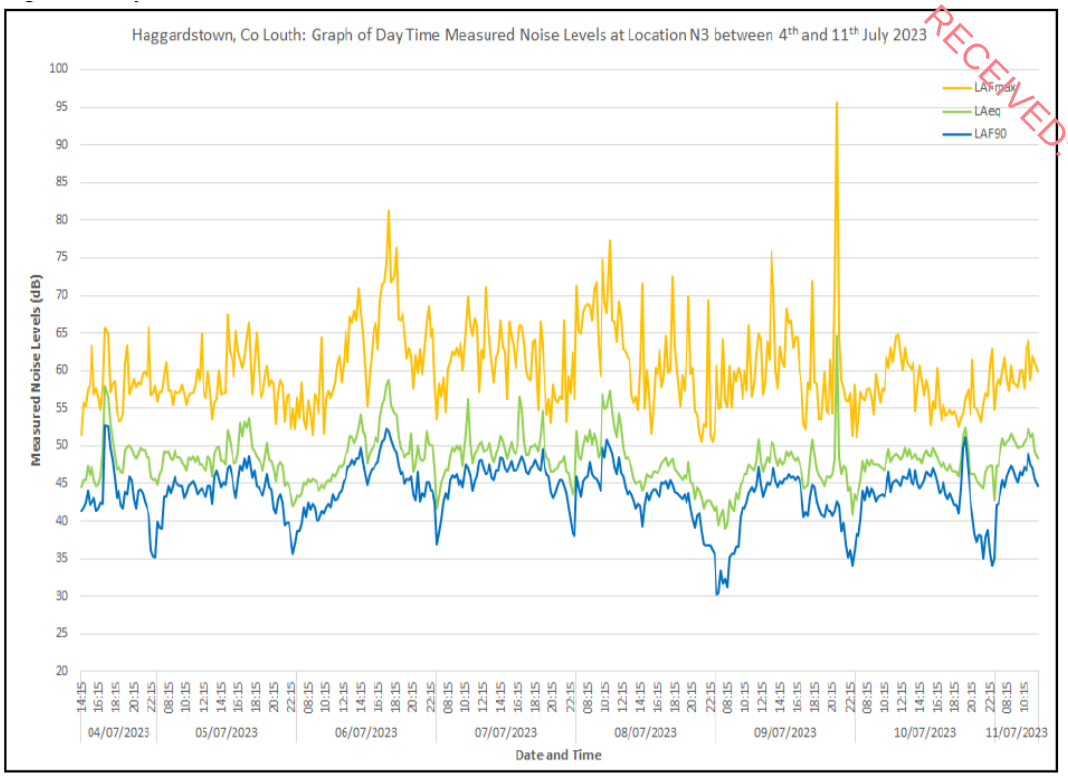

Figure 12-2 Daytime measured noise levels (Source: RSK Ireland Limited, 2023)

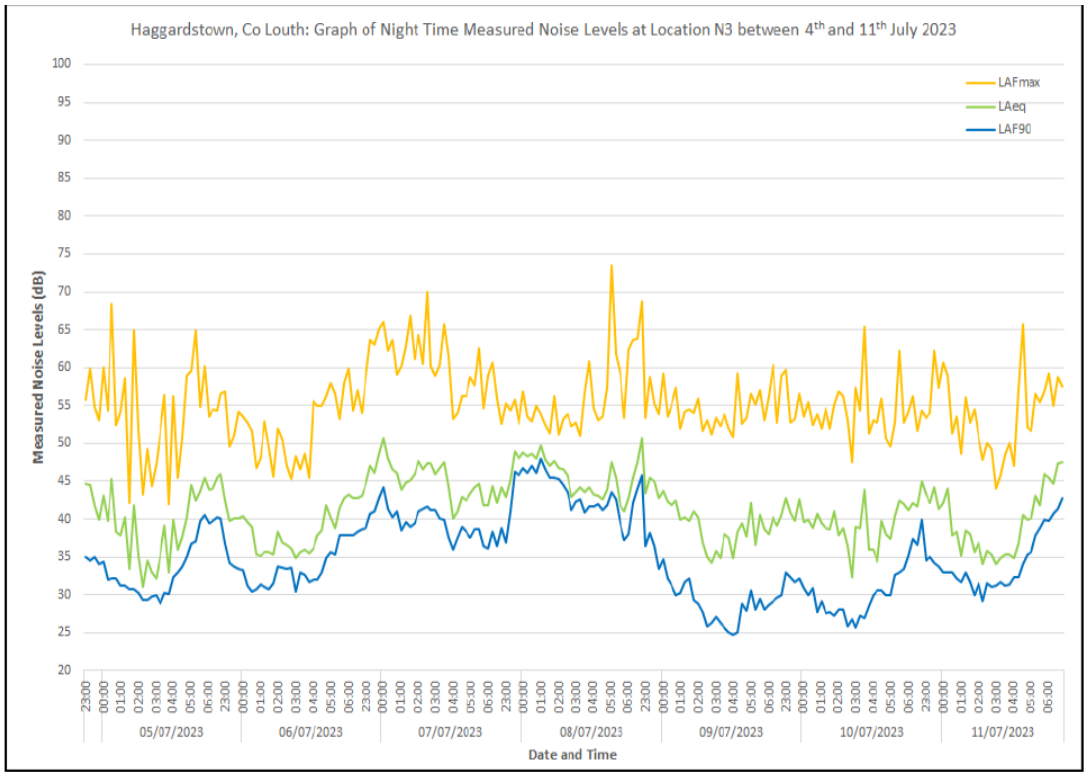

Figure 12-3 Night-time measured noise levels (Source: RSK Ireland Limited, 2023)

12.6.1.6.4 Location N4

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Attended Measurements

Table 12-12 summaries the measured daytime noise levels at Location N4.

Table 12-12 Measured Noise Level at Location N4 (Source: RSK Ireland Limited, 2023)

Period	Date	Start Time	Measured Noise Levels (dB re. 2x10-5 Pa)				Notes
			LAeq	LAmax	LA10	LA90	
Daytime	11/07	14:33	44	61	46	40	Tree song and distant traffic
		15:57	49	77	52	42	
		17:11	49	66	52	42	

The daytime ambient noise levels were in the range of 44 to 49 dB $L_{Aeq,15min}$. Tree song and distant traffic were noted to be the dominant source of noise at this measurement position.

12.6.1.6.5 Location N5

Table 12-13 summaries the measured daytime noise levels at Location N5.

Table 12-13 Measured Noise Level at Location N5 (Source: RSK Ireland Limited, 2023)

Period	Date	Start Time	Measured Noise Levels (dB re. 2x10-5 Pa)				Notes
			LAeq	LAmax	LA10	LA90	
Daytime	11/07	15:01	52	70	56	42	Tree song and distant traffic
		16:20	45	58	48	42	
		17:36	47	71	50	42	

The daytime ambient noise levels were in the range of 45 to 52 dB $L_{Aeq,15min}$. Tree song and distant traffic were noted to be the dominant source of noise at this measurement position.

12.6.1.6.6 Location N6

Table 12-14 summaries the measured daytime noise levels at Location N6.

Table 12-14 Measured Noise Level at Location N6 (Source: RSK Ireland Limited, 2023)

Period	Date	Start Time	Measured Noise Levels (dB re. 2x10^{-5} Pa)				Notes
			L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}	
Daytime	11/07	15:26	42	58	45	39	Local road traffic
		16:43	42	73	43	38	
		18:00	43	68	43	40	

The daytime ambient noise levels were in the range of 42 to 43 dB $L_{Aeq,15min}$. Local road traffic was noted during the survey period.

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12.7 The 'Do Nothing' Scenario

The "Do Nothing" scenario is expected to reflect the existing noise and vibration climate in the area, as there will be no new noise or vibration sources present on the site. In this scenario, the existing noise and vibration levels will remain unchanged, with no additional contributions to the acoustic environment. However, given the zoning and planning context, it is reasonable to expect that a similar residential development could be proposed for the site and in such case similar effects as described above would be expected.

12.8 Potential Significant Effects

This section outlines the potential significant effects of each phase of the development.

12.8.1 Demolition Phase

There will be no demolition works associated with the development.

12.8.2 Construction Phase

12.8.2.1 Noise

Louth County Council have not outlined specific construction noise limits within the Louth County Council Noise Action Plan 2019, or the Draft Noise Action Plan 2024-2028, therefore noise limits outlined in BS5228-1:2009+A1 have been adopted as the criteria for this project. BS5228-1 takes into consideration the impact of the ambient noise at the noise sensitive receptor as follows:

Table 12-15: BS5228 threshold levels.

Assessment category and threshold value period	Threshold value, in decibels (dB) (L_{Aeq})		
	Category A[1]	Category B[2]	Category C[3]
Daytime (07:00hrs – 19:00hrs) and Saturdays (07:00hrs – 14:00hrs)	65	70	75
Evenings and weekends [4]	55	60	65
Night-time (23:00hrs – 07:00hrs)	45	50	55

Note 1: Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.

Note 2: Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values.

Note 3: Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category B values.

Note 4: 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sunday.

BS5228 defines a noise sensitive location as:

> *"any occupied premises outside a site used as a dwelling (including gardens), place of worship, educational establishment, hospital or similar institution, or any other property likely to be adversely affected by an increase in noise level".*

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12.8.2.2 Vibration

The Louth County Council Noise Action Plan does not contain guidance relating to vibration limits. Best practice guidance is taken from British Standard *BS 5228-2:2009 + A1 2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites - Vibration.*

BS 5228-2:2009 + A1 2014 recommends that for a soundly constructed residential property and similar structures (in good repair), the threshold for minor or cosmetic (i.e. non- structural) damage should be taken as a Peak Particle Velocity (PPV) (in frequency range of predominant pulse) of 15mm/s at 4Hz increasing to 20mm/s at 15Hz and 50mm/s at 40Hz and above. Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of:

Table 12-16: Allowable vibration limits.

Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of:			
Building Type	**Less than 15Hz**	**15Hz to 40Hz**	**40Hz and above**
Light framed structures/residential buildings	15 mm/s	20 mm/s	50 mm/s

12.8.3 Operational Phase

12.8.3.1 Noise

The main potential source of operational noise from the development is external amenity spaces, creche operations, traffic generated on the development and plant and equipment.

12.8.3.2 Louth County Council Noise Action Plan 2024-2028

The Louth County Council Draft Noise Action Plan 2024-2028 doesn't specify any operational noise limits. Typically, most councils define these as follows:

- Daytime 55 dB(A) Leq
- Night-time 45 dB(A) Leq (or exceptionally 40 dB(A) Leq)

12.8.3.2.1 BS 4142: Methods for Rating and Assessing Industrial and Commercial Sound.

BS 4142 states that and exceedance of the noise source of the background noise by:

- +10 dB or more indicates that complaints are likely,
- + 5 dB is of marginal significance, and;
- The rating level is more than 10 dB below the measured background noise level, then this is a positive indication that complaints are unlikely.
-

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BS4142 outlines guidance for penalty corrections to be applied to the noise sources in question should the noise source have one of the following characteristics:

- The noise contains a distinguishable, discreet, continuous tone (whine, or hum);
- The noise contains distinct impulses (i.e. bangs),
- The noise is intermittent or:
- The noise is irregular.

12.8.3.3 EPA NG4: Guidance note for Noise: License Applications, Surveys and Assessments in Relation to Scheduled Activities.

EPA NG4 outlines that noise attributable solely to onsite activities from a licenced premises should not exceed the following limits:

- Daytime (07:00hrs – 19:00hrs) – 55dB LAr,T
- Evening (19:00hrs – 23:00hrs) – 50dB LAr,T
- Night time (23:00hrs – 07:00hrs) – 45dB LAeq,T

> *During daytime and evening periods rigorous efforts should be made to avoid clearly audible tones and impulsive noise at all sensitive locations. A penalty of 5dB for tonal and/or impulsive elements is to be applied to the daytime and evening measured LAeq,T values to determine the appropriate rating level (LAr,T). In all cases, an assessment by a competent person will be required.*
>
> *During the night-time period no tonal or impulsive noise from the facility should be clearly audible or measurable at any NSL.*

12.8.3.4 Vibration

There are no specific vibration criteria for buildings in Ireland. The vibration criteria for this project are based on BS 5228-2:2009+A1:2014, which provides guidance relating to the assessment of human response to vibration in terms of PPV. Table 12-17 below outlines the range of vibration values and the associated potential effects on humans.

Table 12-17: Project vibration criteria.

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Vibration Level, PPV	Effect
0.14mm/s	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies. At lower frequencies people are less sensitive to vibration.
0.3mm/s	Vibration might be just perceptible in residential environments.
1mm/s	It is likely that a vibration level of this magnitude in residential environments will cause complaint.

Vibrations typically become perceptible between 0.15mm/s to 0.3mm/s and may become annoying or disturbing at higher magnitudes. Higher levels of vibration are tolerated for single events or events of short duration, particularly during construction projects. For example, ground breaking or piling can typically be tolerated at vibration levels up to 2.5mm/s if adequate public relations are in place and timeframes are known.

12.8.4 Construction Phase

12.8.4.1 Noise Limits

The project criteria for construction noise is outlined below in Table 12-18 distance to the NSLs is based on the closest receiver for each NSL where the NSL reflects a number of sensitive receivers at each NSL. Reference to the baseline survey results and guidance contained in BS 5228 Part 1 for construction noise levels threshold for significance affect from constriction activities is set as follows for the closest noise sensitive locations as shown below in Figure 12-4.

Figure 12-4: Site location, noise sensitive locations, measurement locations, and the surrounding area.

Table 12-18: Construction noise limits.

Noise Sensitive Location	Distance to the Centre of the Site	Ambient Noise dB(A) Leq	Noise Limit dB(A) Leq 1
NSL1	170	42	65
NSL2	280	48	65
NSL3	430	42	65
NSL4	430	45	65
NSL5	480	45	65

1) 65 dB (A) lower threshold limit at the noise sensitive locations

For the appropriate assessment period (i.e. daytime in this instance) the ambient noise level is determined and rounded to the nearest 5dB. If the noise generated by construction activities exceeds the appropriate category value, then a significant effect is deemed to occur.

For large infrastructure projects a limit of 75dB(A) is set as the appropriate the upper limit for construction noise within urban areas near main roads in heavy industrial areas. This is considered an appropriate upper limit for construction noise.

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12.8.4.2 Construction Noise Predictions

This section outlines the predicted noise levels for the construction phase.

Table 12-19: Construction noise predictions.

Construction Phase	Item of Plant (BS 5228-1:2009+A1:2014 Ref)	Noise Level (L_{Aeq} at 10m dB(A))	On Time of 10 hr day
Site Setup	Digger	77	4 hours
	Carpentry tools	78	3 hours
	Skill saw	84	2 hours
Substructure	Excavators	77	2 Hours
	Con saws	84	3 Hours
	Drills	85	3 Hours
	Dumper 7t	81	2 Hours
	Cement Mixer	75	4 Hours
	Telescopic Handler	71	4 Hours
	Concrete Pump	78	3 Hours
Superstructure	Drills	85	3 Hours
	Power Tools	70	3 Hours
	Impact Steel	69	2 Hours
	Hammer	69	1 Hour
	Dumper 7t	81	3 Hours
	Cement Mixer	75	2 Hours
	Telescopic Handler	71	5 Hours
External finishes	Hand Tools	70	5 hours
	Power Tools	70	2 hours
Internal finishes	n/a	n/a	n/a

Table 12-20 summarises the predicted construction noise level at the noise sensitive locations. Examination of the results indicate the construction noise without mitigation is predicted to exceed the noise limits during all stages of the development.

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Table 12-20: Predicted noise levels without mitigation for each stage at the noise sensitive locations.

Location	Noise Limit	Predicted noise level (construction noise + ambient) with no mitigation L_{Aeq}, dB			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	67	74	71	56
NSL2	65	65	72	69	55
NSL3	65	63	70	67	53
NSL4	65	63	70	67	53
NSL5	65	63	69	67	52

Table 12-21 below outlines the attenuation required at each noise sensitive location for the construction stage. Mitigation measures outlined in Section can be used to adequately attenuate construction noise.

Table 12-21: Attenuation required without mitigation for each stage at the noise sensitive locations.

Location	Noise Limit	Predicted noise level (construction noise + ambient) with no mitigation L_{Aeq}, dB			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	2	9	6	0
NSL2	65	0	7	4	0
NSL3	65	0	5	2	0
NSL4	65	0	5	2	0
NSL5	65	0	4	2	0

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12.8.4.3 Construction Traffic Noise Predictions

This section outlines the potential noise impact from the construction traffic arriving and departing from the site. The assessment has been conducted based on a worst-case scenario using figures provided by the traffic consultant. The AADT reference figure is outlined below in Figure 12-6.

12.8.4.4 Figure 12-5: AADT referenced road layout.

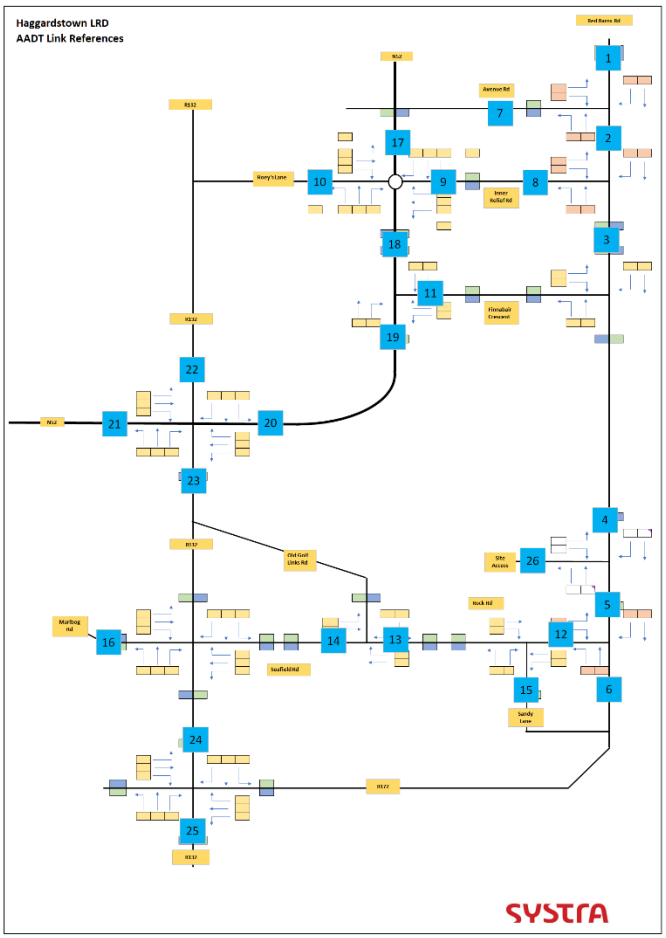

Figure 12-6: AADT link layout.

12.8.4.5 Construction Traffic Figures

Table 11-19 to Table 11-22 below outlines the construction traffic figures provided by Systra for use in this assessment.

Table 12-22: AADT Figures per Link (Construction Phase)

Link Number	Road Link	Construction Traffic AADF			% impact
		HGV	Personnel	Total	
4	R172 north of Site Access	40	60	100	1.10%
11	Finnabair Crescent to east of N52	40	60	100	3.20%
19	N52 south of Finnabair Crescent	40	60	100	0.80%
20	N52 east of R132	40	60	100	0.80%
21	N52 west of R132	40	60	100	0.50%
22	R132 north of N52 junction	40	60	100	0.90%
23	R132 south of N52 junction	40	60	100	0.90%

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12.8.4.6 Construction Traffic Predictions

Based on the figures outlined above in Section 12.8.4.5 the construction phase of the development is expected to contribute minimal traffic volumes in the area. The increase in traffic related noise levels over baseline figures is predicted to be less than 1dBA Leq. Table 12-23 below outlines the magnitude of impact based on the increased construction traffic on the surrounding roads.

Table 12-23: Likely effect associated with change in construction traffic noise levels.

Magnitude of Impact	Increase in Traffic Noise Levels (dB)
No Impact	Less than 1.0
Minor	Greater than or equal to 1.0 and less than 3.0
Moderate	Greater than or equal to 3.0 and less than 5.0
Major	Greater than or equal to 5.0

12.8.4.7 Construction Vibration

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Vibration impact is not anticipated for most of the construction stage, some vibration is expected to be generated during the substructure stage where piling operations or earth works are likely to occur. During this phase, compliance with vibration criteria is evaluated using a combination of measured data and general estimates, as predicting vibration impacts over distance is challenging due to variations in soil composition and ground conditions. While precise predictions are difficult to achieve, general estimates based on measured vibration levels at specific distances, as outlined in BS5228-2, provide a practical method for assessing potential impacts, as outlined below in Table 12-24.

Table 12-24: Likely Construction Noise Impact.

Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of:			
Building Type	**Less than 15Hz**	**15 to 40Hz**	**40Hz and above**
Light framed structures/ residential buildings	15 mm/s	20 mm/s	50 mm/s

12.8.5 Operational Phase

12.8.5.1 Operational Noise Predictions

This section outlines the predicted operational noise impact on the surrounding noise sensitive receptors. The operational noise sources for the proposed development include, external amenity spaces, creche play area, creche car parking, additional traffic generated across the site and plant and equipment as outlined in Section 12.8.5.2.

12.8.5.2 Plant Noise

The operational external mechanical plant and equipment associated with the residential units is not available at this stage. In the absence of information regarding the operational plant during planning stage the approach has been taken to determine suitable operational noise emission limits.

The closest NSL to the proposed development site is NSL1. The closest representative noise monitoring location to NSL1 is N1/N3, limits have also been set for the remaining NSL's and outlined below in Table 12-25.

To be reflective of a worst-case scenario, the lowest L_{A90} measured from the daytime and night-time have been used to determine suitable operational noise emission limits.

Table 12-25 below contains the daytime and night-time noise threshold limits to be adhered to for any plant/equipment noise from the proposed development at the nearest noise sensitive location (NSL1).

Table 12-25: Derived noise threshold limits for plant/equipment noise.

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NSL	Background Noise Levels LA90 dB	Penalty for Tonality dB(A)	Derived Noise Threshold Limit dB(A) Leq at Noise Sensitive Locations
1	37 (Daytime)	TBC	37
	30 (Night)	TBC	30
2	41 (Daytime)	TBC	41
	31 (Night)	TBC	31
3	38 (Daytime)	TBC	38
	31 (Night)	TBC	31
4	38 (Daytime)	TBC	38
	31 (Night)	TBC	31
5	40 (Daytime)	TBC	40
	31 (Night)	TBC	31

At detail design stage mitigation measures, if required, may need to be incorporated into the design of external plant and equipment if applicable.

12.8.5.3 Operational Traffic

Operational phase traffic volumes have been provided by Systra for use in this chapter. Table 12-26 below outline the operational traffic volumes.

Table 12-26: AADT Figures per Link (Operational Phase)

Link Number	Link Name	Two-way AADT				Speed (kph)	Length (km)	% HGV
		Opening Year 2028	Design Year 2043	Opening Year 2028 + Dev	Design Year 2043 + Dev			
1	Red Barns Rd north of Avenue Rd	7,387	8,725	7,750	9,088	No data	200	No data
2	R172 between Avenue Rd and Inner Relief Rd	11,403	13,330	12,242	14,170		530	1.30%

Link Number	Link Name	Two-way AADT				Speed (kph)	Length (km)	% HGV
		Opening Year 2028	Design Year 2043	Opening Year 2028 + Dev	Design Year 2043 + Dev			
3	R172 between Inner Relief Rd and Finnabair Crescent	10,615	12,058	11,645	13,088		640	1.10%
4	R172 north of Site Access	9,659	11,531	10,961	12,832		630	No data
5	R172 south of Site Access	9,160	10,378	10,027	11,404		1300	No data
6	R172 between Rock Road and Sandy Lane	5,395	6,164	5,913	6,682		580	No data
7	Avenue Road between N52 and R172	6,523	7,479	6,999	7,956		530	No data
8	Inner Relief Road west of R172	5,150	5,906	5,340	6,097		280	No data
9	Inner Relief Road east of N52	7,547	8,655	7,620	8,728		270	15.20%
10	Hoey's Lane to west of N52	8,662	9,933	8,726	9,996		200	6.90%
11	Finnabair Crescent immediately to east of N52	3,485	3,962	3,756	4,234		660	3.10%
12	Rock Road to west of R617	4,992	5,607	5,477	6,093		800	1.10%
13	Rock Road between Old golf Links Rd and Sandy Lane	6,717	7,497	7,066	7,845		240	0.90%

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Link Number	Link Name	Two-way AADT				Speed (kph)	Length (km)	% HGV
		Opening Year 2028	Design Year 2043	Opening Year 2028 + Dev	Design Year 2043 + Dev			
14	Rock Rd between R132 and Old Golf Links Rd	3,499	3,959	3,708	4,168		780	0.50%
15	Sandy Lane	3,543	4,049	3,543	4,049		610	0.60%
16	Marlbog Rd	4,730	5,400	4,896	5,565		200	4.30%
17	N52 between Avenue Rd and Inner Relief Rd	11,852	13,453	11,961	13,539		710	2.30%
18	N52 between Inner Relief Road and Finnabair Crescent	11,876	13,482	11,975	13,570		480	2.40%
19	N52 south of Finnabair Crescent	13,583	15,405	13,784	15,607		480	4.40%
20	N52 east of R132	14,906	16,922	15,108	17,123		480	4.20%
21	N52 west of R132	21,295	24,185	21,463	24,353		400	3.90%
22	R132 north of N52 junction	12,076	13,690	12,108	13,722		2100	2.50%
23	R132 south of N52 junction	12,899	14,674	12,967	14,741		1200	3.40%
24	R132 north of R172	8,102	9,214	8,102	9,214		1300	3.90%
25	R132 south of R172	9,337	10,610	9,758	11,031		400	3.70%
26	Site Access	0	0	2,168	2,168		200	0.00%

12.8.5.3.1 Operational Phase Traffic Predictions

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The Design Manual for Roads and Bridges (DMRB) states that it takes a 25% increase in traffic flows in order to get a 1dBA increase in traffic noise levels. Traffic flow increases associated with the proposed development will be significantly less than 25% and hence traffic noise level increases will be significantly less than 1dBA.

It is generally accepted that it takes an approximate 3dBA increase in noise levels to be perceptible to the average person (Ref: Planning Policy Guidance Note 24 [PPG24 - Planning & Noise).

Operational traffic noise levels associated with the proposed development will not have a negative impact on nearby noise sensitive locations (NSLs). The magnitude of effect is no impact.

Table 12-27: Likely effect associated with change in traffic noise levels.

Magnitude of Impact	Increase in Traffic Noise Levels (dB)
No Impact	Less than 1.0
Minor	Greater than or equal to 1.0 and less than 3.0
Moderate	Greater than or equal to 3.0 and less than 5.0
Major	Greater than or equal to 5.0

12.8.5.3.2 Communal Amenity Space Noise

The operational phase of the proposed development will feature noise from the usage of external amenity spaces located around the development. A noise model has been created to predict the operational noise levels from the proposed amenity spaces on the nearest noise sensitive locations. For the purpose of the model, it is assumed that the amenity spaces will be operational during the hours of 16:00hrs-01:00hrs, with 1 in 3 talking. The operational capacity of each space is listed below:

- Central Open Space – 42 persons.
- Open Space between blocks R & T – 12 persons.
- Open Space to the north of Creche – 6 persons.

  Open Space to the west of Creche – 6 persons.
- Open Space to the north of block V – 6 persons.
- Open Space to the north of block N – 12 persons.
- Open Space to the south of block M – 12 persons.
- Open Space to the east of block J – 12 persons.

- Open Space to the east of block D – 12 persons.

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Table 12-28: External amenity sound power levels.

Description	Octave Band Sound Power Level L_W dB at Centre Frequency (Hz)								Overall Sound Power Level L_{WA} dB
	63	125	250	500	1000	2000	4000	8000	
Male talker with normal voice.	56	58	67	69	63	59	55	50	69

12.8.5.3.3 Creche Play Area Noise Levels

Table 12-29 below outlines the noise levels of the creche play area. Additionally, the creche has been assessed for 3 hours of external play during the hours of 08:00hrs-18:00hrs during the week. The creche is assumed to not be operational during the night-time period.

Table 12-29: Creche play area sound power levels.

Description	Octave Band Sound Power Level L_W dB at Centre Frequency (Hz)								Overall Sound Power Level L_{WA} dB
	63	125	250	500	1000	2000	4000	8000	
Creche play area	80	77	75	76	75	71	65	55	79

12.8.5.4 Daytime Noise Impact

As the development has the potential to generate noise with different characteristics for both the day and nighttime periods, a model has been undertaken for both the day and nighttime operations of the proposed development.

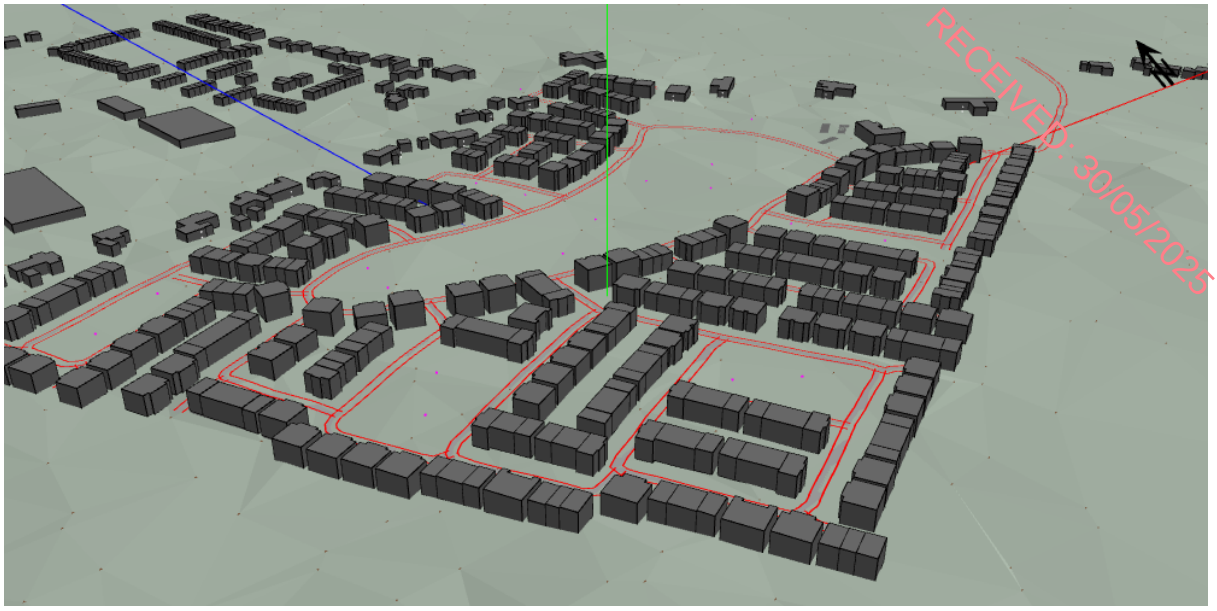

Figure 12-7: Screenshot from noise model.

The daytime situation assumes the following noise sources:

- External amenity spaces outlined above in operation during the daytime hours of 16:00hrs-23:00hrs.
- Creche play area in use for 3 hours daily.
- Creche parking assumed to have 1 movement per space during morning/evening.
- Operational traffic AADT assigned to entrance roads of the proposed development, as outlined in

Noise levels from the unattended noise monitoring position N3 have been averaged for the daytime periods for use in the assessment.

Table 12-30: BS 4142 assessment for the daytime period.

Results		Relevant BS 4142 Clause	Commentary
Predicted specific sound level (daytime)	LAeq(15min) = 42dB	7.3.6	As the proposed development is not yet existing, the noise levels have been predicted using SoundPlan modelling software. Worst case specific sound predicted at NSL2.
Residual sound level (daytime)	LAeq(60min) = 50dB	7.3.2	The residual sound level was dominated by road traffic noise on the nearby roads. Background location N3 assessed as this

Results		Relevant BS 4142 Clause	Commentary
			is representative for worst case receptor (NSL2).
Background sound level (daytime)	LA90(60min) = 44dB	8.1.2 8.4	The LA90 sound level was measured at a representative location with the source absent.
Assessment made during the daytime, so the reference time interval is 1 hour		7.2	
Specific sound level as predicted	LAeq(15min) = 42dB	7.3.6	The specific sound has been predicted by calculation alone as the new development is not existing at the time of the survey.
Acoustic feature correction	+0dB	9.2 9.3.2	It is not anticipated that the specific sound will have any impulsive, tonal or intermittent characteristics.
Rating level	(42 + 0) dB = 42dB	9.2	
Background sound level	LA90(60min) = 44dB	8	
Excess of rating over background sound level	(42 - 44) dB = -2dB	11	Assessment indicates that no adverse impact is likely on the noise sensitive locations as the specific sound is 2dB below the background levels and is lower than the residual sound. Context has also been considered.
Uncertainty of the assessment	Not significant	10	The specific sound is a worst-case prediction as the assessment assumes operational noise sources as outlined above.

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Based on the review of the noise sources and the BS 4142 assessment it is predicted that the noise emanating from the proposed development will likely not have an adverse impact.

12.8.5.4.1 Tonality & Impulsivity

The tonality and impulsivity of the noise sources has been considered, given the residual sound and the predicted noise levels from the development it is not anticipated that there will be tonal or impulsive characteristics to the noise. Plant and equipment should be reviewed at design development stage as highlighted above in Section 12.8.5.2.

12.8.5.5 EPA NG4

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NG4 recommends a daytime criterion of (07:00hrs – 19:00hrs) 55dB $L_{Ar,T}$, the predicted noise emissions from the development are 42 dBA at NSL2, with no tonality or impulsivity, therefore the NG4 criteria is expected to be achieved. Table 12-31 below outlines the predicted noise impact at each noise sensitive location from the operation of the external amenity spaces, creche play area and car parking, and additional traffic across the development, the project criteria and compliance with the project criteria.

Table 12-31: Predicted noise levels at each noise sensitive location.

Location	Distance to centre of the site (Meters)	EPA NG4 Daytime Criteria $L_{Ar,T}$ dBA	Predicted Noise Level from Proposed Development $L_{eq,T}$ dBA	Compliance
NSL1	170	55	30	Compliant
NSL2	280	55	42	Compliant
NSL3	430	55	40	Compliant
NSL4	430	55	35	Compliant
NSL5	480	55	26	Compliant

12.8.5.6 Night-time Scenario

As the development has the potential to generate noise with different characteristics for both the day and nighttime periods, a model has been undertaken for both the day and nighttime operations of the proposed development.

The daytime situation assumes the following noise sources:

- External amenity spaces outlined above in operation during the daytime hours of 23:00hrs-01:00hrs.
- Creche play area not in operation.
- Creche car parking not in operation.
- Operational traffic AADT assigned to entrance roads of the proposed development, as outlined in Table 12-26.

Noise levels from the unattended noise monitoring position N3 have been averaged for the night-time periods for use in the assessment.

Table 12-32: BS 4142 assessment for the daytime period.

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Results		Relevant BS 4142 Clause	Commentary
Predicted specific sound level (daytime)	LAeq(15min) = 36dB	7.3.6	As the proposed development is not yet existing, the noise levels have been predicted using SoundPlan modelling software. Worst case specific sound predicted at NSL2.
Residual sound level (daytime)	LAeq(60min) = 43dB	7.3.2	The residual sound level was dominated by road traffic noise on the nearby roads. Background location N3 assessed as this is representative for worst case receptor (NSL2).
Background sound level (daytime)	LA90(60min) = 37dB	8.1.2 8.4	The LA90 sound level was measured at a representative location with the source absent.
Assessment made during the daytime, so the reference time interval is 1 hour		7.2	
Specific sound level as predicted	LAeq(15min) = 36dB	7.3.6	The specific sound has been predicted by calculation alone as the new development is not existing at the time of the survey.
Acoustic feature correction	+0dB	9.2 9.3.2	It is not anticipated that the specific sound will have any impulsive, tonal or intermittent characteristics.
Rating level	(36 + 0) dB = 36dB	9.2	
Background sound level	LA90(60min) = 37dB	8	
Excess of rating over background sound level	(36 - 37) dB = -1dB	11	Assessment indicates that no adverse impact is likely on the noise sensitive locations as the specific sound is 1dB below the background levels and is lower than the residual sound. Context has also been considered.
Uncertainty of the assessment	Not significant	10	The specific sound is a worst-case prediction as the assessment assumes operational noise sources as outlined above.

Based on the review of the noise sources and the BS 4142 assessment it is predicted that the noise emanating from the proposed development will likely not have an adverse impact.

12.8.5.6.1 Tonality & Impulsivity

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The tonality and impulsivity of the noise sources has been considered, given the residual sound and the predicted noise levels from the development it is not anticipated that there will be tonal or impulsive characteristics to the noise. Plant and equipment should be reviewed at design development stage as highlighted above in Section 12.8.5.2.

12.8.5.7 EPA NG4

NG4 recommends a daytime criterion of (23:00hrs – 07:00hrs) 45dB $L_{Aeq,T}$, the predicted noise emissions from the development are 36 dBA at NSL5, with no tonality or impulsivity, therefore the NG4 criteria is expected to be achieved. Table 12-33 below outlines the predicted noise impact at each noise sensitive location from the operation of the external amenity spaces, creche play area and car parking, and additional traffic across the development, the project criteria and compliance with the project criteria.

Table 12-33: Predicted noise levels at each noise sensitive location.

Location	Distance to centre of the site (Meters)	EPA NG4 Daytime Criteria $L_{eq,T}$ dBA	Predicted Noise Level from Proposed Development $L_{eq,T}$ dBA	Compliance
NSL1	170	45	25	Compliant
NSL2	280	45	36	Compliant
NSL3	430	45	34	Compliant
NSL4	430	45	28	Compliant
NSL5	480	45	21	Compliant

12.8.5.8 Operational Vibration Predictions

There are no sources of vibration associated with the operational phase of the development.

12.8.6 Cumulative Effects

Table 11-38 below outlines the committed developments in the local area.

Table 12-34: Cumulative projects.

Planning Ref	Description	Application Type	Decision	Comments
ABP 303891 and ABP 306503	142 no. apartments and associated site works	SHD	Permitted.	Under Construction.

Planning Ref	Description	Application Type	Decision	Comments
24/102			EOD Permitted.	This permission expires 31st December 2026
ABP 303253 23/406	166 no. residential units, creche, completion of street network and link roads and associated site works	SHD	Permitted. EOD Permitted.	Under Construction. This permission expires 30th Sept 2025
25/2	EOD of 304782 – an SHD comprising 483 no. units.	Extension of Duration	Refused 07/03/2025	This is located at the application Site.
ABP 308135	257 no. residential units (163 no. houses, 94 no. apartments), childcare facility and associated site works	SHD	Granted 23/12/2020	Under construction. This permission will expire in Q1 2026.
15/285 ABP 245454 20/981	4 blocks of student housing comprising 21 units, a total of 189 rooms, 127 room nursing home, training centre, parking and ancillary site works.		Permitted. EOD Permitted.	Under construction. This permission expires 24th January 2026.
21/1032 ABP 311776	Construction of 29 residential units comprising 24 no. apartments in two blocks, 5 houses.	Application	Granted 27/04/2023	Under Construction. NIS Included
23/64, ABP 316990	Construction of 183 residential units and associated site works	LRD	Granted 03.05.2023	
2360177	15 no. dwellings		Granted 06.06.2024	
2360113, ABP 318894	Demolition of dwelling with associated outbuildings for construction of 37 residential units with car parking, vehicular		Refused by LCC. Appealed.	

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Planning Ref	Description	Application Type	Decision	Comments
	and pedestrian access along with all associated ancillary site works		Decision Outstanding.	
22583	Resi development comprising c. 234 dwellings	S.34	Granted 17.02.2023	NIS included
22688		S.34	Granted 06.07.2023	
2360257		S.34	Granted 20.09.2023	
2460331		S.34	Granted 05.12.2024	
2460512	Neighbourhood centre including retail, medical practice, pharmacy, café, dental and creche	S.34	Decision to Grant 10.03.2025	Check final status
2460649	Resi development comprising 91 units	S.34	FI Requested 06.12.2024	Check final status
2460737	Resi development comprising 80 units	S.34	FI Requested 24.01.2025	Check final status
2460785	Resi development comprising 85 units	S.34	FI Requested 07.02.2025	Check final status
221000, ABP 318174	Demolition of derelict structure and construction of 39 dwellings and all associated site works	S.34	Granted 19.09.2024	NIS
2460033, ABP 321426	Construction of a discount supermarket with off-licence along with all associated site works	S.34	Granted by LCC. Appealed. Decision Outstanding.	NIS
2460037	Permission for the subdivision of ground floor unit 2 into two separated units	S.34	Granted 08.04.2024	

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Planning Ref	Description	Application Type	Decision	Comments
2460114	Permission for A. The construction of a new material storage building (Area=2020m2, Height = 13.57m). B. Extension of yard to the West of the existing building. C. Removal of existing carpark area and replacement of same with construction of new carpark area to the North East and extension of carpark to the South East of Site. D. Alterations to site landscaping. E. All associated site development works	S.34	Granted 19.04.2024	
2460675	Extension to Felda Health and Spa		Decision Due Date 15.04.2025	Check final status
PT8LH154	Dundalk Active Travel Project along the Dublin Road from Xerox Junction (R132, R215 intersection) heading northwards to Riverside Walk for a length of c.2km	Part 8	Proceed 10.09.2024	
PT8LH116	Inner Relief Road Active Travel Scheme to install high-quality segregated pedestrian and cycling infrastructure to improve safety and promote Active Travel along the R132 Inner Relief Road Dundalk from Xerox Junction (R132, R215 intersection) heading northwards to The		Proceed 10.09.2024	

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Planning Ref	Description	Application Type	Decision	Comments
	Tain Bridge for a length of c.4km			
	Uisce Eireann Coes Road Upgrade works to be completed by Q4 2029 – Q1 2030	Development by Statutory Undertaker		Construction period likely to overlap
	Dundalk Flood Relief Scheme			The project timeline given by the OPW indicates that the planning and development consent stage will run from Q3 2024 to end Q2 2026.
	Dundalk Active Travel Project – Dublin Road (R132) Dundalk, Xerox Junction to Greengates	Part 8	Consultation Stage.	Consultation on Preliminary Design Proposals in Nov / Dec 2024.

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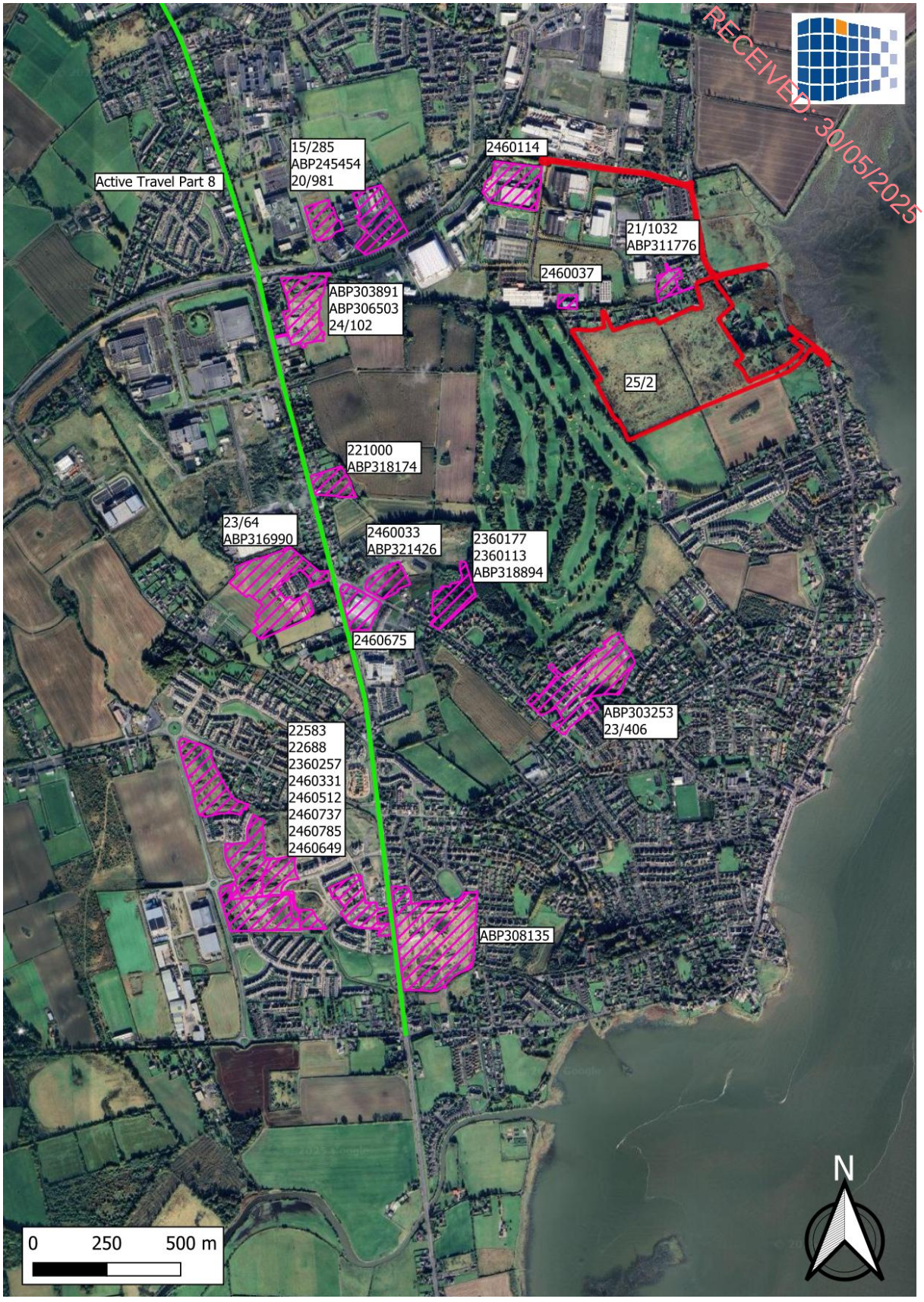

Figure 12-8: Aerial view of cumulative projects.

The cumulative impact of the committed developments have been considered, it is not known if the construction periods of the developments will align. However, given the locations of the developments, the predictions and assessments undertaken it is not predicted that the in combination effects will have a negative impact on the noise sensitive receptors for the majority of the developments outlined in Table 12-34 and Figure 12-8 above. However, there are two developments (Ref: 2460037 and 21/1032) that are within 500m of the proposed development which may cause cumulative noise impact during the construction phase depending on if construction phases align.

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The following Table **12-35** summarises the identified likely significant effects during the construction phase of the proposed development before mitigation measures are applied.

Table 12-35 Summary of Construction Phase Likely Significant Effects in the absence of mitigation

Quality	Significance	Duration	Type
Negative	Slight	Short-Term	Noise
Neutral	Imperceptible	Short-Term	Vibration

The following Table 12-36 summarises the identified likely significant effects during the operational phase of the proposed development before mitigation measures are applied.

Table 12-36 Summary of Operational Phase Likely Significant Effects in the absence of mitigation.

Quality	Significance	Duration	Type
Neutral	Imperceptible	Long-Term	Noise
Neutral	Imperceptible	Long-Term	Vibration

12.9 Mitigation Measures - Noise

12.9.1 Incorporated Design Mitigation

Based on the layout of the dwellings, the central amenity space where the majority of large gatherings are likely to take place, is screened to a high degree at the NSL's due to the proposed dwellings surrounding the space.

Additionally, the distances between amenity spaces and the sensitive receptors also provides attenuation due to the distance attenuation rule.

12.9.2 Construction and Demolition Phase

Best practice control measures for noise from construction sites are found within 5228 Code of practice for noise and vibration control on construction and open sites (2009 +A1 2014) Part 1"Construction noise impacts are expected to vary throughout the project, depending on the distance

between construction activities and noise-sensitive receptors. The contractor will implement best-practice noise control measures to minimise any adverse effects on off-site sensitive locations."

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The best practice measures set out in BS 5228 (2009) Part 1 includes guidance on several aspects of construction site mitigation measures, this includes the:

- selection of quiet plant and equipment;
- noise control at source of the noise;
- screening, and;
- public liaison.

12.9.2.1 General Recommendations

This section of the report sets out noise mitigation options and detailed comment on each one specifically for this site.

12.9.2.2 Selection of Plant and Equipment

The noise impact of all plant and equipment should be assessed prior to selection of plant for the project. Where an item of plant is identified as noisy with the potential to cause a negative noise impact it should be reviewed to check if there is an alternative quieter version of the same plant to undertake the same construction task.

12.9.2.3 Noise Control at Source

Where replacing a noisy item of plant is not viable or practical, consideration should be given to control that noise at source. This includes modifying the piece of plant or equipment to generate less noise, using dampening to control vibration induced noise or rattling. The following best practice measures will be applied:

- All plant and equipment to be switched off when idling.
- The use of white noise reversing alarms.
- Restriction on the dropping and loading of materials to less sensitive hours.
- The use of local screening for noisy activities or works with hand tools.
- Not dropping materials onto hard surfaces and using rubber mats etc for the dropping of materials.
- Ensure all plant and equipment is well maintained and cleaned, all lubrication should be in line with manufacturers guidelines.

12.9.2.4 Screening

Screening when used correctly can be an effective method of reducing the construction noise impact on the NSL's. The use of site hoarding and careful selection of areas for noise works, using site offices and the buildings being constructed to screen noise from the works.

Local screening of noisy works with the use of temporary acoustic barriers, examples are provided below:

- https://ventac.com/acoustic-products/noisebreak-acoustic-barrier/
- https://echobarrier.com/

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Figure 12-9: Temporary Construction Noise Barrier © Ventac

12.9.2.5 Public Engagement

A public liaison officer (site manager) will be put forward by the contractor to liaise with the local residents on matters relating to noise. Residents should be informed of any noise works scheduled where there is the potential to generate high levels of construction noise or if specialist works etc need to be conducted out of the working hours. This person should also be the point of contact for all complaints and be responsible for reviewing the noise monitoring results and exceedances.

12.9.2.6 Site Specific Recommendations

The Table below outlines the recommended site-specific noise mitigation measures based on the attenuation required in Table 11-13.

Table 12-37: Site-specific mitigation measures.

Construction Stage	Recommended Noise Mitigation Measure
Site Setup	Erect a minimum 2.4m high site hoarding that blocks the line of sight between noise source and receiver. Example construction for the site hoarding would be as follows: • A 2.4m high and 9mm plywood (4.5 kg/m2). Barrier must be solid and not contain gaps at the bottom or between adjacent panels Local screening using the examples provided in General Recommendations section 12.9.2.1 are required around hand tools in addition to hoarding. An absorptive lining should be considered for screening around hand tools will need to have an absorptive lining to avoid reflections increasing noise at other receivers. On this project 5 NSL's have been identified it is recommended that a noise monitor should be placed on the boundary with the nearest noise sensitive locations closest to the works i.e. NSL1 or NSL2 are the most appropriate locations.
Substructure	Site hoarding to block line of sight. Local screening around noisy plant and equipment. Noise monitoring as above
Superstructure	Local screening around saws/hammers where possible. Use external new building to screen noise from works where possible. Noise monitoring as above
External finishes	Local screening around hand tools. Noise monitoring as above

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12.9.3 Operational Phase

Based on the results from the noise impact assessment, the predicted results show compliance with all relevant standards for noise impact at the surrounding noise sensitive receptors. Therefore, no mitigation measures are required for the operational phase of the development.

12.10 Mitigation Measures - Vibration

12.10.1 Construction and Demolition Phase

Prediction of vibration levels at receptors is complex and dependent on several variables including 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 under specific conditions e.g. soil type, however there is no data for other types of equipment.

Taking account of the distances to the works and notwithstanding ground conditions present, it is not anticipated that the vibration criteria outlined above will not be exceeded. However, it is recommended, precautionary vibration monitoring at the boundary with the nearest sensitive receptors is undertaken during construction (for vibration generating works).

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12.10.2 Operational Phase

Based on the type, and assumed usage of the development, it is not expected that there will be any operational vibration sources and impacts on surrounding noise sensitive receptors. Therefore, no mitigation is required to offset operational vibration impacts.

12.11 Residual Impact Assessment

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

12.11.1 Construction Phase

12.11.1.1 Noise

As the construction phase is temporary, there will be no long-term/permanent noise impacts on the surrounding area from construction noise. Section 12.9 above outlines mitigation measures which if used in full will reduce the construction noise impact on the surrounding sensitive receptors.

12.11.1.2 Vibration

As the construction phase is temporary, there will be no long term/permanent vibration impacts on the surrounding area from construction activities. Section 12.10 above outlines mitigation measures which if used in full will reduce the construction vibration impact on the surrounding sensitive receptors.

12.11.2 Operational Phase

12.11.2.1 Noise

Operational noise sources include creche play area, creche car parking, external amenity spaces, and other traffic movements in and out of the site. Based on the noise impact assessment it is not likely that these sources will have a negative noise impact on the surrounding area.

12.11.2.2 Vibration

Based on the type, and assumed usage of the development, it is not expected that there will be any operational vibration impacts on surrounding noise sensitive receptors.

12.11.3 Summary of Post-mitigation Effects

The following Table 12-38 summarises the identified likely significant residual effects during the construction phase of the proposed development following the application of mitigation measures.

Table 12-38 Summary of Construction Phase Effects Post Mitigation

Quality	Significance	Duration	Type
Neutral	Slight	Short-Term	Noise
Neutral	Imperceptible	Short-Term	Vibration

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The following Table 12-39 summarises the identified likely residual significant effects during the operational phase of the proposed development post mitigation.

Table 12-39 Summary of Operational Phase Effects Post Mitigation

Quality	Significance	Duration	Type
Neutral	Imperceptible	Long-Term	Noise
Neutral	Imperceptible	Long-Term	Vibration

12.11.4 Cumulative Residual Effects

The cumulative residual effects of the proposed development, considering both the construction and operational phases, are primarily related to noise emissions. In accordance with EPA guidance on the assessment of environmental effects, the predicted impact due to changes in road traffic noise has been assessed.

Traffic modelling indicates that increases in road traffic flows are significantly less than 25%. As per the Design Manual for Roads and Bridges (DMRB), a 25% increase in traffic flow typically results in a 1 dB increase in noise levels. Given the predicted increase is well below this threshold, the associated change in noise levels at noise-sensitive locations is likely to be less than 1 dB, which is considered imperceptible to negligible.

Accordingly, residual noise impacts from operational traffic are classified as imperceptible and not significant in accordance with EPA significance criteria. These effects are expected to be localised, transient (in the case of construction), and fully compliant with relevant acoustic criteria, ensuring no adverse long-term impacts.

No other significant residual environmental effects are expected following the application of standard construction-phase mitigation measures. The noise environment will remain within acceptable thresholds during both construction and operation.

Table 12-40 below outlines the magnitude of effects due to the increase in traffic levels with the operation of the development.

Table 12-40: Likely effect associated with change in construction traffic noise levels.

Magnitude of Impact	Increase in Traffic Noise Levels (dB)
No Impact	Less than 1.0
Minor	Greater than or equal to 1.0 and less than 3.0
Moderate	Greater than or equal to 3.0 and less than 5.0
Major	Greater than or equal to 5.0

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12.12 Risk of Major Accidents or Disasters

There is no predicted adverse effects of the project on the environment in terms of noise or vibration. As outlined above in Section 12.9 the construction phase of the project will pose potential noise nuisance without mitigation measures in place and the operational phase of the project is predicted to comply with relevant standards such as the Louth County Council Noise Action Plan and EPA NG4.

12.13 Worst Case Scenario

This assessment assumes a worst-case scenario when assessing the construction and operational noise impacts on the surrounding noise sensitive locations. The dominating noise source in the area is road traffic noise, even with the additional traffic from the construction and operational phases the predicted noise levels at the sensitive locations are within project criteria.

12.14 Interactions

Interactions are dealt with in Chapter 16 of this EIAR.

12.15 Monitoring

Noise and vibration monitoring should be considered during the construction and demolition phase of the development as outlined below. Particularly during the substructure stage of construction when piling or earth works operations are likely to occur. There are a multitude of noise sensitive receptors surrounding the development lands, NSL's 1 and 2 are the most suitable locations for noise and vibration monitors to be erected.

No operational monitoring is required.

12.15.1 Noise Monitoring

Noise monitoring should be undertaken at periodic sample periods on the boundary with the nearest noise sensitive receptors.

Noise monitoring should be conducted in accordance with the *International Standard ISO 1996: 2017: Acoustics – Description, measurement and assessment of environmental noise*.

12.15.2 Vibration Monitoring

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Vibration monitors should be considered during the substructure phase of the development between the site and NSL 1/NSL2 as these are closest vibration sensitive locations on the boundary of the site.

The Vibration monitoring stations should continually log vibration levels using the Peak Particle Velocity parameter (PPV, mm/s) in the X, Y and Z directions, in accordance with *BS ISO 4866: 2010: Mechanical vibration and shock – Vibration of fixed structures – Guidelines for the measurement of vibrations and evaluation of their effects on structures.*

The recommended vibration limits to avoid cosmetic damage to buildings, as set out in:

- British Standard BS7385: 1993: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration, and;
- British Standard BS5228-2: 2009 + A1: 2014: Code of practice for noise and vibration control on construction and open sites – Vibration.

The standards note that minor structural damage can occur at vibration magnitudes which are greater than twice those presented in Table 11-43 and major damage to a building structure is possible at vibration magnitudes greater than four times the values set out in Table 12-41. Definitions of the damage categories are presented in BS 7385-1:1990.

Table 12-41: Transient vibration guide values for cosmetic damage.

Vibration PPV at the closest part of sensitive property to the source of vibration Frequency		
4 to 15 Hz	**15 to 40Hz**	**40Hz and above**
15 mm/s	20 mm/s	50 mm/s

Note 1: At frequencies below 4 Hz, a maximum displacement of 0.6 mm (zero to peak) is not to be exceeded.

Note 2: It should be noted that these values are at the base of the building.

12.16 Summary of Mitigation and Monitoring

The following Table 12-42 summarises the Construction Phase mitigation and monitoring measures.

Table 12-42 Summary of Construction Phase Mitigation and Monitoring

Likely Significant Effect	Quality	Significance
Neutral	Slight	Short-Term
Neutral	Imperceptible	Short-Term

The following Table 12-43 summarises the Operational Phase mitigation and monitoring measures.

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Table 12-43 Summary of Operational Phase Mitigation and Monitoring

Likely Significant Effect	Quality	Significance
Neutral	Imperceptible	Long-Term
Neutral	Imperceptible	Long-Term

12.17 Conclusion

12.17.1 Construction Phase

Mitigation measures are required during the substructure and superstructure stages of the construction phase to minimise potential noise and vibration impacts. This includes managing noise and vibration levels associated with earth works and other high-impact activities to ensure compliance with relevant standards and to limit disturbances to nearby receptors. With the implementation of these measures, the construction phase impacts are expected to be managed effectively and kept within acceptable thresholds.

12.17.2 Operational Phase

The operational phase of the development is compliant with the project criteria. Noise associated with the marginal increase in traffic flows is projected to result in a maximum increase of 1dBA from baseline figures in 2024 to the design year 2043+development traffic scenario, which is considered negligible in terms of perceptible change. Overall, the operational phase will have minimal residual effects on the surrounding environment during both the daytime and night-time periods.

12.18 References and Sources

- BS 8233:2014 Guidance on sound insulation and noise reduction for buildings.
- Louth County Council Draft Noise Action Plan 2024-2028.
- Louth County Council Noise Action Plan 2019.
- Environmental Protection Agency NG4: Guidance note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities.
- BS4142 2014 A1+ 2019 Methods for rating and assessing industrial and commercial sound.
- ISO 1996-1:2016 Acoustics – Description, measurement and assessment of environmental noise – Part 1: Basic quantities and assessment procedures.
- BS 5228-1:2009+A1: Code of practice for noise and vibration control on construction and open sites – Noise.
- BS 5228-2:2009+A1: Code of practice for noise and vibration on construction and open sites – Vibration.
- ISO 1996-2:2017 Acoustics - Description, measurement and assessment of environmental noise Part 2: Determination of sound pressure levels.
- ISO 9613-1:1993 Acoustics - Attenuation of sound during propagation outdoors -- Part 1: Calculation of the absorption of sound by the atmosphere.

- ISO 9613-2:1996 Acoustics - Attenuation of sound during propagation outdoors -- Part 2: General method of calculation.
- BS7385: 1993: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration.
- DMRB-LA111: Noise and Vibration.
- Dept. of Housing, Planning and Local Government (DHPLG), 2018. Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment August 2018.

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Dundalk, Co. Louth

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Main Statement

Volume II

CHAPTER 13

Air Quality

May 2025

McCutcheon Halley
CHARTERED PLANNING CONSULTANTS

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13 Air Quality

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13.1 Introduction

This chapter of the EIAR was prepared to assess the potential significant effects of the proposed development on air quality.

Taking into account Ambient Air Quality Standards[1], the baseline air quality was examined along with the potential for release of emissions to the atmosphere and associated effects prior to and following mitigation measures.

It should be read in conjunction with the Population and Human Health, Land and Soils, Biodiversity, Climate and Traffic Chapters of this EIAR.

13.2 Expertise & Qualifications

This chapter of the EIAR has been prepared by Laura Griffin of Enviroguide Consulting (a DNV Company).

Laura holds a Master of Science (Hons) degree in Climate Change from Maynooth University and a Bachelor of Arts (Hons) degree in English and Geography from Maynooth University. Laura has been working as an Environmental Consultant with Enviroguide since 2021 and has 5 years of professional experience. Laura has built up experience in EIAs for a range of residential and commercial developments, particularly for LRD (previously SHD) projects in Dublin and across Ireland. Laura's experience includes EIA Screening, EIAR report writing and coordination, Air Quality Assessment Reports, Resource Waste Management Plans and Construction Environmental Management Plans. Laura has been involved in the preparation of EIARs for the following projects:

- Donore Project (St. Teresa's Gardens):
    - Project Description: Residential scheme on a 3.26-hectare site with a net developable area of 2.05 hectares on the former St. Teresa's Gardens, Donore Avenue, Dublin 8.
    - Scale: Residential scheme of 543 no. apartments and crèche.
- Blessington Phase 2 and 3:
    - Project Description: Large Scale-Residential Development and residential led master plan at a c. 25.14-hectare site within the townlands of Blessington Demesne, Newpaddocks and Santryhill, Blessington, Co. Wicklow.
    - Scale: 329 no. residential units and the extension of the Blessington Inner Relief Road (approx. 700m long) from the existing 4-arm roundabout at Blessington Demesne Lands, running northwest of Blessington Business Park, and north of the Woodleigh residential area to a new four-arm roundabout junction on the N81 Dublin Road.

[1] Air Quality Standards Regulations 2011 (S.I No. 180 of 2011) Irish Statute Book.

- Athlone LRD:
    - Project Description: 10-year permission for the provision of residential development on lands located within the townlands of Ballkeeran and Cornamaddy, Athlone, Co. Westmeath.
    - Scale: 332 no. residential unit masterplan with a 2-storey crèche.

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13.3 Proposed Development

A comprehensive description of the proposed development is presented in Chapter 2 of this EIAR.

13.3.1 Aspects Relevant to this Assessment

13.3.2 Construction Phase

The aspects of the Construction Phase relevant to this chapter are as follows:

- Dust deposition, resulting in the soiling of surfaces;
- Visible dust plumes, which are evidence of dust emissions;
- Elevated PM_{10}, $PM_{2.5}$ concentrations from demolition and construction activities (including earthworks and trackout); and
- An increase in concentrations of PM_{10}, $PM_{2.5}$ and nitrogen dioxide due to exhaust emissions from vehicles and equipment used on site (non-road mobile machinery) and vehicles accessing the site.

13.3.3 Operational Phase

The aspects of the Operational Phase relevant to this chapter are as follows:

- An increase in concentrations of PM_{10}, $PM_{2.5}$ and nitrogen dioxide due to exhaust emissions from vehicles and equipment used on site (non-road mobile machinery) and vehicles accessing the site.

13.4 Methodology

This study methodology is in line with accepted practices. 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 and emission generating activities associated with the Construction Phase of the proposed development in accordance with relevant guidance (Institute of Air Quality Management (IAQM) 2024).

Traffic has the potential to impact local air quality as a result of increased vehicle movements associated with the proposed development. The scoping criteria detailed in 13.4.2.2 has been used to determine if any road links are affected by the proposed development and require an air quality assessment.

In addition to assessing the impact to people as a result of air quality, the impact to sensitive ecosystems must also be assessed as per the TII guidelines (TII, 2022; 2024). The EC Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the *'Habitats Directive'*) requires an Appropriate Assessment to be carried out where there is likely to be a significant impact upon a European protected site. TII requires the Air Quality Specialist to liaise with an ecologist on schemes where there is a European protected site within 2km of the proposed development site. The following internationally designated sites are within 2km of the Proposed Development:

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- Dundalk Bay SAC (000455) (adjacent to the site);
- Dundalk Bay SPA (004026) (adjacent to the site);
- Dundalk Bay pNHA (adjacent/within project boundary – small portions of the pNHA are within the proposed development redline boundary); and
- Dundalk Bay RAMSAR site (adjacent/within project boundary – small portions of the RAMSAR are within the proposed development redline boundary).

This study involved coordination with the ecologist preparing the AA Screening and Natura Impact Statement reports (submitted under separate cover) and the Biodiversity chapter of this EIAR Chapter 11).

13.4.1 Relevant Legislation and Guidance

The principal guidance and best practice documents used to inform the assessment of potential impacts on air quality is as follows:

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government (DHPLG), 2018);
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the Environmental Protection Agency (EPA) Guidelines) (EPA, 2022);
- Guidance on the Assessment of Dust from Demolition and Construction Version 2.2 (Institute of Air Quality Management (IAQM), 2024);
- A Guide To The Assessment Of Air Quality Impacts On Designated Nature Conservation Sites (Version 1.1) (IAQM, 2020);
- TII Guidance Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 and TII Road Emissions Model (REM) online calculator tool (TII, 2022); and
- TII Road Emissions Model (REM): Model Development Report – GE-ENV-01107 (TII, 2024).

13.4.1.1 Ambient Air Quality Standards

In order to reduce the risk to health from poor air quality, National and European statutory bodies, the Department of the Environment, Heritage and Local Government in Ireland (DEHLG, 2004) and the European Parliament and Council of the European Union, have set limit values in ambient air for a range of air pollutants. These limit values or *'Air Quality Standards'* are health or environmental-based levels for which additional factors may be considered. For example, natural background levels,

environmental conditions and socio-economic factors may all play a part in the limit value which is set.

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Air quality significance criteria are assessed based on compliance with the appropriate standards or limit values. The applicable standards in Ireland include the Air Quality Standards Regulations 2022, which incorporate European Commission Directive 2008/50/EC, which has set limit values for numerous pollutants with the limit values for NO_2, PM_{10}, and $PM_{2.5}$ being relevant to this assessment. Council Directive 2008/50/EC combines the previous Air Quality Framework Directive (96/62/EC) and its subsequent daughter directives (including 1999/30/EC and 2000/69/EC) and includes ambient limit values relating to $PM_{2.5}$. The applicable limit values for NO_2, PM_{10}, and $PM_{2.5}$ are set out in Table 13-1.

Table 13-1 Limit Values for Cleaner Air for Europe (CAFE) Directive 2008/50/EC (Source: EPA, 2020)

Pollutant	Regulation Note1	Limit Type	Value
Dust Deposition	TA Luft (German VDI, 2002)	Annual average limit for nuisance dust	350 mg/m²/day
Nitrogen Dioxide	2008/50/EC	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	200 µg/m³
		Annual limit for protection of human health	40 µg/m³
NO_X	2008/50/EC	Annual limit for the protection of vegetation	30 µg/m³
Particulate Matter (as PM_{10})	2008/50/EC	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50 µg/m³ PM_{10}
		Annual limit for protection of human health	40 µg/m³ PM_{10}
Particulate Matter (as $PM_{2.5}$) – Stage 1	2008/50/EC	Annual limit for protection of human health	25 µg/m³ $PM_{2.5}$
Particulate Matter (as $PM_{2.5}$) – Stage 2 Note 2	2008/50/EC	Annual limit for protection of human health	20 µg/m³ $PM_{2.5}$

Note 1 EU 2008/50/EC – Clean Air For Europe (CAFÉ) Directive replaces the previous Air Framework Directive (1996/30/EC) and daughter directives 1999/30/EC and 2000/69/EC

Note 2 Stage 2 indicative limit value for $PM_{2.5}$ to be applied from 1 January 2020 after review by the European Commission

On the 14th of October 2024 the European Parliament and the Council adopted a directive setting updated air quality standards across the EU. The directive aims to improve air quality across the EU by aligning standards with the latest World Health Organisation (WHO) guidelines and reducing air pollution's health impacts by more than 55% by 2030. The directive updates and consolidates previous directives (2004/107/EC and 2008/50/EC) to enhance clarity and effectiveness. This plan is part of the broader European Green Deal, targeting significant reductions in air, water, and soil pollution by 2050. The revised directive will also ensure early action, with air quality roadmaps that need to be prepared ahead of 2030 if there is a risk that the new standards will not be attained by that date. The air quality

standards will be reviewed regularly in line with latest scientific evidence to assess whether they continue to be appropriate.

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The text will be published in the EU's Official Journal and enter into force on the twentieth day following publication. Member states will have two years after the entry into force to transpose the directive into national law.

By 2030, the European Commission will review the air quality standards and every five years thereafter, in line with latest scientific evidence.

At present, the applicable standards for assessing compliance in relation to air quality are those outlined in Table 13-1.

13.4.1.2 Air Quality and Traffic Impact Significance Criteria

The TII document *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022) details a methodology for determining air quality impact significance criteria for road schemes which can be applied to any project that causes a change in traffic. The degree of impact is determined based on the percentage change in pollutant concentrations relative to the 'Do Nothing' scenario. The TII significance criteria are outlined in Table 4.9 of *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022) and reproduced in Table 13-2 below. These criteria have been adopted for the proposed development to predict the effect of NO_2, PM_{10} and $PM_{2.5}$ emissions as a result of the proposed development.

Table 13-2 Air Quality Significance Criteria

Long Term Average Concentration at Receptor in Assessment Year	% Change in Concentration Relative to Air Quality Limit Value (AQLV)			
	1%	2-5%	6-10%	>10%
75% or less of AQLV	Neutral	Neutral	Slight	Moderate
76 – 94% of AQLV	Neutral	Slight	Moderate	Moderate
95 – 102% of AQLV	Slight	Moderate	Moderate	Substantial
103 – 109% of AQLV	Moderate	Moderate	Substantial	Substantial
110% or more of AQLV	Moderate	Substantial	Substantial	Substantial

Source Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2022)

13.4.2 Construction Phase

13.4.2.1 Construction Phase Dust Impact Assessment

The main air quality impacts that may arise during demolition and construction activities are:

- Dust deposition, resulting in the soiling of surfaces;
- Visible dust plumes, which are evidence of dust emissions;
- Elevated PM_{10}, $PM_{2.5}$ concentrations from demolition and construction activities (including earthworks and trackout); and

- An increase in concentrations of PM_{10}, $PM_{2.5}$ and nitrogen dioxide due to exhaust emissions from vehicles and equipment used on site (non-road mobile machinery) and vehicles accessing the site.

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The risk of dust emissions from a demolition/construction site causing loss of amenity and/or health or ecological impacts (and effects) is related to:

- The activities being undertaken (demolition, number of vehicles and plant etc.);
- The duration of these activities; the size of the site;
- The meteorological conditions (wind speed, direction and rainfall);
- The proximity of receptors to the activities;
- The adequacy of the mitigation measures applied to reduce or eliminate dust; and
- The sensitivity of the receptors to dust.

A review of Dunsany meteorological data indicates that the prevailing wind direction is south-westerly, and wind speeds are generally moderate in nature (see Section 13.6.4.2). Moderate to high windspeeds (above 5m/s (7-10 knots)) are most likely to result in fugitive dust emissions. Approximately 41.52% of all hourly data featured winds of below 5m/s. In addition, dust generation is considered negligible on days where rainfall is greater than 0.2mm. According to a review of daily rainfall data from 2007-2024 it can be determined that 40% of the time dust generation will be reduced. The frequency of winds (>5m/s) occurring in a south-westerly direction on dry days is 8.6%. The prevailing meteorological conditions in the vicinity of the site are favourable in general for the suppression of dust.

As with any impact, the risk will be determined by the magnitude of the source, the effectiveness of the pathway and the sensitivity of the receptor.

The IAQM Guidance on the Assessment of Dust from Demolition and Construction (2024) provides a framework for the assessment of risk. Activities on construction sites have been divided into four types:

- Demolition;
- Earthworks;
- Construction; and
- Trackout.

The potential for dust emissions is assessed for each activity that is likely to take place. The assessment methodology considers three separate dust impacts:

- Annoyance due to dust soiling;
- The risk of health impacts due to an increase in exposure to PM_{10}; and
- Harm to ecological receptors with account being taken of the sensitivity of the area that may experience these effects.

The assessment is used to define appropriate mitigation measures to ensure that there will be no significant impact.

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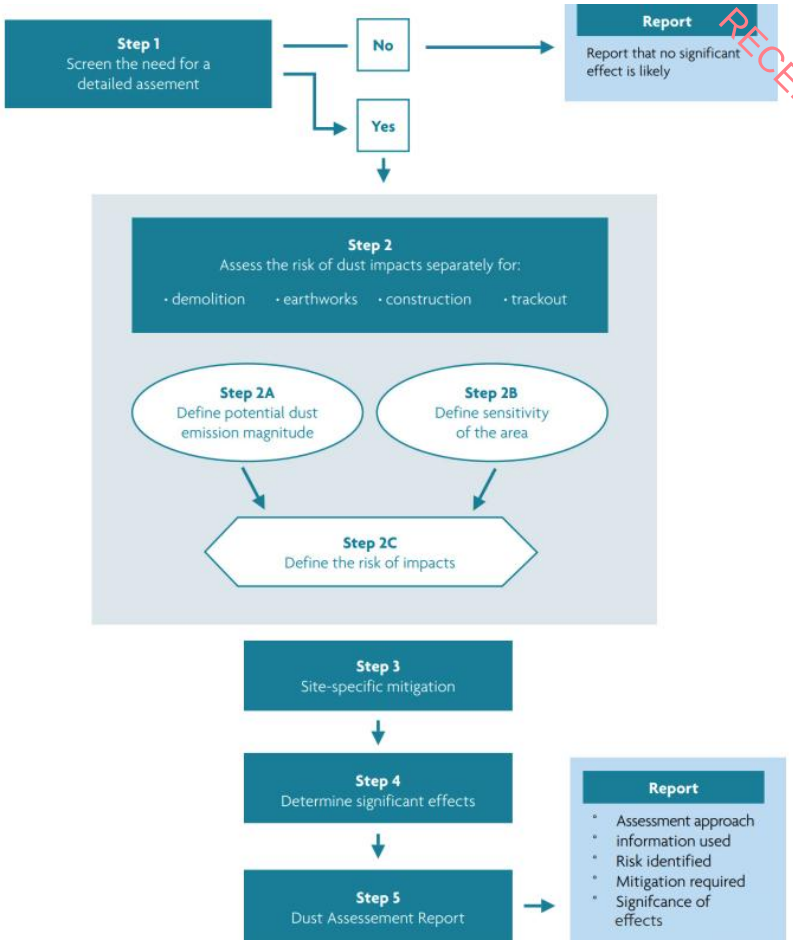

Figure 13-1 Steps to Perform a Dust Assessment (IAQM, 2024)

Step 1 – Screening the Need for a Detailed Assessment

Step 1 is to screen the requirement for a more detailed assessment. An assessment will normally be required where there is:

- A human receptor within:
  - 250m of the boundary of the site; and/or
  - 50m of the route(s) used by the construction vehicles on the public highway, up to 250m from the site entrance(s).
- An 'ecological receptor' within:
  - 50m of the boundary of the site; and/or
  - 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the site entrance(s).

Dundalk Bay SAC (000455) and Dundalk Bay SPA (004026) are both adjacent to the site and the Dundalk Bay pNHA and Dundalk Bay RAMSAR site are adjacent/within project boundary – small portions of the pNHA and RAMSAR site are within the proposed development redline boundary). Therefore, the requirement for a more detailed assessment has been screened in.

Figure 13-2 Map Showing 20m Buffer from the Site Boundary

Figure 13-3 Map Showing 50m Buffer from the Site Boundary

Figure 13-4 Map Showing 100m Buffer from the Site Boundary

Figure 13-5 Map Showing 250m Buffer from the Site Boundary

Step 2 – Assess the Risk of Dust Impacts

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Step 2 is to assess the risk of dust impacts. This is carried out separately for each of the activities; as there is no demolition works proposed as part of the proposed development, the dust impacts are assessed for the remaining three activities (earthworks; construction; and trackout). According to the IAQM (2024), the risk of dust arising in sufficient quantities to cause annoyance and/or ecological impacts should be determined using four risk categories: negligible, low, medium and high. A site is allocated to a risk category based on two factors:

- The scale and nature of the works, which determines the potential dust emission magnitude as small, medium and large (Step 2A); and
- The sensitivity of the area to dust impacts (Step 2B), which is defined as low, medium or high sensitivity.

These two factors are combined in Step 2C to determine the risk of dust impacts with no mitigation applied. The risk category assigned to the site can be different for each of the three potential activities (earthworks, construction and trackout). More than one of these activities may occur on a site at any one time. Risks are described in terms of there being a low, medium and high risk of dust impacts for each of the four separate potential activities. Where there are low, medium and high risks of an impact, then site-specific mitigation will be required, proportionate to the level of risk.

Step 2A – Define the Potential Dust Emission Magnitude

The dust emission magnitude is based on the scale of the anticipated works and should be classified as Small, Medium or Large.

Earthworks: Earthworks will primarily involve excavating material, haulage, topping and stockpiling. Activities such as levelling the site and landscaping works are also considered under this category. The dust emission magnitude from earthworks can be classified as small, medium and large based on the definitions from the IAQM guidance:

- Large: Total site area >110,000m^2, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >6m in height;
- Medium: Total site area 18,000m^2 – 110,000m^2, moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 3m – 6m in height; and
- Small: Total site area <18,000m^2, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds >3m in height.

The site area is 180,000m^2 and therefore, the dust emission magnitude for the proposed earthwork activities can be classified as large.

Construction: The key issues when determining the potential dust emission magnitude during the construction phase include the size of the building(s)/infrastructure, method of construction, construction materials, and duration of build. The IAQM example definitions for construction are:

- Large: Total building volume >75,000 m^3, on site concrete batching, sandblasting;

- Medium: Total building volume 12,000 m^3 – 75,000 m^3, potentially dusty construction material (e.g. concrete), on site concrete batching; and
- Small: Total building volume <12,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber).

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The total building volume to be constructed is 228,350m^3 therefore, the dust emissions magnitude for construction is large

Trackout: Factors which determine the dust emission magnitude are vehicle size, vehicle speed, vehicle numbers, geology and duration. As with all other potential sources, professional judgement must be applied when classifying trackout into one of the dust emission magnitude categories. IAQM definitions for trackout are:

- Large: >50 HDV (>3.5t) outward movements[2] in any one day[3], potentially dusty surface material (e.g. high clay content), unpaved road length >100m;
- Medium: 20-50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50m – 100m; and
- Small: <20 HDV (3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50m.

These numbers are for vehicles that leave the site after moving over unpaved ground, where they will accumulate mud and dirt that can be tracked out onto the public highway.

The dust emission magnitude for the proposed trackout activities can be classified as 20 HGV movements per day are anticipated to be the maximum.

Table 13-3 Dust Emission Magnitude for the Site

Activity	Dust Emission Magnitude
Earthworks	Large
Construction	Large
Trackout	Medium

Step 2B – Define the Sensitivity of the Area

The sensitivity of the area takes account of a number of factors:

- The specific sensitivities of receptors in the area;
- The proximity and number of those receptors;
- In the case of PM_{10}, the local background concentration; and
- Site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

[2] A vehicle movement is a one-way journey, i.e., from A to B, and excludes the return journey.

[3] HDV movements during the construction project vary over its lifetime, and the number of movements is the maximum, not the average.

Sensitivities of People to Dust Soiling Effects

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For the sensitivity of people and their property to soiling, the IAQM (2024) recommends that the air quality practitioner uses professional judgment to identify where on the spectrum between high and low the sensitivity of a receptor lies, taking into account the following general principles set out in Table 13-4.

Table 13-4 Sensitivity of People to Dust Soiling Effects (Source: IAQM, 2024)

Sensitivity	Features	Indicative Examples
High	• Users can reasonably expect enjoyment of a high level of amenity; or • The appearance, aesthetics or value of their property would be diminished by soiling; and • The people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of the use of the land.	• Dwellings; • Museums and other culturally important collections; and • Medium and long-term carparks and showrooms.
Medium	• Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; or • Their appearance, aesthetics or value of their property could be diminished by soiling; or • The people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land.	• Parks; and • Places of work.
Low	• The enjoyment of amenity would not reasonably be expected; or • Property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling; or	• Playing fields; • Farmland (unless commercially sensitive horticultural); • Footpaths; • Short-term carparks[4]; and • Places of work.

[4] Carparks have a range of sensitivities depending on the duration and frequency that people would be expected to park their cars there, and the level of amenity they could reasonably expect whilst doing so. Car parks associated with workplace or residential parking might have a high level of sensitivity compared to car parks used less frequently and for shorter durations, such as those associated with shopping. Cases should be examined on their own merits.

Sensitivity	Features	Indicative Examples
	• There is a transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use for the land.	

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Sensitivities of People to Health Effects of PM_{10}

For the sensitivity of people to the health effects of PM10, the IAQM (2024) recommends that the air quality practitioner assumes that there are three sensitivities based on whether or not the receptor is likely to be exposed to elevated concentrations over a 24-hour period, consistent with the Defra's advice for local air quality management, Defra LAQM Technical Guidance LAWM.TG (2022).

Table 13-5 Sensitivities of People to the Health Effects of PM_{10} (Source: IAQM, 2024)

Sensitivity	Features	Indicative Examples
High	• Locations where members of the public are exposed over a time period relevant to the air quality objective for PM10 (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day)[5].	• Residential properties; • Hospitals; • Schools; and • Residential care homes.
Medium	• Locations where the people exposed are workers[6], and exposure is over a time period relevant to the air quality objective for PM_{10} (in the case of 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day).	• Office and shop owners. (Workers occupationally exposed to PM_{10} are generally not included, as protection is covered by Health and Safety at Work Legislation)
Low	• Locations where human exposure is transient[7].	• Public footpaths; • Playing fields; and • Shopping streets.

[5] This follows Defra Guidance as set out in LAQM.TG (2022)

[6] Notwithstanding the fact that the air quality objectives and limit values do not apply to people in the workplace, such people can be affected by the exposure of PM_{10}. However, they are considered to be less sensitive than the general public as a whole because those most sensitive to the effects of air pollution, such as young children are not normally workers. For this reason, workers have been included in the medium sensitivity category.

[7] There are no standards that apply to short-term exposure, e.g., one or two hours, but there is still a risk of health impacts, albeit less certain.

Sensitivities of Receptors to Ecological Effects

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Dust deposition due to earthworks, construction and trackout has the potential to affect sensitive habitats and plant communities.

Dust can have two types of effect on vegetation: physical and chemical. Direct physical effects include reduced photosynthesis, respiration and transpiration through smothering. Chemical changes to soils or watercourses may lead to a loss of plants or animals for example via changes in acidity. Indirect effects can include increased susceptibility to stresses such as pathogens and air pollution. These changes are likely to occur only as a result of long-term demolition and construction works adjacent to a sensitive habitat. Often impacts will be reversible once the works are completed, and dust emissions cease.

Table 13-6 provides an example of possible sensitivities:

Table 13-6 Sensitivities of Receptors to Ecological Effects

Sensitivity	Features	Indicative Examples
High	• Locations with an international designation and the designated features may be affected by dust soiling; or • Locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data for Ireland[8].	• A Special Area of Conservation (SAC) designated for acid heathlands, or a local site designated for lichens adjacent to the demolition of a large site containing (alkali) buildings.
Medium	• Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or • Locations with a national designation where the features may be affected by dust deposition.	• A Site of Special Scientific Interest (SSSI) with dust sensitive features.
Low	• Locations with a local designation where the features may be affected by dust deposition.	• A local Nature Reserve with dust sensitive features.

Table 13-7 - 13-9 illustrate how the sensitivity of the area may be determined for dust soiling, human health impacts and ecological impacts, respectively. It should be noted that the highest level of sensitivity from each table should be considered, as recommended by the IAQM.

[8] A Habitat Regulation Assessment of the site may be required as part of the planning process, if the site lies close to an internationally designated site i.e., Special Conservation Areas (SACs), Special Protection Areas (SPAs) designated under the Habitats Directive (92/43/EEC) and RAMSAR sites.

The criteria detailed in Table 13-7 - 13-9 was used to determine the sensitivity of the area to dust soiling effects, human health impacts and ecological impacts.

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Table 13-7 Sensitivity to Dust Soiling Effects on People and Property

Receiver Sensitivity	Number of Receivers	Distance from the Source (m)			
		<20m	<50m	<100m	<250m
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table 13-8 Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the Source (m)			
			<20	<50	<100	<250
High	>32 µg/m³	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
	28-32 µg/m³	>100	High	High	Low	Low
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24-28 µg/m³	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24 µg/m³	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	>32 µg/m³	>100	High	Medium	Low	Low
		10-100	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low
	28-32 µg/m³	>100	Low	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
	24-28 µg/m³	>100	Low	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
	<24 µg/m³	>100	Low	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low

Table 13-9 Sensitivity of the Area to Ecological Impacts

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

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Step 2C – Define the Risk of Impacts

In accordance with the IAQM Guidance, the dust emission magnitude (Step 2A) and sensitivity of the area (Step 2B) have been combined and the risk of impacts from construction, earthworks and trackout have determined (before mitigation is applied).

Table 13-10 to 13-12 illustrate how the dust emission magnitude should be combined with the sensitivity of the area to determine the risk with no mitigation measures applied.

Table 13-10 Risk of Dust – Earthworks

Potential Impact	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 13-11 Risk of Dust – Construction

Potential Impact	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible Risk

Table 13-12 Risk of Dust – Trackout

Potential Impact	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Negligible
Low	Low Risk	Low Risk	Negligible

The risk of dust impacts is based on the potential dust emissions magnitude and the sensitivity of the area. These two factors are then combined to determine the risk of dust impacts with no mitigation applied. In the absence of any site-specific information, a higher risk category has been applied to represent a worst-case scenario.

The risk of dust soiling and the impact on human health before mitigation, is summarised in Section 13.8.

13.4.2.2 Construction Phase Traffic Emissions

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Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2022), states that road links meeting one or more of the following criteria can be defined as being 'affected' by a proposed development and should be included in the local air quality assessment. While the guidance is specific to infrastructure projects the approach can be applied to any development that causes a change in traffic.

- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- Daily average speed change by 10 kph or more;
- Peak hour speed change by 20 kph or more; or
- A change in road alignment by 5m or greater.

The construction stage traffic will not change by more 1,000 AADT or 200 HDV AADT and does not meet the above scoping criteria. As a result, a detailed air assessment of construction stage traffic emissions has been scoped out from any further assessment as there is no potential for significant impacts to air quality.

13.4.3 Operational Phase

Operational Phase traffic has the potential to affect local air quality as a result of increased vehicle movements associated with the proposed development. The TII scoping criteria detailed in Section 13.4.2.2 were used to determine if any road links are affected by the proposed development and require inclusion in a detailed air quality modelling assessment. The proposed development will result in the Operational Phase traffic increasing by more than 1,000 AADT on 4 road links. Therefore, a detailed air quality modelling assessment of Operational Phase traffic emissions was conducted.

The impact to air quality due to changes in traffic is assessed at sensitive receptors in the vicinity of affected roads. The receptor locations are discussed in further detail within Section 13.4.3.2.1.

The TII guidance (TII, 2022) states that modelling should be conducted for NO_2, PM_{10} and $PM_{2.5}$ for the Base, Opening and Design Years for both the Do Minimum (Do Nothing) and Do Something scenarios. Modelling of operational NO_2, PM_{10} and $PM_{2.5}$ concentrations has been conducted for the Do Nothing and Do Something scenarios using the TII Road Emissions Model (REM) online calculator tool (TII, 2025).

The following inputs are required for the REM tool:

- Receptor locations;
- Light duty vehicle (LDV) annual average daily traffic movements (AADT);
- Annual average daily heavy duty vehicles (HDV AADT);
- Annual average traffic speeds;
- Road link lengths;
- Road type;
- Project county location; and

- Pollutant background concentrations.

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The *Default* fleet mix option was selected along with the *Intermediate Case* fleet data base selection, as per TII Guidance (TII, 2024). The *Intermediate Case* assumes a linear interpolation between the *Business as Usual* case, where current trends in vehicle ownership continue and the *Climate Action Plan (CAP)* case, where adoption of low emission light duty vehicles occurs.

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

13.4.3.1 Traffic Data Used in Modelling Assessment

Traffic flow information was obtained from SYSTRA Ireland (2025) for the purposes of this assessment. Two different year scenarios are presented in Table 13-13 for the Operational Phase vehicle trip generation data. The 'Do Nothing' and 'Do Something' scenarios for the Opening Year (2028) and Design Year (2043) (which is Opening Year plus 15 years, as per TII Guidance).

The traffic data are detailed in Table 13-13 4 road links met the TII scoping criteria and were within 200m of receptors therefore, these links were included in the modelling assessment. Background concentrations have been included as per Section 13.6.1 of this chapter based on available EPA background monitoring data (EPA, 2025).

Table 13-13 Traffic Data Used in Detailed Air Modelling Assessment

Link Number	Road Name	Opening Year (2028)		Design Year (2043)		Speed (km/hr)	Link Length
		Do Nothing	Do Something	Do Nothing	Do Something		
		AADT	AADT	AADT	AADT		
1	R172 between Inner Relief Rd and Finnabair Crescent	10,615 (8.5% HGV)	11,645 (8.5% HGV)	12,058 (8.5% HGV)	13,088 (8.5% HGV)	80	640m
2	R172 North of Site Access	9,659 (5.7% HGV)	10,961 (5.7% HGV)	11,531 (5.7% HGV)	12,832 (5.7% HGV)	80	630m
3	R172 South of Site Access	9,160 (5.7% HGV)	10,027 (5.7% HGV)	10,378 (5.7% HGV)	11,404 (5.7% HGV)	80	1.3km

Link Number	Road Name	Opening Year (2028)		Design Year (2043)		Speed (km/hr)	Link Length
		Do Nothing	Do Something	Do Nothing	Do Something		
		AADT	AADT	AADT	AADT		
4	Site Access	0	2,168 (5% HGV)	0	2,168 (5% HGV)	50	200m

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13.4.3.2 Sensitive Receptors

13.4.3.2.1 Human Receptors

The impact to air quality as a result of changes in traffic is assessed at sensitive receptors in the vicinity of affected roads. The TII guidance (TII, 2022) states a proportionate number of representative receptors which are located in areas which will experience the highest concentrations or greatest improvements as a result of the proposed development are to be included in the modelling. The TII criteria state that receptors within 200m of affected road links should be assessed; roads which are greater than 200m from receptors will not affect pollutant concentrations at that receptor. The TII guidance (TII, 2022) defines sensitive receptor for the purposes of modelling annual mean pollutant concentrations as residential housing, schools, hospitals, care homes and short term-accommodation such as hotels, i.e. locations where members of the public are likely to be regularly present for 24 hours.

For the purpose of determining local air quality impacts, 8 receptors were included in this modelling assessment and are identified in Figure 13-6. The receptors modelled will represent the worst-case location in the vicinity the proposed development and was chosen based on proximity (within 200m) to the road links affected by the proposed development:

Table 13-14 Sensitive Receptors

Name	Type	ITM Coordinates	
		X	Y
R1	Residential	706819	805405
R2	Residential	706808	805122
R3	Residential	706822	804932
R4	Residential	706825	804832
R5	Residential	706851	804721
R6	Residential	706978	804577
R7	Residential	707269	804314
R8	Residential	707342	804166

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Figure 13-6 Road Traffic Emissions Sensitive Receptors

13.4.3.2.2 Air Quality Impacts on Sensitive Ecology

In addition to assessing the impact to people as a result of air quality, the impact to sensitive ecosystems must also be assessed as per the TII guidelines (TII, 2022; 2024). The EC Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the *'Habitats Directive'*) requires an Appropriate Assessment to be carried out where there is likely to be a significant impact upon a European protected site. TII requires the Air Quality Specialist to liaise with an ecologist on schemes where there is a European protected site within 2km of the proposed development site. However, as the potential impact of a scheme is limited to local level, detailed consideration need only be given to roads where there is a significant change to traffic flows and the designated site lies within 200m of the road centre line. Where these two requirements are fulfilled, the assessment involves a calculation of nitrogen oxides (NOx) and ammonia (NH_3) concentrations to determine the N deposition and acid deposition rates using the methodology set out in TII Guidance document PE-ENV-01106 (TII, 2022).

Sections of the Dundalk Bay SAC (Site Code: 000455) and Dundalk Bay SPA (Site Code: 004026) are within 200m of the link roads impacted by the proposed development. Therefore, an assessment of air quality impacts to ecology was carried out within sections of these sites closest to the impacted roads.

The TII REM was used to calculate the NO_X and NH_3 concentrations and N deposition and acid deposition rates within the sections of the identified ecological sites that are within closest proximity to the road alignments. Pollutant concentrations will be greatest closest to the road, with

concentrations decreasing with increased distance from the road. Therefore, by assessing the impact at the point within the designated site that is closest to the road, the worst-case impact can be determined. The inputs into the REM are the same as those outlined for the local air quality assessment. Modelling of the Opening Year 2028 and the Design Year 2043 was conducted for both the Do Nothing and Do Something scenarios in order to determine the degree of change in air quality.

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Impacts in relation to NO_X concentrations were compared against the annual mean ambient air quality standard of 30 µg/m^3 for the protection of ecology. Impacts in relation to NH_3 concentrations were compared against the annual mean limit value of 3 µg/m^3. The impact of N and acid deposition were assessed using the criteria in Table 8-14 which are based on Table 3.24 of PE-ENV-01107.

Background NO_X and NH_3 concentrations as well as background N deposition and acid deposition rates for the area of the Dundalk Bay SAC and Dundalk Bay SPA within the study area were determined using the Air Pollution Information System (APIS) web GIS based portal (CEH, 2022). The APIS site was also used to determine the relevant critical loads for various habitat types within the designated sites. The critical loads for the sensitive habitat types within the designated sites are detailed in Table 13-16. The critical load ranges for the most sensitive habitat or species were used in the current assessment as a conservative approach regardless of whether the sensitive habitat or species was present in the impacted location.

Table 13-15 Significance of Effects on Sensitive Designated Habitats

Description of Results	Significance
Total N deposition and acid deposition are more than 1% of the critical load	Discuss further with project biodiversity practitioners
The total N deposition and acid deposition are less than 1% of the critical load	Not significant

Source: PE-ENV-01107 Air Quality Assessment Standard for Proposed National Roads, Table 3.24 (TII, 2024).

Table 13-16 Critical Load

Pollutant	Designated Site	Potential Sensitive Ecology Present for Determining Critical Load	Critical Load Range
N Deposition	Dundalk Bay SAC	Estuaries, Atlantic Salt Meadows (Glauco-Puccinellietalia Maritime)	5-10 kgN/ha/yr
	Dundalk Bay SPA	Podiceps cristatus (North-western Europe - wintering), Pluvialis apricaria [North-western Europe], Vanellus vanellus (Europe - breeding), Numenius arquata (Europe - breeding), Tringa totanus (Eastern Atlantic - wintering)	5-10 kgN/ha/yr

Pollutant	Designated Site	Potential Sensitive Ecology Present for Determining Critical Load	Critical Load Range
Acid Deposition	Dundalk Bay SAC	Anas acuta (North-western Europe), Anas crecca (North-western Europe), Anas platyrhynchos (North-western Europe), Anser anser, Charadrius hiaticula (Europe/Northern Africa - wintering), Haematopus ostralegus (Europe & Northern/Western Africa), Larus canus (West and Central Europe), Larus ridibundus (North-western Europe - breeding), Melanitta nigra (Western Siberia/Western & Northern Europe/North-western Africa), Numenius arquata (Europe - breeding), Pluvialis apricaria [North-western Europe], Podiceps cristatus (North-western Europe - wintering), Tringa totanus (Eastern Atlantic - wintering), Vanellus vanellus (Europe - breeding)	0.714 – 5.34 keq/ha/yr
	Dundalk SPA	N/A	No features sensitive due to acidity impacts

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The modelling results are discussed in Section 13.8 of this chapter.

13.5 Difficulties Encountered

No difficulties have been encountered while compiling this chapter.

13.6 Baseline Environment

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13.6.1 Air Quality

Air quality monitoring programs have been undertaken in recent years by the EPA. The most recent annual report on air quality in Ireland is *"Air Quality In Ireland 2023"* (EPA, 2024). The EPA website details the range and scope of monitoring undertaken throughout Ireland and provides both monitoring data and the results of previous air quality assessments (EPA, 2025).

As part of the implementation of the Framework Directive on Air Quality (1996/62/EC, four air quality zones have been defined in Ireland by the EPA for air quality management and assessment purposes.

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 is located in Haggardstown, Co. Louth and falls into 'Zone C' of Ireland which is described by the EPA as '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'. It is expected that existing ambient air quality in the vicinity of the site is characteristic of a suburban location with the primary source of air emissions such as particulate matter, NO_2, and hydrocarbons likely to be of traffic, aviation, industrial activities, combustion and agriculture, and domestic fuel burning.

The EPA launched a national air quality forecast in November 2023, to provide greater information to the public regarding expected air quality in Ireland for up to three days - "Today", "Tomorrow" and the "Day after Tomorrow".

Forecasts include daily Air Quality Index for Health (AQIH), Particulate Matter (PM), nitrogen dioxide (NO_2) and ozone (O_3). PM, NO_2 and O_3 are the three main air pollutants impacting human health in Ireland. All pollutants mapped are presented on the Air Quality Index for Health (AQIH) scale (1 – 10). The forecast maps are uploaded twice daily, once in the morning and once in the evening.

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, 2023' reports the quality of the air in Ireland based on the data from the National Ambient Air Quality Monitoring Network throughout the year 2023 (EPA, 2024).

The nearest air monitoring station which continuously measures NO_2, PM_{10} and $_{PM2.5}$ is Dundalk monitoring station (ca. 3 kilometres north-west of the site).

Measured concentrations of NO_2 for the years 2022 and 2023 are presented in 9-17 for Dundalk monitoring station.

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Table 13-17 Concentrations of NO_2 at Dundalk Monitoring Station

Station	Objective	Concentration (µg/m³)		Limit or Threshold Value
		2022	2023	
Dundalk	Annual Mean NO_2	10.4	9.3	40 µg/m³
	Days >200µg/m³	1	1	35 days

Measured concentrations of NO_2 at Dundalk monitoring station for the years 2022 and 2023 are presented in Table 13-17. Concentrations of NO_2 at Dundalk monitoring station are well below their respective limit values in 2020 and 2021, with an annual mean of 10.4 ug/m³ and 9.3 ug/m³ respectively, and with no exceedances of the NO_2 daily limit for the protection of human health (EPA, 2023; EPA, 2024).

EPA 2023 background concentrations have been used in combination with correction factors to estimate annual average NO_2 concentrations for 2025. These factors have been adapted from both TII (2011) and DEFRA roadside NO_2 projection factors. Based on these correction factors, the estimated current background NO_2 concentration in the region of the proposed development is 8.8 µg/m³.

Measured concentrations of PM_{10} for the years 2022 and 2023 are presented in Table 13-18 for Dundalk monitoring station.

Table 13-18 Concentrations of PM_{10} at Dundalk Monitoring Station

Station	Objective	Concentration (µg/m³)		Limit or Threshold Value
		2022	2023	
Dundalk	Annual Mean PM_{10}	12.3	13.2	40 µg/m³
	Days >50µg/m³	2	1	35 days

Measured concentrations of PM_{10} at Dundalk monitoring station for the years 2022 and 2023 are presented in Table 13.18. Concentrations of PM_{10} at Dundalk monitoring station are well below their respective limit values in 2022 and 2023, with an annual mean of 12.3 ug/m³ and 13.2 ug/m³, respectively, and with no exceedances of the PM_{10} daily limit for the protection of human health (EPA, 2022; EPA, 2023).

Based on EPA background concentrations for 2022 and 2023, the estimated current background PM_{10} concentration in the region of the proposed development is 12.8 µg/m³.

Measured concentrations of $PM_{2.5}$ for the years 2022 and 2023 are presented in Table 13-19 for Dundalk monitoring station.

Table 13-19 Concentrations of $PM_{2.5}$ at Dundalk Monitoring Station

Station	Averaging Period	Year	
		2022	2023
Dundalk	Annual Mean $PM_{2.5}$ (µg/m³)	**19.8**	**8.9**

As is evident from the results shown in Table 13-19, current levels of $PM_{2.5}$ are below the annual mean limit value of 25 µg/m^3, with an annual mean of 19.8 ug/m^3 and 8.9 ug/m^3 (EPA, 2023; EPA, 2024).

Based on EPA background concentrations for 2022 and 2023, the estimated current background $PM_{2.5}$ concentration is 14.35 µg/m^3.

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13.6.2 Sensitive Designated Ecological Habitats

Background concentrations for NO_X, NH_3, and nitrogen and acid deposition at the identified designated habitats (Dundalk Bay SAC and Dundalk Bay SPA) were derived from the 1 km grid square concentrations provided on the Air Pollution Information System (APIS) website (APIS, 2025), in line with UK Environment Agency (2014) and UK Defra (2016) guidance and are shown in Table 13-20.

The background concentrations have been added to the modelled REM outputs in Section 13.8.

Table 13-20 Background Concentrations for NO_X, NH_3, N Deposition and Acid Deposition

Sensitive Designated Habitat	NO_X (µg/m^3)	NH_3 (µg/m^3)	Nitrogen Deposition (kg/ha/yr)	Acid Deposition (keqN/ha/yr)
Dundalk Bay SAC	4.4	2.1	6.8	1.53
Dundalk Bay SPA	4.6	2.1	6.7	1.53

13.6.3 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.

13.6.4 Microclimate

The synoptic meteorological station at Dunsany, Co. Meath is located approximately 54km southwest 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 site.

The weather in the area of the 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 Dunsany over the last 3 years, the mean January temperature is 5°C, while the mean July temperature is 15.3°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.

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13.6.4.1 Rainfall

Table 13-21 illustrates the monthly and annual rainfall data collected over a 3-year period (2022-2024) at Dunsany Weather Station. The annual rates of precipitation ranged from 828.1 in 2022 to 1048.2 in 2023 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 13-21 Monthly Rainfall Values (mm) for Dunsany Weather Station from January 2022 to December 2024 (Source: Met Eireann)

Year	Jan	Feb	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Annual
2024	60.9	71.3	93.0	72.1	37.8	35.8	58.0	58.3	47.3	51.4	59.1	45.8	**690.8**
2023	54.2	17.7	127.9	70.9	25.1	50.5	184.5	107.2	109.9	125.8	70.9	103.6	**1048.2**
2022	29.5	118.1	38.2	35.3	63.8	64.0	34.7	14.1	126.4	141.1	81.9	81.0	**828.1**
Mean	**80.2**	**59.7**	**63.4**	**61.1**	**65.1**	**71.5**	**61.4**	**77.7**	**71.8**	**90.6**	**84.0**	**83.2**	**869.7**

13.6.4.2 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 Dunsany synoptic weather station over a period of 11 years suggests that the predominant wind direction blows from the southwest, with windspeeds of between 7 and 10 knots occurring most frequently.

Figure 13-7 provides a wind speed frequency distribution which represents wind speed classes and the frequency at which they occur (% of time) at Dunsany weather station over a period of 17 years. Wind speeds of 6 and 7 knots have the highest frequency, occurring approximately 9% of the time.

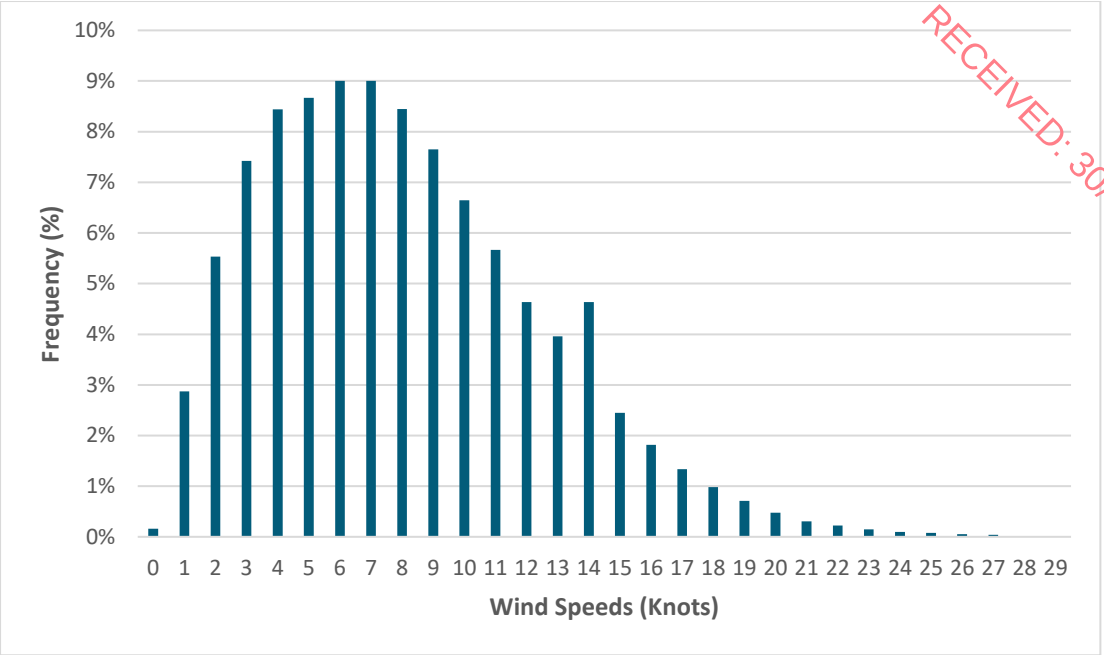

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Figure 13-7 Wind Speed Frequency Distribution at Dunsany Synoptic Weather Station over 17 years (2007-2024)

Figure 13-8 provides a wind rose of the predominant wind directions and associated wind speeds at Dunsany. As is visible from Figure 13-8, the prevailing wind is from a south-westerly direction with an annual incidence of 34.08% for winds between 200 and 250 degrees. The most frequent wind speed associated with this wind direction is between 7 and 10 knots which is considered a 'gentle breeze' in terms of the Beaufort scale, this wind direction and wind speed occurs in combination approximately 11.13% of the time. The overall most common windspeed is between 7 and 10 knots, occurring in 31.74% of incidences, and wind speeds of between 4 and 6 knots occurring in 25.69% of incidences.

The lowest frequency is for winds blowing from the northern quadrant at approximately 3.10% of the time. The incidence of wind between 1 and 6 knots is about 41.52% with wind speeds of above 17 knots (8.7 m/s) occurring in just 4.48% of incidences. This wind rose is broadly representative of the prevailing conditions experienced at the site.

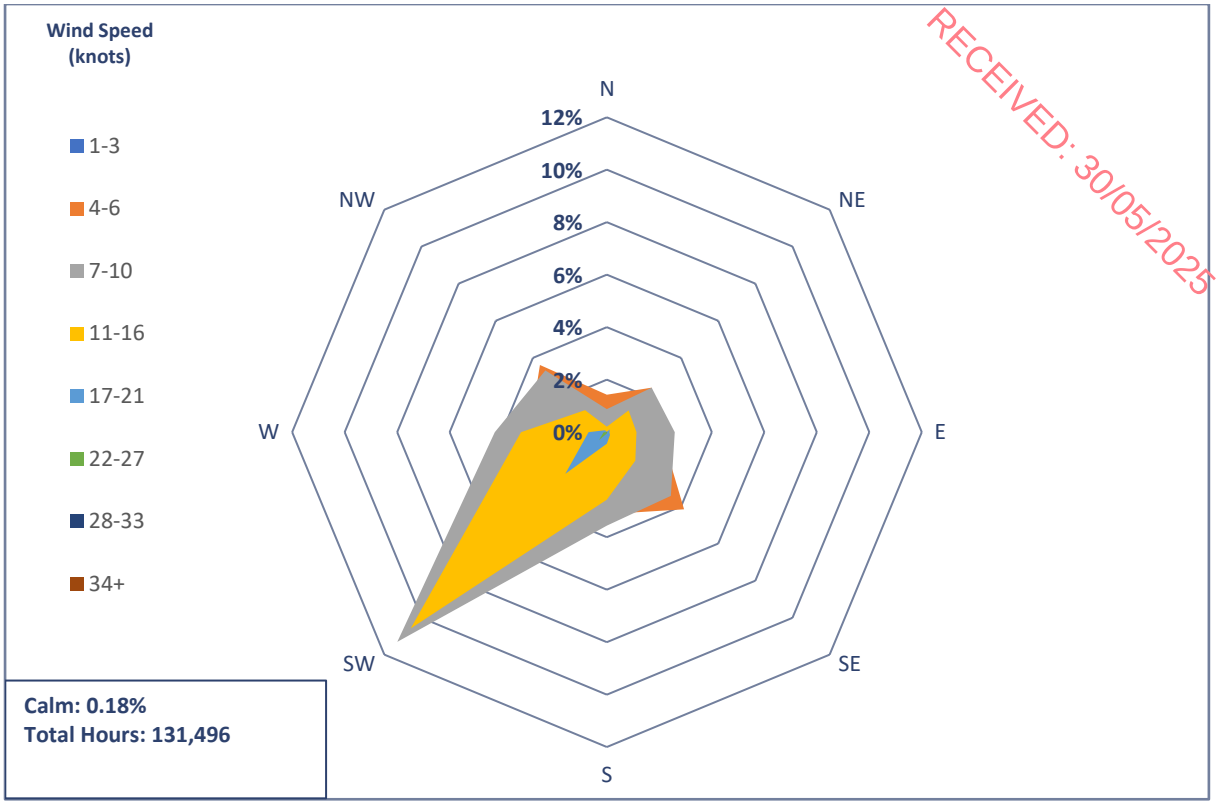

Figure 13-8 17-year Windrose at Dunsany Weather Station 2007-2024 (Developed using Met Eireann Hourly Data)

13.7 The 'Do Nothing' Scenario

If the proposed development were not to proceed, ambient air quality at the site will remain as per the baseline and will change in accordance with trends within the wider area (including influences from potential new developments in the surrounding area, changes in road traffic etc). Under the Do-Nothing Scenario construction works associated with the proposed development will not take place. Impacts from increased traffic volumes and associated emissions from the proposed development will also not occur. It can be determined that the Do-Nothing Scenario would be neutral and not significant in EIA terms

However, given the zoning and planning context, it is reasonable to expect that a similar residential development could be proposed for the site and in such case similar effects as described above would be expected.

13.8 Potential Significant Effects

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13.8.1 Construction and Demolition Phase

13.8.1.1 Dust

There is potential for construction related air emissions to impact on local air quality due to the proposed development. The IAQM *Guidance on the Assessment of Dust from Demolition and Construction (2024)* provides a framework for the assessment of risk, details of which are provided in Section 13.4 of this chapter.

Potential Dust Emission Magnitude (Step 2A)

The potential magnitude of dust emissions from construction, earthworks and trackout has been assessed, as identified in Table 13-22.

Table 13-22 Dust Emission Magnitude for the Site

Activity	Dust Emission Magnitude
Earthworks	Large
Construction	Large
Trackout	Medium

Sensitivity of the Area (Step 2B)

The outcomes of the assessments of potential magnitude of dust emissions and the sensitivity of the area are combined to determine the risk of impact. This risk is then used to inform the selection of appropriate mitigation. Table 13-23 details the risk of dust impacts for earthworks, construction and trackout activities.

Table 13-23 Sensitivity of the Area

Sensitivity Type	Factors	Sensitivity of the Area	
		On-site	Trackout
Dust Soiling	In order to account for a worst-case scenario, the sensitivity of the area has been classified as high for on-site activity (earthworks and construction) and trackout.	High	High

Sensitivity Type	Factors	Sensitivity of the Area	
		On-site	Trackout
Human Health	As per Section 13.6.1, a conservative estimate of the background PM_{10} levels for the region of the Proposed Development is 12.8 µg/m³. As the PM_{10} concentration is less than 24 µg/m³, the sensitivity of the area to human health effects is considered to be low.	Low	Low
Ecology	Dundalk Bay SAC (000455) and Dundalk Bay SPA (004026) are both adjacent to the site and the Dundalk Bay pNHA and Dundalk Bay RAMSAR site are adjacent/within project boundary – small portions of the pNHA and RAMSAR site are within the proposed development redline boundary. To account for a worst-case scenario, the ecological receptors can be classified as high sensitivity receptors as per Table 13.6 for on-site activity (earthworks and construction) and trackout.	High	High

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Risk of Dust Impacts (Step 2C)

The outcomes of the assessments of potential magnitude of dust emissions and the sensitivity of the area are combined to determine the risk of impact. This risk is then used to inform the selection of appropriate mitigation. Table 13-24 details the risk of dust impacts for earthworks, construction and trackout activities.

Table 13-24 Summary of Unmitigated Risks

Potential Impact	Sensitivity	Magnitude		
		Earthworks	Construction	Trackout
		Large	Large	,Medium
Dust Soiling Impacts	High	High Risk	High Risk	Medium Risk
Human Health Impacts	Low	Low Risk	Low Risk	Low Risk
Ecological Impacts	High	High Risk	High Risk	Medium Risk

The dust risk categories for each of the four activities determined in STEP 2C have been used to define the appropriate, site-specific, mitigation measures to be adopted in Section 13.10 of this chapter (Step 3 as per the IAQM Guidance on the Assessment of Dust from Demolition and Construction (2024)) (see Section 13.4 of this chapter).

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There is at most a high risk of dust soiling, at most a low risk of human health impacts and at most a high risk of ecological impacts associated with the proposed works. Best practice dust mitigation measures appropriate for high-risk sites will be implemented to ensure there are no significant effects at nearby sensitive receptors.

13.8.1.2 Traffic Assessment

There is also the potential for traffic emissions to affect air quality in the short-term over the construction phase, particularly due to the increase in HGVs accessing the site. The construction stage traffic has been reviewed, and a detailed air quality assessment has been scoped out as none of the road links affected by the Proposed Development satisfy the TII scoping assessment criteria in Section 13.4.2.2.

It can be determined that the construction stage traffic will have a ***direct, short-term, negative*** and ***imperceptible, i.e., not significant,*** effect on air quality and human health, which is overall not significant in EIA terms.

13.8.2 Operational Phase

13.8.2.1.1 Traffic Emissions

The potential effects of the Proposed Development have been assessed by modelling emissions from the traffic generated as a result of the development using the TII Road Emissions Model (TII, 2025). The traffic data includes the Do Nothing and Do Something scenarios. The impact of NO_2, PM_{10} and $PM_{2.5}$ emissions for the modelled Opening Year and Design Year was predicted at the nearest sensitive receptors to the development. This assessment allows the significance of the development, with respect to both relative and absolute impacts, to be determined.

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

13.8.2.2 NO_2

The results of the assessment of the effects of the proposed development on NO_2 in the Opening Year 2028 and Design Year 2043 are shown in Table 13-25. The annual average concentration is in compliance with the limit value at the worst-case receptors in the year 2028 and 2043. Concentrations of NO_2 are at most 32% of the annual limit value in 2028 and 29% of the annual limit value in 2043. In addition, the TII guidance (TII, 2022) states that the hourly limit value for NO_2 of 200 µg/m^3 is unlikely to be exceeded at roadside locations unless the annual mean is above 60 µg/m^3. As predicted NO_2

concentrations are significantly below 60 µg/m^3. It can be concluded that the short-term NO_2 limit value will be complied with at all receptor locations.

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The effects of the proposed development on annual mean NO_2 concentrations can be assessed relative to 'Do Nothing' levels. NO_2 concentrations at the receptors assessed will increase as a result of the proposed development when compared with the Do-Nothing scenario. There will be at most an increase of 1.05 µg/m^3 at receptor R3, which is a 2.63% change when compared with the ambient air quality limit value of 40 µg/m^3. Where the predicted annual mean concentrations in the Opening Year and Design Year without the proposed development are less than 75% of the air quality standard (see Table 13-1) and there is a less than 5% change in concentrations compared with the annual mean ambient air quality standard, then, the impact is considered neutral as per the TII significance criteria (see Table 13-2). Therefore, the effect of the proposed development on NO_2 concentrations according to the TII guidance (TII, 2022) is neutral**.**

Table 13-25 Predicted Annual Mean NO_2 Concentrations (µg/m^3)

Receptor	Do Nothing (DN)	% of AQLV	Do Something (DS)	% AQLV	DS-DN	% of AGLV	Description
Impact Opening Year (2028)							
R1	11.7	29%	11.98	30%	0.7	1.75%	Neutral
R2	10.26	26%	10.4	26%	0.35	0.88%	Neutral
R3	12.61	32%	13.03	33%	1.05	2.63%	Neutral
R4	10.57	26%	10.79	27%	0.22	0.55%	Neutral
R5	10.27	26%	10.47	26%	0.2	0.5%	Neutral
R6	10.72	27%	10.97	27%	0.25	0.63%	Neutral
R7	10.21	26%	10.39	26%	0.18	0.45%	Neutral
R8	11.07	28%	11.29	28%	0.22	0.55%	Neutral
Impact Design Year (2043)							
R1	10.69	27%	10.85	27%	0.16	0.4%	Neutral
R2	9.75	24%	9.83	25%	0.08	0.2%	Neutral
R3	11.33	28%	11.57	29%	0.24	0.6%	Neutral
R4	10	25%	10.13	25%	0.13	0.33%	Neutral
R5	9.81	25%	9.92	25%	0.11	0.28%	Neutral
R6	10.12	25%	10.26	26%	0.14	0.35%	Neutral
R7	9.73	24%	9.85	25%	0.12	0.3%	Neutral
R8	10.28	26%	10.43	26%	0.15	0.38%	Neutral

13.8.2.3 PM_{10}

In relation to changes in PM_{10} concentrations as a result of the proposed development, the results of the assessment can be seen in Table 13-26 for the Opening Year 2028 and Design Year 2043. The annual average concentration is in compliance with the limit value at the worst-case receptors in the year 2028 and 2043. Concentrations of PM_{10} are at most 43% of the annual limit value in 2028 and 44% of the annual limit value in 2043. In addition, the proposed development will not result in any exceedances of the daily PM_{10} limit value of 50 µg/m^3. The effects of the proposed development on

annual mean PM_{10} concentrations can be assessed relative to 'Do Nothing' levels. PM_{10} concentrations at the receptors assessed will increase as a result of the proposed development when compared with the Do-Nothing scenario.

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There will be at most an increase of 0.42 µg/m^3 at receptor R3, which is a 1.05% change when compared with the ambient air quality limit value of 40 µg/m^3. As with NO_2, where the predicted annual mean concentrations in the Opening Year without the proposed scheme are less than 75% of the air quality standard (see Table 13-1) and there is a less than 5% change in concentrations compared with the annual mean ambient air quality standard, then, the impact is considered neutral as per the TII significance criteria (see Table 13-2). Therefore, the effect of the proposed development on PM_{10} concentrations according to the TII guidance (TII, 2022) is neutral.

Table 13-26 Predicted Annual Mean PM_{10} Concentrations (µg/m^3)

Receptor	Do Nothing (DN)	% of AQLV	Do Something (DS)	% AQLV	DS-DN	% of AGLV	Description
Impact Opening Year (2028)							
R1	15.81	40%	16.1	40%	0.29	0.73%	Neutral
R2	14.3	36%	14.45	36%	0.15	0.38%	Neutral
R3	16.63	42%	17.05	43%	0.42	1.05%	Neutral
R4	14.51	36%	14.73	37%	0.22	0.55%	Neutral
R5	14.21	36%	14.4	36%	0.19	0.475%	Neutral
R6	14.64	37%	14.89	37%	0.25	0.63%	Neutral
R7	14.15	35%	14.31	36%	0.16	0.4%	Neutral
R8	14.98	37%	15.19	38%	0.21	0.53%	Neutral
Impact Design Year (2043)							
R1	16.19	40%	16.48	41%	0.29	0.73%	Neutral
R2	14.49	36%	14.64	37%	0.15	0.38%	Neutral
R3	17.2	43%	17.62	44%	0.42	1.05%	Neutral
R4	14.81	37%	15.03	38%	0.22	0.55%	Neutral
R5	14.47	36%	14.66	37%	0.19	0.48%	Neutral
R6	14.98	37%	15.22	38%	0.24	0.6%	Neutral
R7	14.34	36%	14.51	36%	0.17	0.43%	Neutral
R8	15.26	38%	15.49	39%	0.23	0.58%	Neutral

13.8.2.4 $PM_{2.5}$

In relation to changes in $PM_{2.5}$ concentrations as a result of the proposed development, the results of the assessment can be seen in Table 13-27 for the modelled Opening Year 2028 and Design Year 2043. The annual average concentration is in compliance with the limit value at the worst-case receptors in the year 2028 and 2043. Concentrations of $PM_{2.5}$ are at most 66% of the annual limit value in 2028 and 67% of the annual limit value in 2043. The effect of the proposed development on annual mean $PM_{2.5}$ concentrations can be assessed relative to 'Do Nothing' levels. $PM_{2.5}$ concentrations at the receptors assessed will increase as a result of the proposed development when compared with the Do-Nothing scenario.

There will be at most an increase of 0.24 µg/m^3 at receptor R3, which is a 0.96% change when compared with the ambient air quality limit value of 25 µg/m^3. As with NO_2, where the predicted annual mean concentrations in the Opening Year without the proposed scheme are less than 75% of the air quality standard (see Table 13-1) and there is a less than 5% change in concentrations compared with the annual mean ambient air quality standard, then, the impact is considered neutral as per the TII significance criteria (see Table 13-2). Therefore, the effect of the Proposed Development on $PM_{2.5}$ concentrations according to the TII guidance (TII, 2022) is neutral.

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Table 13-27 Predicted Annual Mean $PM_{2.5}$ Concentrations (µg/m^3)

Receptor	Do Nothing (DN)	% of AQLV	Do Something (DS)	% AQLV	DS-DN	% of AGLV	Description
Impact Opening Year							
R1	16.02	64%	16.18	65%	0.16	0.64%	Neutral
R2	15.18	61%	15.26	61%	0.08	0.32%	Neutral
R3	16.47	66%	16.71	67%	0.24	0.96%	Neutral
R4	15.3	61%	15.42	62%	0.12	0.48%	Neutral
R5	15.13	61%	15.24	61%	0.11	0.44%	Neutral
R6	15.37	61%	15.51	62%	0.14	0.56%	Neutral
R7	15.1	60%	15.19	61%	0.09	0.36%	Neutral
R8	15.56	62%	15.67	63%	0.11	0.44%	Neutral
Impact Design Year							
R1	16.22	65%	16.37	65%	0.15	0.6%	Neutral
R2	15.28	61%	15.37	61%	0.09	0.36%	Neutral
R3	16.77	67%	17.01	68%	0.24	0.96%	Neutral
R4	15.46	62%	15.58	62%	0.12	0.48%	Neutral
R5	15.27	61%	15.38	62%	0.11	0.44%	Neutral
R6	15.55	62%	15.69	63%	0.14	0.56%	Neutral
R7	15.2	61%	15.3	61%	0.1	0.4%	Neutral
R8	15.71	63%	15.83	63%	0.12	0.48%	Neutral

Overall, the TII significance criteria have identified neutral impacts due to increases in NO_2, PM_{10} and $PM_{2.5}$ annual mean concentrations which are less than 5% of the annual mean ambient air quality standards (and the annual mean concentrations are less than 75% of the air quality standard). This equates to a potential effect of the proposed development on ambient air quality, and human health, in the operational stage according to the EPA guidelines (EPA, 2022) which is considered ***direct, long-term, negative*** and ***not significant***.

13.8.2.5 Ecological Impacts

An assessment of the impact of the proposed project has been undertaken using the approach outlined in the IAQM guidance document (IAQM, 2020) and the TII guidance (TII, 2022). An assessment of the ecologically sensitive sites has been carried out. As outlined in Section 13.4.3.2.2, sections of the Dundalk Bay SAC and Dundalk Bay SPA are within 200m of road links impacted by the proposed

development. Therefore, an assessment of air quality impacts to ecology was carried out within sections of these sites closest to the impacted roads.

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Annual mean NOx and ammonia concentrations, as well as nitrogen and acid deposition levels have been compared to the relevant critical levels and loads in Table 13-28 for the Opening Year 2028 and in Table 13-29 for Design Year 2043 for the worst-case ecologically sensitive receptors. The ground level concentrations, nitrogen deposition flux and acid deposition flux are presented for the closest locations within the ecological sites nearest to the affected road.

The results in Table 13-28 and Table 13-29 include background concentrations as per Table 13-20. With respect to both Total Nitrogen Deposition Flux and Total Acid Deposition Flux there are both a lower and an upper critical load threshold (see Table 13-16). With respect to NO_X and NH_3, results have been compared against the appropriate limit value of 30 µg/m^3 and 3 µg/m^3, respectively.

Table 13-28 Opening Year 2028 Maximum Predicted NO_X and NH_3 Concentrations, and Nitrogen and Acid Deposition Rates at Closest Point within Ecological Sites to Road

	Predicted Ground Level NO_X Concentration (including background) µg/m^3	Predicted Ground Level NH_3 Concentration (including background) µg/m^3	Total Nitrogen Deposition Flux (kg/ha/yr)	Total Acid Deposition Flux (keq/ha/yr)
Do Nothing	2.44	1.68	8.93	0.64
Do Something	2.90	1.68	8.96	0.64
Difference between Do-Something and Do-Nothing	0.46	No change	0.03	No change
Change relative to lower critical load (%)	1.5%	No change	0.6%	No change
Change relative to upper critical load (%)			0.3%	No change

Table 13-29 Design Year 2043 Maximum Predicted NO_X and NH_3 Concentrations, and Nitrogen and Acid Deposition Rates at Closest Point within Ecological Sites to Road

	Predicted Ground Level NO_X Concentration (including background) µg/m^3	Predicted Ground Level NH_3 Concentration (including background) µg/m^3	Total Nitrogen Deposition Flux (kg/ha/yr)	Total Acid Deposition Flux (keq/ha/yr)
Do Nothing	1.63	1.68	8.86	0.63
Do Something	1.90	1.68	8.89	0.64
Difference between Do-Something and Do-Nothing	0.27	No change	0.03	0.01
Change relative to lower critical load (%)	0.9%	No change	0.6%	1.4%
Change relative to upper critical load (%)			0.3%	0.2%

The annual mean NO_X concentrations (including background) are below the critical level of 30 µg/m^3 at all modelled habitats, in both the DN and the DS scenarios, in both the Opening and Design Years. The annual mean NH_3 concentrations (including background) are below the critical level of 3 µg/m^3 at all modelled habitats, in both the DN and the DS scenarios, in both the Opening and Design Years.

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Nitrogen deposition levels (including background) are within the range of critical loads for nitrogen deposition (see Table 13-20) at all modelled habitats, in both the DN and the DS scenarios, in both the Opening and Design Years. The acid deposition (as N) levels are within the range of critical loads for acid deposition (as N) (see Table 13-20) at all modelled designated sites, in both the DN and the DS scenarios, in both the Opening and Design Years.

In accordance with the EPA Guidelines (EPA, 2022) the ecological impacts associated with the operational phase traffic emissions are overall ***direct, long-term, negative*** and ***slight,*** which is overall ***not significant***.

13.8.3 Cumulative Effects

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. Chapter 1 of this EIAR details the planning permissions on record in the area, a review of these planning permissions has been completed as part of this assessment.

The cumulative effects on the air quality of the current proposed development and other permitted developments have been considered, through the generation of air pollutants. The potential impacts on air quality are assessed in Section 13.9 and it is considered that there are no other potential significant cumulative impacts associated with the proposed development and considered offsite permitted developments.

In terms of dust, no significant impacts are predicted; good construction practice, which incorporates the implementation of the identified mitigation measures, will be employed at the site.

Assessment of road traffic emission 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. Therefore, cumulative impacts have been assessed in this regard and the impact on ambient air quality has been determined as not being significant.

It is considered that the cumulative impact will be 'short-term', 'imperceptible' and 'negative', i.e., not significant.

13.8.4 Summary

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

Table 13-30 Summary of Construction Phase Likely Significant Effects in the absence of mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Dust Nuisance	Negative	Slight	Local Ara	Likely	Short-term	Direct
Traffic Emissions	Negative to neutral	Imperceptible	Local Area	Unlikely	Short-term	Direct

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

Table 13-31 Summary of Operational Phase Likely Significant Effects in the absence of mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Traffic Emissions	Neutral	Imperceptible to slight	Local Area	Unlikely	Short-term	Direct

13.9 Mitigation Measures

13.9.1 Construction and Demolition Phase Mitigation

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site;
- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager/community liaison officer;
- Display the head or regional office contact information; and
- Develop and implement a Dust Management Plan (DMP), the final dust management plan will form part of the overall construction and environmental management plan which will formally be prepared by the appointed contractor(s) and submitted to Louth County Council post grant of planning permission.

Site Management

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken;
- Make the complaints log available to the local authority when asked;
- Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book; and
- Hold regular liaison meetings with other high risk construction sites within 250m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.

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Monitoring

- Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the Louth Council when asked; and
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

Preparing and Maintaining the site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible;
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site;
- Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period;
- Avoid site runoff of water or mud;
- Keep site fencing, barriers and scaffolding clean using wet methods;
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below; and
- Cover, seed or fence stockpiles to prevent wind whipping.

Operating Vehicle/Machinery and Sustainable Travel

- Ensure all vehicles switch off engines when stationary - no idling vehicles;
- Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable; and
- 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.

Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems;
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/ mitigation, using non-potable water where possible and appropriate;

- Use enclosed chutes and conveyors and covered skips;
  Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate; and
  Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

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Waste Management

- Avoid bonfires and burning of waste materials.

Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable;
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable; and
- Only remove the cover in small areas during work and not all at once.

Measures Specific to Construction

- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.

Measures Specific to Trackout

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use;
- Avoid dry sweeping of large areas;
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport;
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable;
- Record all inspections of haul routes and any subsequent action in a site log book;
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned;
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable);
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits; and
- Access gates to be located at least 10 m from receptors, where possible.

13.9.2 Operational Phase Mitigation

It has been determined that the Operational Phase air quality impact is negligible and therefore no site-specific mitigation measures are proposed.

13.10 Residual Impact Assessment

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The IAQM recommends that significance is only assigned to effect after considering the construction activity mitigation. The risk of dust impacts has been determined in Step 2C and the appropriate dust mitigation measures identified in Step 3 (Section 13.8.1 of this chapter) and the final step is to determine whether there are significant effects arising from the Construction Phase of the proposed development. The proposed mitigation measures will ensure that a potential significant adverse effect will not occur, therefore, the residual effect will be direct, short-term, negative and imperceptible for the Construction Phase, i.e., not significant.

The traffic generated by the proposed development has been assessed for its impact on air quality and it has been determined that the residual impact for the Operational Phase will be direct, long-term, negative and not significant.

13.10.1 Summary of Post-mitigation Effects

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

Table 13-32 Summary of Construction Phase Effects Post Mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Dust Nuisance	Negative	Imperceptible	Local Area	Unlikely	Long-term	Direct
Traffic Emissions	Negative to neutral	Imperceptible	Local Area	Unlikely	Long-term	Direct

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

Table 13-33 Summary of Operational Phase Effects Post Mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Traffic Emissions	Negative to neutral	Imperceptible	Local Area	Unlikely	Long-term	Direct

13.10.2 Cumulative Residual Effects

It is considered that there are no other potential significant cumulative impacts associated with the proposed development and considered offsite permitted developments.

13.11 Risk of Major Accidents or Disasters

There are no likely risks of major accidents and disasters in relation to air quality associated with the proposed development due to the nature and scale of the development. The proposed development is residential in nature and will not require large scale quantities of hazardous materials or fuels.

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13.12 Worst Case Scenario

A worst-case scenario has been applied - Step 2A (defining the potential dust emission magnitude) of the construction dust impact assessment and the highest risk category has been applied when selecting the mitigation measures that are general for the proposed development.

It is expected that adequate mitigation measures, as outlined in Section 13.8, will assist in preventing nuisance dust from resulting in any significant effects. However, even with the most rigorous DMP in place, it is not possible to guarantee that the dust mitigation measures will be effective all the time, and if, for example, dust emissions occur under adverse weather conditions, or there is an interruption to the water supply used for dust suppression, the local community may experience occasional, short-term dust annoyance. The likely scale of this would not be considered sufficient to change the conclusion that with mitigation the effects will be 'not significant'.

13.13 Interactions

Interactions are dealt with in Chapter 16 of this EIAR.

13.14 Monitoring

The monitoring of construction dust during the Construction Phase of the proposed development is recommended to ensure that impacts are not experienced beyond the site boundary. Monitoring of dust can be carried out by using the Bergerhoff Method. This involves placing Bergerhoff Dust Deposit Gauges at a strategic locations along the site boundaries for a period of 30 +/- 2 days. The selection of sampling point locations should be carried out in consideration of the requirements of VDI 2119 with respect to the location of the samplers relative to buildings and other obstructions, height above ground, and sample collection and analysis procedures. After the exposure period is complete, the Gauges should be removed from the site; the dust deposits in each Gauge will then be determined gravimetrically and expressed as a dust deposition rate in mg/m2/day in accordance with the relevant standard.

Due to the negligible impact on air quality from the Operational Phase of the proposed development, no specific monitoring is recommended.

13.15 Summary of Mitigation and Monitoring

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

Table 13-34 Summary of Construction and Demoltion Phase Mitigation and Monitoring

Likely Significant Effect	Mitigation	Monitoring
Dust nuisance	The dust risk categories determined in Step 2C have been used to refine the appropriate mitigation measures to be adopted. The mitigation measures have been divided into general measures and measures applicable specifically to earthworks, construction and trackout. For those mitigation measures that are general, the highest risk category has been adopted. For example, the site is medium risk for trackout but high risk for earthworks and construction, therefore the general measures applicable to a high risk site have been applied, based on IAQM Guidance (2024).	The monitoring of construction dust during the Construction Phase of the proposed development is recommended to ensure that impacts are not experienced beyond the site boundary. Monitoring of dust can be carried out by using the Bergerhoff Method.
Traffic Emissions	It has been determined that the Construction Phase impact is imperceptible and overall, not signification and therefore no site-specific mitigation measures are proposed.	It has been determined that the Construction Phase impact is imperceptible and overall, not signification and therefore no site-specific monitoring measures are proposed.

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

Table 13-35 Summary of Operational Phase Mitigation and Monitoring

Likely Significant Effect	Mitigation	Monitoring
Traffic Emissions	It has been determined that the Operational Phase impact is negligible and therefore no site-specific mitigation measures are proposed.	It has been determined that the Operational Phase impact is negligible and therefore no site-specific monitoring measures are proposed.

13.16 Conclusion

The implementation of the mitigation measures outlined in Section 13.10 will ensure that the proposed development has an overall not significant impact in terms of local air quality.

13.17 References and Sources

- 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.
- Air Quality, Clean Air for Europe Directive (2008/50/EC) EUR-Lex.
- Department of the Environment, Transport and the Regions, 1995. The Environmental Effects of Dust from Surface Mineral Workings- Volume 2. Technical Report.
- Department for Environment, Food and Rural Affairs (DEFRA) (2022) Air Quality Management Technical Guidance LAQM.TG (22);
- Environmental Protection Agency (2024) Ireland's Final 1990-2023 Inventory Data and the EPA's latest 2023-2030 Projection Estimates.
- Environmental Protection Agency (2022) Guidelines on the information to be contained in Environmental Impact Assessment Reports.
- Environmental Protection Agency (2020) Air Dispersion Modelling from Industrial Installations Guidance Note (AG4).
- Environmental Protection Agency (2023) Air Quality in Ireland 2022 Annual Report on Air Quality in Ireland from the Environmental Protection Agency.
- Environmental Protection Agency (2024) Air Quality in Ireland 2023 Annual Report on Air Quality in Ireland from the Environmental Protection Agency.
- German VDI (2002) Technical Guidelines on Air Quality Control – TA Luft.
- Institute of Air Quality Management (2014) Guidance on the Assessment of Dust from Demolition and Construction.
- Institute of Air Quality Management (2016) Guidance on the Assessment of Mineral Dust Impacts for Planning.
- Institute of Air Quality Management (2017) Land-Use Planning & Development Control: Planning for Air Quality.
- Institute of Air Quality Management (2024) Guidance on the Assessment of Dust from Demolition and Construction.
- Met Eireann (2025) Daily Meteorological Data for Dunsany Weather Station.
- Met Eireann (2025) Monthly Meteorological Data for Dunsany Weather Station.
- Transport Infrastructure Ireland (2011) Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes.
- Transport Infrastructure Ireland (TII) (2023) GE-GEN-01101: Guide to the Implementation of Sustainability for TII Projects.
- UK Department for Environment, Food and Rural Affairs (2008) Analysis of the relationship between annual mean nitrogen dioxide concentration and exceedances of the 1-hour mean AQS Objective.
- UK Department for Environment, Food and Rural Affairs (2020) NO_x to NO_2 Conversion Spreadsheet (Version 8.1).
- 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.

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Main Statement

Volume II

CHAPTER 14

Climate

May 2025

McCutcheon Halley
CHARTERED PLANNING CONSULTANTS

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14 Climate

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14.1 Introduction

This chapter assesses the likely climate impacts associated with the proposed development. A full description of the development is available in Chapter 2.

The climate assessment is divided into two distinct sections – a greenhouse gas assessment (GHGA) and a climate change risk assessment (CCRA).

- Greenhouse Gas Emissions Assessment (GHGA) – Quantifies the GHG emissions from a project over its lifetime. The assessment compares these emissions to relevant carbon budgets, targets and policy to contextualise magnitude.
- Climate Change Risk Assessment (CCRA) – Identifies the impact of a changing climate on a project and receiving environment. The assessment considers a project's vulnerability to climate change and identifies adaptation measures to increase project resilience.

14.2 Expertise & Qualifications

This chapter was completed by Ciara Nolan. Ciara is a Principal Environmental Consultant in the Air Quality & Climate section of AWN Consulting. She holds a BSc in Energy Systems Engineering from University College Dublin and has also completed an MSc in Applied Environmental Science at UCD. She is a Member of the Institute of Air Quality Management (MIAQM) and the Institution of Environmental Sciences (MIEnvSc). She has over 8 years of experience in undertaking air quality and climate assessments. She has prepared air quality and climate impact assessments as part of EIARs for residential developments including Woodbrook, Shankill (Planning Application Ref. ABP30584419), Ballygossan Park, Skerries (Planning Application Ref. LRD0010/S3), SHD Ratoath (Planning Application Ref. SH305196), SHD Rathmullen, Drogheda (Planning Application Ref. SH305552), commercial and industrial developments by Dublin Airport Authority, Abbvie, Mountpark, Pfizer, Takeda, as well as renewable energy developments such as Crockahenny Windfarm, Upperchurch Windfarm, Knocknamona Windfarm and Keerglen Windfarm. She also specialises in conducting air dispersion modelling assessments of emissions from data centres, energy centres and the chemical industry as part of EPA Industrial Emissions Licences for Echelon DC, AWS, Takeda, MSD and Regeneron. She has undertaken air quality and climate impact assessments for transportation schemes, primarily regional and national road schemes, from constraints, through to route selection and EIAR stage.

14.3 Proposed Development

The proposed development is described in Chapter 2. The development generally comprises of 502 no. residential units, comprising 1, 2, 3 and 4 bed units in a mix of maisonettes, terraced and semi-detached units, with 1 no. detached bungalow unit; Creche building and all associated site and development works including landscaping and amenity areas, infrastructure and services, and new entrance from Blackrock Road, with additional pedestrian/cycle access from Bóthar Maol.

14.3.1 Aspects Relevant to this Assessment

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During the construction phase, engine emissions from site vehicles and machinery have the potential to impact climate through the release of CO_2 and to a lesser extent, other greenhouse gases (GHGs). Embodied carbon of materials used in the construction of the development along with site activities will impact climate. However, the proposed development has been designed with sustainability in mind. The proposed housing units will be of timber frame construction which is less carbon intensive that traditional concrete blocks. Additionally, materials will be sourced locally to reduce transport related emissions and thus reduce the embodied carbon impact of the development. Impacts to climate are assessed against Ireland's obligations under the EU 2030 GHG targets and sectoral emissions ceilings.

Engine emissions from vehicles accessing the site have the potential to impact climate, during the operational phase of the development, through the release of CO_2. Operational phase impacts will be long-term in duration. In addition, the vulnerability of the proposed development in relation to future climate change must be considered during the operational phase. The proposed development has been designed to minimise the impact on climate where possible in line with the most recent development guidelines (Part L of the Building Regulations 2022) and in reference to measures within the Climate Action Plan 2024 (DECC, 2023a).

14.4 Methodology

14.4.1 Relevant Guidance, Legislation & Policy

14.4.1.1 Guidance

The principal guidance and best practice documents used to inform the assessment of potential impacts on climate are summarised below. In addition to specific climate guidance documents, the following guidelines were considered and consulted in the preparation of this chapter:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the Environmental Protection Agency (EPA) Guidelines) (EPA, 2022); and
- Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017).

The assessment has made reference to national guidelines where available, in addition to international standards and guidelines relating to the assessment of climate impacts. These are summarised below:

- Transport Infrastructure Ireland (TII) PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (TII, 2022a);
- Transport Infrastructure Ireland (TII) PE-ENV-01105: Climate Assessment Standard for Proposed National Roads (TII, 2022b);

- Transport Infrastructure Ireland (TII) GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document (TII, 2024);
- Institute of Environmental Management & Assessment (IEMA) Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating their Significance (hereafter referred to as the IEMA 2022 GHG Guidance) (IEMA, 2022);
- IEMA Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (hereafter referred to as the IEMA 2020 EIA Guide) (IEMA, 2020a);
- IEMA GHG Management Hierarchy (hereafter referred to as the IEMA 2020 GHG Management Hierarchy) (IEMA, 2020b);
- IEMA Principles Series: Climate Change Mitigation & EIA (IEMA, 2010);
- Carbon Management in Infrastructure and Built Environment - PAS 2080 (BSI, 2023); and
- Technical Guidance on the Climate Proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021a).

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14.4.1.2 Legislation

In 2015, the Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) (Government of Ireland, 2015) was enacted (the 2015 Act). The purpose of the 2015 Act was to enable Ireland *"to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050"* (3.(1) of No. 46 of 2015). This is referred to in the 2015 Act as the 'National Transition Objective'. The 2015 Act made provision for a national mitigation plan, and a national adaptation framework. In addition, the 2015 Act provided for the establishment of the Climate Change Advisory Council. This council functions to advise and make recommendations on the preparation of national mitigation and adaptation plans and compliance with existing climate obligations.

The first Climate Action Plan (CAP) was published by the Irish Government in June 2019 (Government of Ireland, 2019). The Climate Action Plan 2019 outlined the current status across key sectors including Electricity, Transport, Built Environment, Industry and Agriculture and the various broadscale measures required for each sector to achieve ambitious decarbonisation targets. The 2019 CAP also detailed the required governance arrangements for implementation including carbon-proofing of policies, establishment of carbon budgets, a strengthened Climate Change Advisory Council and greater accountability to the Oireachtas. The Government published the second Climate Action Plan in November 2021 (Government of Ireland, 2021a), a third update in December 2022 (Government of Ireland, 2022) and a fourth update in December 2024. The current Climate Action Plan is CAP25, published in April 2025 (DECC, 2025).

Following on from Ireland declaring a climate and biodiversity emergency in May 2019, and the European Parliament approving a resolution declaring a climate and environment emergency in Europe in November 2019, the Government approved the publication of the General Scheme in December 2019, followed by the publication of the Climate Action and Low Carbon Development (Amendment) Act 2021 (hereafter referred to as the 2021 Climate Act) in March 2021. The 2021 Climate Act was signed into Law on the 23rd July 2021, giving statutory effect to the core objectives stated within the CAP.

The purpose of the 2021 Climate Act (Government of Ireland, 2021) is to provide for the approval of plans "*for the purpose of pursuing the transition to a climate resilient, biodiversity rich and climate neutral economy by no later than the end of the year 2050*". The 2021 Climate Act also provides for "*carbon budgets and a decarbonisation target range for certain sectors of the economy*". The 2021 Climate Act defines the carbon budget as "*the total amount of greenhouse gas emissions that are permitted during the budget period*".

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In relation to carbon budgets, the 2015 Act (as amended) states "*A carbon budget, consistent with furthering the achievement of the national climate objective, shall be proposed by the Climate Change Advisory Council, finalised by the Minister and approved by the Government for the period of 5 years commencing on the 1 January 2021 and ending on 31 December 2025 and for each subsequent period of 5 years (in this Act referred to as a 'Budget Period')*". The carbon budget is to be produced for 3 sequential budget periods (Table 14.1). The carbon budget can be revised when new obligations are imposed under the law of the European Union or international agreements or when there are significant developments in scientific knowledge in relation to climate change. In relation to the sectoral emissions ceiling, the Minister for the Environment, Climate and Communications (the Minister for the Environment) shall prepare and submit to government the maximum amount of GHG emissions that are permitted in different sectors of the economy during a budget period and different ceilings may apply to different sectors. The sectorial emission ceilings for 2030 were published in the Climate Action Plan 2024 (CAP24) (DECC, 2023a) (Table 14.2).

Table 14.1 5-Year Carbon Budgets 2021-2025, 2026-2030 and 2031-2025

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

Table 14.2 Sectoral Emission Ceilings 2030

Sector	Baseline ($MtCO_2e$)	Carbon Budgets ($MtCO_2e$)		2030 Emissions ($MtCO_2e$)	Indicative Emissions % Reduction in Final Year of 2025 – 2030 Period (Compared to 2018)
	2018	2021-2025	2026-2030		
Electricity	10	40	20	3	75
Transport	12	54	37	6	50
Built Environment – Residential	7	29	23	4	40
Built Environment – Commercial	2	7	5	1	45
Industry	7	30	24	4	35
Agriculture	23	106	96	17.25	25
Other (F-gases, waste, petroleum refining)	2	9	8	1	50

Sector	Baseline ($MtCO_2e$)	Carbon Budgets ($MtCO_2e$)		2030 Emissions ($MtCO_2e$)	Indicative Emissions % Reduction in Final Year of 2025 – 2030 Period (Compared to 2018)
	2018	2021-2025	2026-2030		
Land Use, Land-use Change and Forestry (LULUCF)	5	Reflecting the continued volatility for LULUCF baseline emissions to 2030 and beyond, CAP24 puts in place ambitious activity targets for the sector reflecting an EU-type approach.			
Total	68				
Unallocated Savings	-	-	26	-5.25	-
Legally Binding Carbon Budgets and 2030 Emission Reduction Targets	-	295	200	-	51

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14.4.1.3 Policy

14.4.1.3.1 Greenhouse Gas Assessment Policy

In April 2025 the current Climate Action Plan, CAP25, was published (DECC, 2025). CAP25, along with the previous CAPs, outlines the necessary strategies to progress towards the goal of a 51% reduction in GHG emissions by 2030 and reaching climate neutrality by no later than 2050. The measures outlined in CAP25 are essential in Ireland achieving this objective.

CAP25 strengthens Ireland's commitment to ensuring a just transition through its four principle framework, focusing on evidence-based planning, skills development, equitable cost distribution, and social dialogue. In relation to industry, key decarbonisation actions outlined in CAP25 focus on cement and construction decarbonisation, carbon-neutral heating and more efficient use of energy. Electricity emissions are on a decreasing trajectory due to the increasing share of renewable generation and net electricity imports. Ongoing work to expand generation from wind is continuing to ensure the electricity sectoral targets are met. Key targets for the public sector outlined in CAP25 include reducing GHG emissions by 51% and improving energy efficiency by 50% by 2030. Additionally, the new *Green Public Procurement Strategy and Action Plan 2024-2027* is driving the implementation of sustainable procurement practices. Emissions from transport are a key area where focus is required, as CAP25 outlines, emissions have increased by 0.3% in 2023 and in order to remain within the sectoral emissions ceiling would now require an unprecedented 12.4% decrease in emissions in both 2024 and 2025. Key targets to further reduce emissions include a 20% reduction in total vehicle kilometres travelled relative to business-as-usual, a 50% reduction in fuel usage, and significant increases to sustainable transport trips and modal share. Fleet electrification and the use of biofuels will continue to provide the greatest share of emissions abatement in the medium term.

In April 2023, the Government published its *Long-Term Strategy on Greenhouse Gas Emissions Reductions* (DECC, 2023b). This strategy provides a long-term plan on how Ireland will transition towards net carbon zero by 2050, achieving the interim targets set out in the Climate Action Plan.

The *Louth County Council Climate Action Plan 2024-2029* (LCC, 2024) outlines the Council's commitment to achieving significant reductions in GHG emissions while preparing for the impacts of climate change. The target is for Louth to be a net zero county by 2050 in line with the National objective of Ireland being net zero by 2050. The plan outlines the five thematic areas for climate action. These include governance & leadership; built environment & transport; natural environment

& green infrastructure; communities, resilience & transition; and sustainability & resource management. The plan outlines a number of actions and targets across these thematic areas to ensure Louth County Council are on track to meet the net zero by 2050 goal.

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14.4.1.3.2 Climate Change Vulnerability Policy

The second *National Adaptation Framework* (NAF) (DECC, 2024) was published in June 2024 in line the five-year requirement of the 2015 Climate and Low Carbon Development Act. The plan provides a whole of government and society approach to climate adaptation in Ireland to reduce Irelands vulnerability to climate change risks including extreme weather events, flooding, drought, loss of biodiversity, sea level rise and increased temperatures. Similar to the *'Just Transition'* when considering carbon emissions, the NAF aims for *'Just Resilience'* stating that *"a climate resilient Ireland will have a reduced reliance on fossil fuel, it will have widely accessible electrified public transport and will have transitioned towards sustainable agricultural practices such as agroforestry and organic farming"*.

In relation to the built environment the NAF states in Chapter 3 that "*deepening of adaptation considerations in the planning and building standards processes is considered the most appropriate way of increasing the resilience of the built environment*". Within the NAF it is mentioned that there is a risk of damage to buildings and structures from severe weather events such as high winds and intense rainfall. New development should accommodate predicted future climate change impacts without requiring major redesign or redevelopment in the future which may be costly and inefficient. This will require facilitating innovative building design, new materials and standards, e.g. to accommodate hotter summers while withstanding changes in precipitation patterns and more intense storms, according to the NAF (DECC, 2024).

The *National Climate Change Risk Assessment* (NCCRA) was published in May 2024 (EPA, 2024a). The NCCRA was required to be developed under Action 457 from the 2021 CAP (Government of Ireland 2021). Action 457 seeks to "*further develop Ireland's national climate change risk assessment capacity to identify the priority physical risks of climate change to Ireland'*. The NCCRA uses definitions of the risk determinants from the Intergovernmental Panel on Climate Change (IPCC) Risk Framework (IPCC 2023):

- **Hazard** - the potential occurrence of a natural or human-induced physical event or trend or physical impact that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems, and environmental resources.
- **Exposure** - the presence of people, livelihoods, species or ecosystems, environmental functions, services, and resources, infrastructure, or economic, social, or cultural assets in places and settings that could be adversely affected.
- **Vulnerability** - the propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts including sensitivity.
- **Risk** - the potential for adverse consequences for human or ecological systems.

When considering risk, the NCCRA assesses exposure and vulnerability for two future climate change scenarios or Representative Concentration Pathways (RCPs):

- RCP4.5 was selected as it represents a scenario aligned with the global temperature trajectory.
- RCP8.5 was selected as it represents a high-emissions scenario and achieves the highest level of modelled temperature increases by the end of the century. Consequently, this scenario will result in the highest level of physical risk for Ireland, and the greatest requirement for adaptation.

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These scenarios align with a conservative approach to assess risks to Ireland and assumes global emission reduction targets are not met. This aligns with the principle of precaution as stated in the NAF (DECC 2024). In addition to the future climate scenarios, the NCCRA assesses the risk from the future climate during the following timeframes:

- Present (~2030);
- Medium term (~2050);
- Long term (~2100).

The *Louth County Council Climate Action Plan 2024-2029* highlights the increasing risks posed by climate change to the county's infrastructure, residents, and businesses, particularly from extreme weather events such as flooding, storm events, heatwaves, and droughts. Without mitigation, these events are projected to lead to the inundation of properties, damage to infrastructure, and disruptions to transport networks.

14.4.2 Greenhouse Gas Assessment

As per the EU guidance document *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* (European Commission, 2013) the climate baseline is first established with reference to EPA data on annual GHG emissions (Section 14.5.1).

14.4.2.1 Construction Phase

The GHG assessment accounts for various components relating to the project during different life stages to determine the total impact of the development on climate. The reference study period, i.e. the assumed building life expectancy, for the purposes of the assessment is 50 years. Embodied carbon refers to the sum of the carbon needed to produce a good or service. It incorporates the energy needed in the mining or processing of raw materials, the manufacturing of products and the delivery of these products to site. The purpose of the embodied carbon assessment is to engage the design team in the consideration of embodied carbon at an early stage in the development and mitigate embodied carbon. This engagement aims to ensure carbon savings are made and to assist in aligning the project to Ireland's CAP goal of Net Carbon Zero by 2050.

A detailed lifecycle assessment (LCA) was undertaken by the project developer (Marina Quarter Ltd./Glenveagh Properties) on their most commonly used house types. The project developer uses consistent house designs across their various developments. This level of repeatability allowed for a detailed LCA to be undertaken across the most commonly used house types, the results of which have been used to generate a typical embodied carbon figure suitable for use across all Glenveagh house types.

A specific $kgCO_2e/m^2$ figure has been calculated which can be factored based on the specific gross internal area (m^2) of the unit to be assessed. Summing the embodied carbon for all of the units within the proposed development then provides an estimate of the embodied carbon associated with the specific project.

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The lifecycle assessment followed the lifecycle stage terminology consistent with widely used industry standards (based on BS EN 15978:2011, BS EN 15804:2012):

- **Stage A1 – A3: Product Carbon** The carbon emissions generated at this stage arise from extracting the raw materials from the ground, their transport to a point of manufacture and then the primary energy used (and the associated carbon impacts that arise) from transforming the raw materials into construction products.
- **Stage A4 – A5: Construction Carbon** These carbon impacts arise from transporting the construction products to site, and their subsequent processing and assembly into the building.
- **Stage B1 – B5: In Use Carbon** – use of the building (B1), maintenance (B2), repair (B3), replacement (B4) and refurbishment (B5).
- **Stage B6, B7, B8: In Use Phase** operational use energy (B6), water (B7) and user activities carbon (B8). *These categories have been excluded from the assessment due to the significant variability in user emissions.*
- **Stage C1 – C4: End of Life Carbon** The eventual deconstruction and disposal of the existing building at the end of its life takes account of the on-site activities of the demolition contractors. No 'credit' is taken for any future carbon benefit associated with the reuse or recycling of a material into new products.
- **Biogenic Carbon:** Carbon sequestered during the growth cycle of a tree that is temporarily stored in the timber product until the end of its useful life. This element must be reported separately to the A – C carbon.

The house types assessed were of timber framed construction with a rendered blockwork façade and concrete tile roof. These house types were considered 'typical' house types for Glenveagh projects. The LCA study examined the carbon across the lifecycle of the typical home and this information can then be used to mitigate impacts from Glenveagh projects and target key areas for improvement.

The LCA was assessed in line with EN15978 and European Level(s) methodologies. The assessment has also followed *RICS Whole Life Carbon Assessment for the Built Environment Guidance V1*, which is comparable with the European Level(s) methodology but it has been adapted to accommodate a 50 year service life for the building to coordinate with European Level(s) methodologies.

OneClick LCA, in addition to Glenveagh specific calculations, was used to calculate embodied carbon emissions in line with detailed RICS guidance. The Inventory of Carbon and Energy (ICE) database as well as Environmental Product Declaration (EPDs) were used to find the relevant carbon factors for the specified materials.

The building element groups included in the embodied carbon assessment were substructure; frame; floors; external walls; internal walls and partitions; windows and doors; roofs; services; MEP (mechanical, electrical and plumbing); some permanent furnishings; and some external works.

An uncertainty factor was included in the LCA calculations. Due to the early design stage, precise material quantities and types are not yet known. To ensure emissions are not under-reported a conservative uncertainty factor of 22% was added to all the embodied carbon emissions based on the RICS V2 guidance, which is more conservative than the RICS V1 guidance.

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The Glenveagh LCA concluded that a figure of 500 $kgCO_2e/m^2$ for total carbon (A – C stages, total lifecycle) can be used in EIAR assessments for typical house types.

The Glenveagh house types utilise a timber framed construction. Timber usage has a positive climatic impact through carbon sequestration. Carbon sequestration is the process of capturing and storing atmospheric carbon. Trees and plants absorb CO_2 from the atmosphere during photosynthesis in exchange for oxygen that they give out in return.

Biogenic carbon is the term used for carbon absorbed, stored and emitted by organic matter like soil, trees, plants and grasses. Biogenic carbon is reported in life-cycle carbon assessments as a separate line item.

The LCA found that a reduction of 21% of total embodied carbon emissions (A – C stages) can be utilised for the biogenic carbon associated with the Glenveagh house types. This will be a carbon saving or negative carbon figure, e.g.-105 $kgCO_2e/m^2$, within the climate impact assessment.

This biogenic carbon must be reported separately to the embodied carbon results and is not included within the figures for the embodied carbon associated with the house and apartment or duplex units referenced above.

In addition to the embodied carbon associated with the buildings in the proposed development, other elements of the proposed development such as site activities, land clearance works, construction worker travel to site, etc. also result in a carbon impact. PE-ENV-01104 (TII, 2022a) recommends the calculation of the construction stage embodied carbon using the TII Online Carbon Tool (TII, 2024).

The TII Online Carbon Tool (TII, 2024) has been commissioned by TII to assess GHG emissions associated with road or rail projects in Ireland. The TII Carbon Tool (TII, 2024) uses emission factors from recognised sources including the Civil Engineering Standard Method of Measurement (CESMM) Carbon and Price Book database (CESMM, 2013), which can be applied to a variety of developments, not just road or rail. The tool aligns with PAS 2080. The TII Carbon Tool was utilised to calculate the embodied carbon associated with the non-building elements of the development including construction wastes; site clearance works; worker travel to site; and construction materials.

The results of the Glenveagh LCA and the TII Carbon Tool were summed to provide a total carbon impact of the proposed development.

14.4.2.2 Operational Phase

14.4.2.2.1 Traffic Emissions

Emissions from road traffic associated with the proposed development have the potential to emit carbon dioxide (CO_2) which will impact climate.

The TII guidance *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022b), states that road links meeting one or more of the following criteria can be defined as being 'affected' by a proposed development and should be included in the local air quality assessment, and also the climate assessment.

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- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- Daily average speed change by 10 kph or more;
- Peak hour speed change by 20 kph or more;
- A change in road alignment by 5 m or greater.

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

There are a small number of road links that will experience a change of over 1,000 in the AADT during the operational phase as a result of the proposed development. As a result a detailed assessment of traffic related carbon dioxide (CO_2) emissions was conducted.

PE-ENV-01104 (TII, 2022a) states that road traffic related emissions information should be calculated using the TII Road Emissions Model (REM) online calculator tool (TII, 2024). The TII guidance (TII, 2022b) states that modelling should be conducted for the Base, Opening and Design Years for both the Do Nothing and Do Something scenarios. The output is provided in terms of CO_2e.

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

Traffic flow information was obtained from SYSTRA, the traffic engineers, for the purposes of this assessment. Data was provided for the Base Year 2025, Opening Year 2028 and Design Year 2043 (see Traffic and Transport Assessment for further details). Both the Do Nothing and Do Something scenarios are quantified to determine the degree of change in emissions as a result of the proposed development. A total of 2 no. scenarios were assessed, these include:

- The Do Nothing scenario – this scenario assumes the proposed development is not in place in future years but includes traffic associated with cumulative developments in the wider area.
- The Proposed scenario – this is the "Do Something" scenario and includes traffic from the Do Nothing scenario and traffic associated with the proposed development as well as traffic associated with cumulative developments in the wider area.

Further detail on the modelling scenarios can be found in the Traffic and Transport Assessment prepared by SYSTRA and submitted with this planning application. The traffic data is detailed in Table 14.3. Only road links that met the TII scoping criteria were included in the modelling assessment. Inputs include light duty vehicle (LDV) annual average daily traffic movements (AADT), annual average

daily heavy duty vehicles (HDV AADT), annual average traffic speeds, road link lengths, road type and project county location.

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Table 14.3 Traffic Data used in Operational Phase Climate Assessment

Road Name	Speed (kph)	Opening Year		Design Year	
		Do Nothing	Do Something	Do Nothing	Do Something
		LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)
R172 between Inner Relief Rd and Finnabair Crescent	60	10498 (117)	11517 (128)	11925 (133)	12944 (144)
R172 north of Site Access	60	9659 (0)	10961 (0)	11531 (0)	12832 (0)
R172 south of Site Access	60	9160 (0)	10027 (0)	10378 (0)	11404 (0)

14.4.2.2.2 Operational Phase Energy Use

The EU guidance (European Commission, 2013) also states indirect GHG emissions as a result of a development must be considered, which includes emissions associated with energy usage. A *Description Of The Proposed Utilities & Energy Sustainability Report* was prepared by Penston MEP Consulting (PEMP) in relation to the proposed development and is submitted separately with this planning application. The report outlines a number of measures which have been incorporated into the overall design of the development which will have the benefit of reducing the impact to climate where possible during operation.

14.4.2.3 Significance Criteria for GHGA

The Transport Infrastructure Ireland (TII) guidance document entitled *PE-ENV-01104 Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document* (TII, 2022a) outlines a recommended approach for determining the significance of both the construction and operational phases of a development.

The significance of GHG effects set out in PE-ENV-01104 (TII, 2022a) is based on IEMA guidance (IEMA, 2022) which is consistent with the terminology contained within Figure 3.4 of the EPA's *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (EPA, 2022).

The 2022 IEMA Guidance (IEMA, 2022) sets out the following principles for significance:

- When evaluating significance, all new GHG emissions contribute to a negative environmental impact; however, some projects will replace existing development or baseline activity that has a higher GHG profile. Therefore, the significance of a project's emissions should be based on its net impact over its lifetime, which may be positive, negative or negligible;
- Where GHG emissions cannot be avoided, the goal of the EIA process should be to reduce the project's residual emissions at all stages; and
- Where GHG emissions remain significant, but cannot be further reduced, approaches to compensate the project's remaining emissions should be considered.

The criteria for determining the significance of effects are a two-stage process that involves defining the magnitude of the impacts and the sensitivity of the receptors, i.e. Ireland's National GHG targets. In relation to climate, there is no project specific assessment criteria, but the project will be assessed against the recommended TII significance determination. This takes account of any embedded or committed mitigation measures that form part of the design which should be considered.

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TII (TII 2022a) states that professional judgement must be taken into account when contextualising and assessing the significance of a project's GHG impact. TII reference the IEMA guidance (IEMA, 2022) which states that the crux of assessing significance is "*not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050".*

Significance is determined using the criteria outlined in Table 14.3 (derived from Table 6.7 of PE-ENV-01104 (TII 2022a)) along with consideration of the following two factors:

- The extent to which the trajectory of GHG emissions from the project aligns with Ireland's GHG trajectory to net zero by 2050; and
- The level of mitigation taking place.

Table 14.4 Significance Criteria for GHGA

Effects	Significance Level	Description
Significant Adverse	Major Adverse	• The project's GHG impacts are not mitigated. • The project has not complied with do-minimum standards set through regulation, nor provided reductions required by local or national policies; and • No meaningful absolute contribution to Ireland's trajectory towards net zero.
	Moderate Adverse	• The project's GHG impacts are partially mitigated. • The project has partially complied with do-minimum standards set through regulation, and have not fully complied with local or national policies; and • Falls short of full contribution to Ireland's trajectory towards net zero.
Not Significant	Minor Adverse	• The project's GHG impacts are mitigated through 'good practice' measures. • The project has complied with existing and emerging policy requirements; and • Fully in line to achieve Ireland's trajectory towards net zero.
	Negligible	• The project's GHG impacts are mitigated beyond design standards. • The project has gone well beyond existing and emerging policy requirements; and • Well 'ahead of the curve' for Ireland's trajectory towards net zero.
Beneficial	Beneficial	• The project's net GHG impacts are below zero and it causes a reduction in atmosphere GHG concentration. • The project has gone well beyond existing and emerging policy requirements; and • Well 'ahead of the curve' for Ireland's trajectory towards net zero, provides a positive climate impact.

Ireland's carbon budgets can also be used to contextualise the magnitude of GHG emissions from the proposed development (TII, 2022a). The approach is based on comparing the net proposed development GHG emissions to the relevant carbon budgets (DECC, 2023a). With the publication of the Climate Action Act in 2021 and the Climate Action Plan 2024, sectoral carbon budgets have been published for comparison with the net GHG emissions from the proposed development over its lifespan. The aim of the carbon budgets is to ensure we are on a trajectory to meet the National Climate Objective of Net Zero by 2050.

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14.4.3 Climate Change Risk Assessment

The assessment involves determining the vulnerability of the proposed development to climate change. This involves an analysis of the sensitivity and exposure of the development to climate hazards which together provide a measure of vulnerability.

PE-ENV-01104 (TII, 2022a) states that the Climate Change Risk Assessment (CCRA) is guided by the principles set out in the overarching best practice guidance documents:

- Technical Guidance on the Climate Proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021a); and
- The Institute of Environmental Management and Assessment, Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (2nd Edition) (IEMA, 2020).

The baseline environment information provided in Section 14.5, future climate change modelling and input from other experts working on the proposed development, i.e. hydrologists, should be used to assess the likelihood of a climate risk.

First an initial screening CCRA based on the operational phase is carried out, according to the TII guidance PE-ENV-01104. This is carried out by determining the sensitivity of proposed development assets, i.e. receptors, and their exposure to climate change hazards.

The proposed development asset categories must be assigned a level of sensitivity to climate hazards. PE-ENV-01104 (TII, 2022a) provides the list of asset categories and climate hazards to be considered. The asset categories will vary for development type and need to be determined on a development by development basis.

- **Asset Categories** Pavements; drainage; structures; utilities; landscaping; signs, light posts, buildings, and fences.
- **Climate Hazards** Flooding (coastal, pluvial, fluvial); extreme heat; extreme cold; wildfire; drought; extreme wind; lightning and hail; landslides; fog.

The sensitivity is based on a High, Medium or Low rating with a score of 1 to 3 assigned as per the criteria below.

- **High Sensitivity** The climate hazard will or is likely to have a major impact on the asset category. This is a sensitivity score of 3.
- **Medium Sensitivity** It is possible or likely the climate hazard will have a moderate impact on the asset category. This is a sensitivity score of 2**.**

- **Low Sensitivity** It is possible the climate hazard will have a low or negligible impact on the asset category. This is a sensitivity score of 1.

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Once the sensitivities have been identified the exposure analysis is undertaken. The exposure analysis involves determining the level of exposure of each climate hazard at the project location irrespective of the project type. For example, flooding could be a risk if the project location is next to a river in a floodplain. Exposure is assigned a level of High, Medium or Low as per the below criteria.

- **High Exposure** It is almost certain or likely this climate hazard will occur at the project location, i.e. might arise once to several times per year. This is an exposure score of 3.
- **Medium Exposure** It is possible this climate hazard will occur at the project location, i.e. might arise a number of times in a decade. This is an exposure score of 2.
- **Low Exposure** It is unlikely or rare this climate hazard will occur at the project location, i.e. might arise a number of times in a generation or in a lifetime. This is an exposure score of 1.

Once the sensitivity and exposure are categorised, a vulnerability analysis is conducted by multiplying the sensitivity and exposure to calculate the vulnerability.

14.4.3.1 Significance Criteria for CCRA

The CCRA involves an initial screening assessment to determine the vulnerability of the proposed development to various climate hazards. The vulnerability is determined by combining the sensitivity and the exposure of the proposed development to various climate hazards.

Vulnerability = Sensitivity x Exposure

The vulnerability assessment takes any proposed mitigation into account. Table 14.4 details the vulnerability matrix. Vulnerabilities are scored on a high, medium and low scale.

TII guidance (TII, 2022a) and the EU technical guidance (European Commission, 2021a) note that if all vulnerabilities are ranked as low in a justified manner, no detailed climate risk assessment may be needed. Therefore, the impact from climate change on the proposed development can be considered to be not significant.

However, where residual medium or high vulnerabilities exist the assessment may need to be progressed to a detailed climate change risk assessment and further mitigation implemented to reduce risks. An assessment of construction phase CCRA impacts is only required according to the TII guidance (TII, 2022a) if a detailed CCRA is required.

Table 14.5 Vulnerability Matrix

		Exposure		
		High (3)	Medium (2)	Low (1)
Sensitivity	High (3)	9 - High	6 – High	3 - Medium
	Medium (2)	6 - High	4 - Medium	2 - Low
	Low (1)	3 - Medium	2 – Low	1 - Low

The screening CCRA, detailed in Section 14.8.2.2, did not identify any residual medium or high risks to the proposed development as a result of climate change. Therefore, a detailed CCRA for the construction and operational phase were scoped out.

While a CCRA for the construction phase was not required, best practice mitigation against climate hazards is still recommended in Section 14.8.

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14.4.4 Site Surveys/Investigations

No surveys were required as part of the climate assessment.

14.4.5 Consultation

No specific consultation with relevant bodies was undertaken as part of the climate assessment.

14.5 Difficulties Encountered

There were no difficulties encountered in compiling this assessment.

14.6 Baseline Environment

PE-ENV-01104 (TII, 2022a) states that a baseline climate scenario should identify, consistent with the study area for the project, GHG emissions without the project for both the current and future baseline.

Ireland declared a climate and biodiversity emergency in May 2019 and in November 2019 there was European Parliament approval of a resolution declaring a climate and environment emergency in Europe. This, in addition to Ireland's current failure to meet its EU binding targets under Regulation 2018/842 (European Union, 2018), results in changes in GHG emissions either beneficial or adverse being of more significance than previously considered prior to these declarations.

14.6.1 Current GHG Baseline

Data published in July 2024 (EPA, 2024), indicates that Ireland exceeded, without the use of flexibilities, its 2023 annual limit set under EU's Effort Sharing Decision (ESD) (EU 2018/842) by 2.27 Mt CO_2e. However, the 2023 emissions were the first time that Ireland's emission were below (-1.2%) 1990 levels. ETS (Emissions Trading Scheme) emissions decreased (-17.0%) and ESR (Effort Sharing Regulation) emissions decreased (-3.4%). Ireland's target is an emission reduction of 626 kt of CO_2e by 2030 on an average baseline of 2016 to 2018. The EPA estimate that 2023 total national GHG emissions, excluding LULUCF, have decreased by 6.8% on 2022 levels to 55.01 Mt CO_2e, with a 2.2 Mt CO_2e (-21.6%) reduction in electricity industries alone. This was driven by a 40.7% share of energy from renewables in 2023 and by increasing our imported electricity. Manufacturing combustion and industrial processes decreased by 5.1% to 6.3 Mt CO_2e in 2023 due to declines in fossil fuel usage. The sector with the highest emissions in 2023 was agriculture at 37.6% of the total, followed by transport at 21.4%. For 2023, total national emissions (including LULUCF) were 60.62 Mt CO_2e (EPA, 2024) (Table 14.5).

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

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Table 14.6 Trends in Total National GHG Emissions 2021 – 2023

Sector *Note 1*	2021	2022	2023	Total Budget (Mt CO_2e) (2021-2025)	% Budget 2021-2025 Used	Annual Change 2022 to 2023
Electricity	9.893	9.694	7.558	40.0	67.9%	-22.0%
Transport	11.089	11.760	11.791	54.0	64.1%	0.3%
Buildings (Residential)	6.868	5.753	5.346	29.0	62.0%	-7.1%
Buildings (Commercial and Public)	1.444	1.447	1.409	7.0	61.4%	-2.6%
Industry	7.093	6.622	6.288	30.0	66.7%	-5.0%
Agriculture	21.940	21.795	20.782	106.0	60.9%	-4.6%
Other *Note 2*	1.864	1.931	1.832	9.0	62.5%	-5.1%
LULUCF	4.628	3.983	5.614	–	–	40.9%
Total including LULUCF	64.819	62.986	60.620	295.0	63.9%	-3.8%

Note 1 Reproduced from latest emissions data on the EPA website July 2024 (EPA, 2024).
Note 2 Other includes Petroleum refining, F-Gases and Waste (emissions from solid waste disposal on land, solid waste treatment (composting and anaerobic digestion), wastewater treatment, waste incineration and open burning of waste).

14.6.2 Future GHG Baseline

The future baseline with respect to the GHGA can be considered in relation to the future climate targets which the assessment results will be compared against. In line with TII (TII, 2022a) and IEMA Guidance (IEMA, 2022) the future baseline is a trajectory towards net zero by 2050, "*whether it* [the project] *contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050*".

The future baseline will be determined by Ireland meeting its targets set out in the CAP24, and future CAPs, alongside binding 2030 EU targets. The European Union (EU) enacted *'Regulation (EU) 2018/842 on binding annual GHG emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No. 525/2013'* (hereafter referred to as the Regulation) (European Union, 2018) to meet the commitments under the Paris Agreement. The Regulation aims to deliver, collectively by the EU in the most cost-effective manner possible, reductions in GHG emissions from the Emission Trading Scheme (ETS) and non-ETS sectors amounting to 43% and 30%, respectively, by 2030 compared to 2005. The Regulation was amended in April 2023 and Ireland must now limit its ETS and non-ETS greenhouse gas emissions by at least 42% by 2030. The ETS is an EU-wide scheme which regulates the GHG emissions of larger industrial emitters including electricity generation, cement manufacturing and heavy industry. The non-ETS sector includes all domestic GHG emitters which do not fall under the ETS scheme and includes GHG emissions from transport, residential and commercial buildings and agriculture.

In June 2024, the EPA released the report *Ireland's Greenhouse Gas Emissions Projections 2023-2050* (EPA, 2024d), which includes total projected emissions and a breakdown of projected emissions per sector under the 'With Existing Measures' and 'With Additional Measures' scenarios. The EPA

projections indicate that under the 'With Existing Measures' scenario, Ireland will achieve a reduction of 11% on 2018 levels by 2030. A reduction of 29% by 2030 can be achieved under the 'With Additional Measures' scenario, which is still short of the 42% reduction target, set out in the carbon budgets.

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14.6.3 Current CCRA Baseline

The region of the proposed development has a temperate, oceanic climate, resulting in mild winters and cool summers. The Met Éireann weather station at Cork Airport is the nearest, representative, weather and climate monitoring station to the proposed development with meteorological data recorded for the 30-year period from 1991 to 2020. The historical regional weather data for Cork Airport metrological station is representative of the current climate in the region of the proposed development. The data for the 30-year period from 1991 to 2020 indicates that the wettest months at Cork Airport Metrological Station were January, October and December, and the driest month on average was May (Met Éireann, 2025a). July was the warmest month with a mean temperature of 15.2 Celsius. January was the coldest month with a mean temperature of 5.7 Celsius.

Met Éireann's 2023 Climate Statement (Met Éireann, 2024a) states 2023's average shaded air temperature in Ireland is provisionally 11.20°C, which is 1.65°C above the 1961-1990 long-term average. Previous to this 2022 was the warmest year on record; however, 2023 was 0.38°C warmer (Figure 14.1).

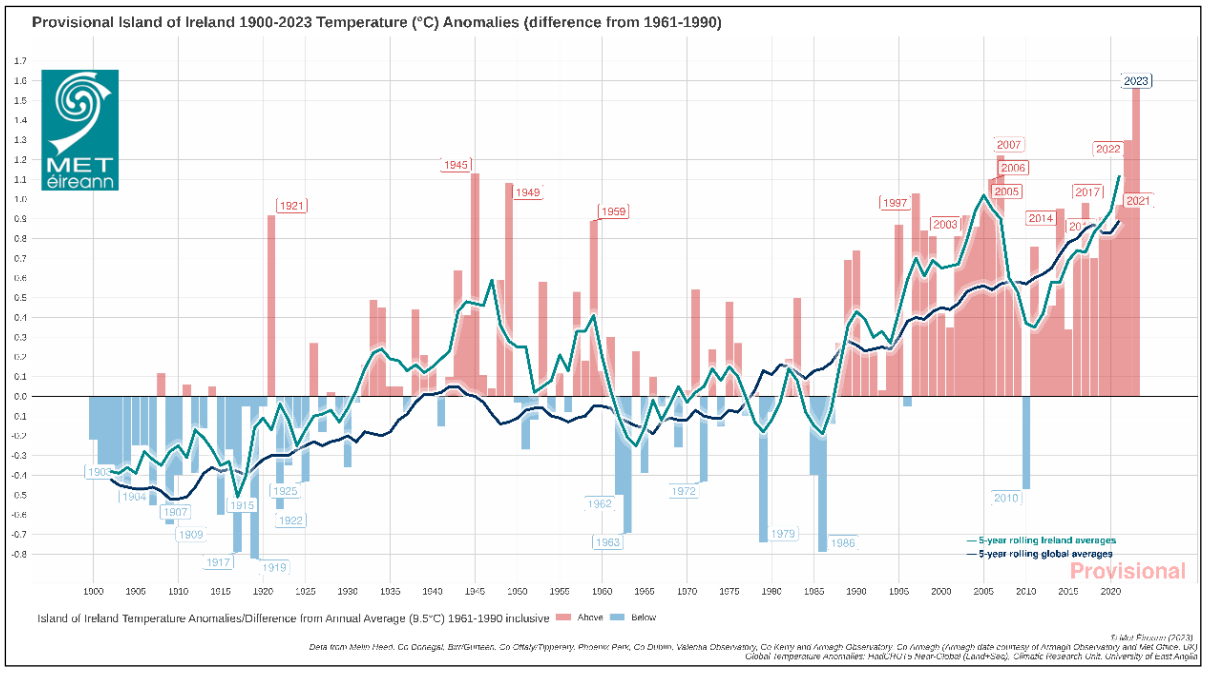

Figure 14.1 1900-2023 Temperature (°C) Temperature Anomalies (differences from 1961-1990)

2023 also had above average rainfall. This included the warmest June on record and the wettest March and July on record. Record high sea surface temperatures (SST) were recorded since April 2023 which included a severe marine heatwave to the west of Ireland during the June 2023. This marine heatwave contributed to the record rainfall in July.

Met Éireann's 2024 *Climate Statement* (Met Éireann 2025b) states 2024's average shaded air temperature in Ireland is provisionally 10.72°C, which is 1.17°C above the 1961-1990 long-term average or 0.55°C above the most recent 1991-2020 long-term average. This is the 4th warmest year on record with 2023 breaking previous records. Seven of the top ten warmest years have occurred since 2005. Record high sea surface temperatures (SST) were recorded in 2022, and in 2024 continued at or near record high levels. 2024 was overall drier than average; however, there were many instances of heavy or intense rainfall which led to flooding events. This trend is predicted to continue with climate change with an increase in both dry periods and heavy rainfall events. Considering the extraordinary data, Met Éireann states that the latest Irish climate change projections indicate further warming in the future, including warmer winters. The record temperatures means the likelihood of extreme weather events occurring has increased. This will result in longer dry periods and heavy rainfall events. Storm surges and coastal flooding due to sea level rise. Compound events, where coastal surges and extreme rainfall events occur simultaneously will also increase. Met Éireann has high confidence in maximum rainfall rates increasing but not in how the frequency or intensity of storms will change with climate change.

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14.6.4 Future CCRA Baseline

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

Ireland has seen increases in the annual rainfall in the north and west of the country, with small increases or decreases in the south and east including in the region where the proposed development will be located (EPA, 2021b). The EPA have compiled a list of potential adverse impacts as a result of climate change including the following which may be of relevance to the proposed development (EPA, 2021b):

- More intense storms and rainfall events;
- Increased likelihood and magnitude of river and coastal flooding;
- Water shortages in summer in the east;
- Adverse impacts on water quality; and
- Changes in distribution of plant and animal species.

TII's Guidance document PE-ENV-01104 (TII 2022a) states that for future climate change a moderate to high Representative Concentration Pathways (RCP) should be adopted. RPC4.5 is considered moderate, while RPC8.5 is considered high. Representative Concentration Pathways (RCPs) describe different 21st century pathways of GHG emissions depending on the level of climate mitigation action undertaken.

National Framework for Climate Services (NFCS) was founded in June 2022 to streamline the provision of climate services in Ireland and will be led by Met Éireann. The aim of the NFCS is to enable the co-production, delivery and use of accurate, actionable and accessible climate information and tools to support climate resilience planning and decision making. In addition to the NFCS, further work has been ongoing into climate projects in Ireland through research under the TRANSLATE project.

TRANSLATE (Met Éireann, 2023b) has been led by climate researchers from University of Galway – Irish Centre for High End Computing (ICHEC), and University College Cork – SFI Research Centre for Energy, Climate and Marine (MaREI), supported by Met Éireann climatologists. TRANSLATE's outputs are produced using a selection of internationally reviewed and accepted models from both CORDEX and CMIP5. Representative Concentration Pathways (RCPs) provide a broad range of possible futures based on assumptions of human activity. The modelled scenarios include for "least" (RCP2.6), "more" (RCP4.5) or "most" (RCP8.5) climate change (Figure 14.2).

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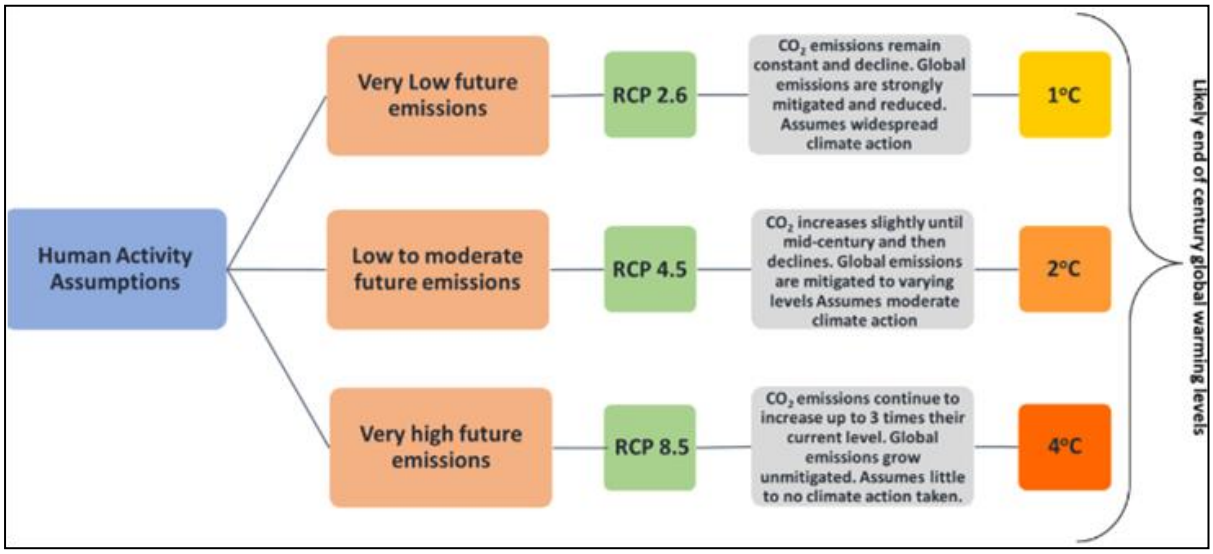

Figure 14.2 Representative Concentration Pathways associated emission levels (Source: TRANSLATE Project Storymap, Met Éireann 2023)

TRANSLATE (Met Éireann, 2023b) provides the first standardised and bias-corrected national climate projections for Ireland to aid climate risk decision making across multiple sectors (e.g. transport, energy, water), by providing information on how Ireland's climate could change as global temperatures increase to 1.5˚C ,2˚C, 2.5˚C, 3˚C or 4˚C. Projections broadly agree with previous projections for Ireland. Ireland's climate is dominated by the Atlantic Meridional Overturning Circulation (AMOC), a large system of ocean currents, including the Gulf Stream, characterised by a northward flow of warm water and a southward flow of cold water. Due to the AMOC, Ireland does not suffer from the extremes of temperature experienced by other countries at a similar latitude. Recent studies have projected that the AMOC could decline by 30 – 40 % by 2100, resulting in cooler North Atlantic Sea surface temperatures (SSTs) (Met Éireann, 2023b). Met Éireann projects that Ireland will nevertheless continue to warm, although the AMOC cooling influence may lead to reduced warming compared with continental Europe. AMOC weakening is also expected to lead to additional sea level rise around Ireland. With climate change Ireland's temperature and rainfall will undergo more and more significant changes, e.g. on average summer temperature could increase by more than 2°C, summer rainfall could decrease by 9% while winter rainfall could increase by 24% (Figure 14.3). Future projects also include a 10-fold increase in the frequency of summer nights (values > 15°C) by the end of the century, a decrease in the frequency of cold winter nights and an increase in the number of heatwaves. A heatwave in Ireland is defined as a period of 5 consecutive days where the daily maximum temperature is greater than 25°C.

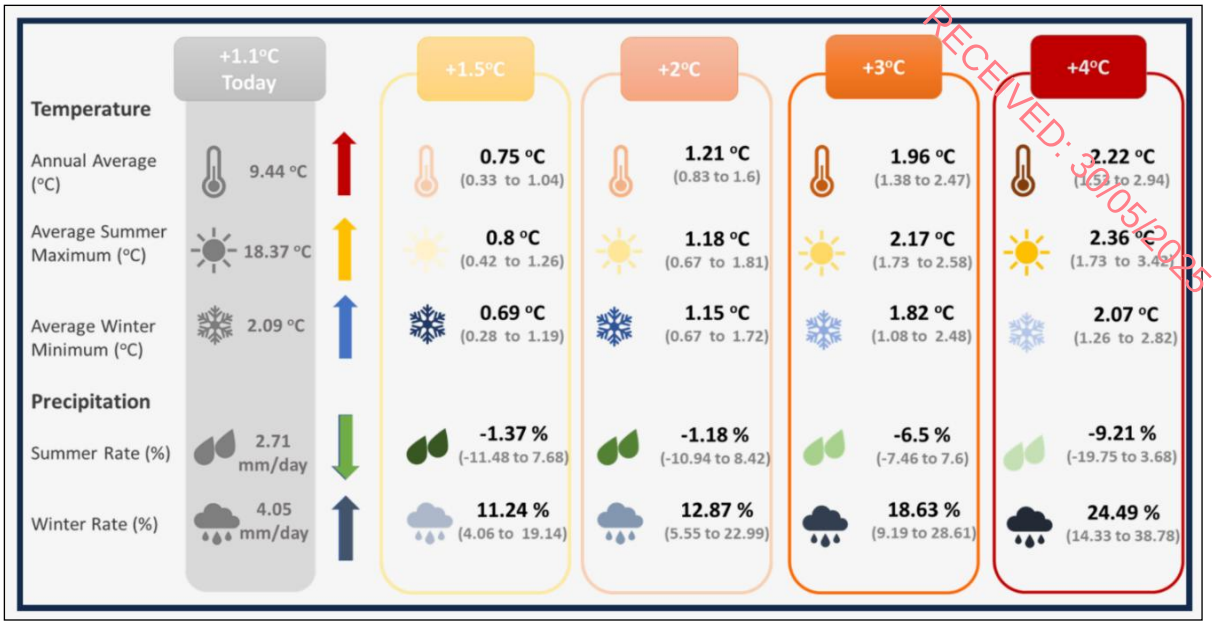

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Figure 14.3 Change of climate variables for Ireland for different Global warming thresholds (Source: TRANSLATE Project Storymap, Met Éireann, 2023b)

The TRANSLATE research report (Met Éireann, 2024d) finds that night-time temperatures will warm more than day-time temperatures, with temperatures increases across all seasons but the highest in the summer (with an increase of 0.5°C to 3.5°C). Autumn is projected to have the highest increase in average minimum temperatures (with an increase of 1.1°C to 4.4°C). The variance is dependent on the scenario that is being reviewed. While these temperatures are projected across all of Ireland, they increase most in the east of the country compared to the west. With respect to rainfall, increases of 4% to 38% are projected. However, this will not be spread across the year as during summer months there are projected decreases in rainfall beyond the 2°C warming scenario.

In January 2024 the EPA published *Ireland's Climate Change Assessment Synthesis Report* (EPA, 2024e) which contained four volumes:

- Volume 1: Climate Science: Ireland in a Changing World;
- Volume 2: Achieving Climate Neutrality by 2050;
- Volume 3: Being Prepared for Ireland's Future Climate; and
- Volume 4: Realising the Benefits of Transition and Transformation.

This report reinforces the existing and future risks arising from climate change. Volume 1 (EPA, 2024e) states that under Early action, the temperature increase averaged across the island of Ireland relative to the recent past (1976 to 2005) would reach 0.91°C (0.44 to 1.10°C) by mid-century before falling back to 0.80°C (0.34 to 1.07°C) at the end of the century. Whereas under Late action, by the end of the century it is projected that the temperature increases could be 2.77°C (2.02 to 3.49°C). Heat extremes will become more frequent and more severe and cold extremes will become less frequent and less severe with further warming.

Precipitation was 7% higher over the period 1991 to 2020 than over the 1961 to 1990 period. The average future predicted increase in precipitation is <10% in annual mean accumulated. By 2100

projected additional rises in sea level range from 0.32 to 0.6m under early action to 0.63 to 1.01m under late action scenarios, with greater storm surges potentially effecting critical infrastructure along the coastline. Projections of changes in storminess are highly uncertain and translate into large uncertainties in future frequency and intensity of extreme waves.

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Volume 3 (EPA, 2024e) discusses how water supplies will face growing pressures resulting in increased water demand and how options need to be developed, including potential new sources. The report states the key role of critical infrastructure for delivering public services, economic development and a sustainable environment. These are exposed to a range of climate extremes. Failures in critical infrastructure can cascade across other sectors and present a multi-sector risk due to climate change.

The report references the EPA's *Critical Infrastructure Vulnerability to Climate Change* report (EPA, 2021a) as the most substantial research project in Ireland to date on climate change and critical infrastructure which assesses the future performance of Ireland's critical infrastructure when climate is considered. The Critical Infrastructure Vulnerability to Climate Change report states with respect to water availability and quality, that flood risk and heatwaves have a medium vulnerability index and the underground supply network has a high vulnerability to snowstorms and cold spells. However, while the vulnerability is high, the exposure is likely to reduce due to future climate change resulting in less cold weather events. The risk assessment highlights the co-dependence of the water sector to the energy sector, and how vulnerability in the energy sector may have cascading impacts.

Volume 4 (EPA, 2024e) calls for system change, including a transformation of urban settings. Stating that meaningful urban transformation can create a better living environment while simultaneously reducing emissions.

The projections were echoed by the *Updated High-resolution Climate Projections for Ireland Research Report: 471* (EPA, 2024f) which was in broad agreement with previous research. The future autumn and winter months are projected to be up to 10% wetter, while summer is projected to be up to 8% drier.

14.7 The 'Do Nothing' Scenario

In the Do-Nothing scenario, the site will remain as per the baseline and will change in accordance with trends within the wider area (including influences from potential new developments in the surrounding area, changes in road traffic, etc).

As the site is zoned for development, it is likely that in the absence of the proposed development a development of a similar nature would occur. Therefore, the predicted climate impacts within this report are likely to occur even in the absence of the proposed development.

14.8 Potential Significant Effects

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14.8.1 Greenhouse Gas Assessment

14.8.1.1 Construction and Demolition Phase

The most significant proportion of GHG emissions tend to occur during the construction and demolition phase as a result of embodied carbon in construction materials and emissions from construction activities. Therefore, the assessment has been included in the construction phase assessment for the purposes of the EIAR. The assessment is broken down into the following stages as per Section 14.4.2.1

- Stage A1 – A3: Product Carbon;
- Stage A4 – A5: Construction Carbon;
- Stage B1 – B5: In Use Carbon;
- Stage C1 – C4: End of Life Carbon; and
- Biogenic Carbon.

Using 500 $kgCO_2e/m^2$ for the housing units in conjunction with the schedule of areas supplied by the project architects, allowed a site specific carbon figure for the building elements of the project to be calculated (Table 14.6).

Additionally, the TII Carbon Tool was utilised to calculate GHG emissions associated with the non-building elements including materials for infrastructure works, site preparation works and fuel usage.

It is estimated that the proposed development will result in total embodied carbon emissions of 34,835 tCO_2e (Table 14.6).

Table 14.7 GHG Assessment Results

GHG Assessment Category	Elements Considered	Predicted Development GHG Emissions (tCO_2e)	% of Total
Buildings	Housing units	25,720	74%
Materials	Aggregates and other fill material, plastic pipework and cabling	3,223	9%
Clearance and demolition	Rock, topsoil and other excavation	8	0.02%
Land Use Change and Vegetation Loss	Land clearance incl. grassland & trees	438	1%
Excavation	Rock, topsoil and other excavation	191	0.5%
Plant Use	Fuel usage by plant operation (generators)	4,240	12%
Construction Waste Disposal	Mixed construction and demolition waste	0.1	0.0002%
Construction Waste Transport	Transport of waste offsite	1,015	3%
Total		**34,835**	-
Total Project Biogenic Carbon	Based on timber frame house	-5,401	-

The GHG emissions associated with the buildings make up the majority (74%) of the total GHG emissions for the project (Table 14.6). As per the LCA completed on the typical house types the majority (75%) of the carbon emissions are linked to the sub and superstructures. The product stage (A1 – A3) contribute the most to the overall carbon result followed by in use emissions (B1 – B5), primarily B4 replacement.

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Seven key materials were identified in the assessment of the house units that together make up 87% of Stage A – C emissions: concrete; MEP (mechanical, electrical and plumbing); plastic; windows, boards; timber; and insulation.

Efforts to reduce the quantity of these materials used or swap them for lower carbon alternatives will impact on the carbon footprint of the units. It is important to highlight that although the timber framework forms a significant part of the structural skeleton of the house units; it is not as carbon intensive as other materials. Both the Climate Change Advisory Council (CCAC) and National Climate Action Plan advise for the use of timber framed buildings as a construction method. Timber frames have the additional benefit of having absorbed carbon from the atmosphere during their growth and providing a long-term carbon sink during their lifetime in the building.

The LCA found that a reduction of 21% of total embodied carbon emissions (A – C stages) can be utilised for the biogenic carbon associated with the proposed development house types. This represents carbon savings of 5,401 tCO_2e for the proposed housing units. As the proposed apartment and duplex units are not of timber frame, there is no carbon saving associated with them.

The predicted emissions for the proposed development are annualised over the assumed 50 year lifespan and then compared to the relevant sector 2030 carbon budgets. Annualising the full carbon emissions over the lifetime of the development allows for appropriate comparison with annual GHG targets. In Table 14.7, GHG emissions have been compared against Ireland's total GHG emissions in 2023 (the existing baseline) and against Ireland's EU 2030 target of a 30% reduction in non-ETS sector emissions based on 2005 levels (27.7 Mt CO_2e) (set out in Regulation EU 2018/842 of the European Parliament and of the Council).

The estimated total GHG emissions, when annualised over the 50-year proposed development lifespan, are equivalent to 0.001% of Ireland's total GHG emissions in 2023 and 0.003% of Ireland's non-ETS 2030 emissions target.

Table 14.8 Estimated GHG Emissions Relative to Targets and GHG Baseline

Predicted Development GHG Emissions (tCO_2e)		Annualised Development GHG Emissions (tCO_2e)	Target/Sectoral Budget (tCO_2e)		Annualised Emissions as % of Relevant Target
34,835	Total Project Stage A - C GHG Emissions	697	Ireland's 2023 Total GHG Emissions (existing baseline)	60,620,000	0.001%
			Non-ETS 2030 Target	27,722,000	0.003%
-5,401	Total Project Biogenic Carbon	-108	-	-	-

The results of the lifecycle assessment for the housing units can be compared with a number of industry benchmarks to demonstrate the carbon impact of the development (Table 14.8).

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The Royal Institute of the Architects of Ireland (RIAI) 2030 Climate Challenge embodied carbon benchmarks for small scale residential developments were used for comparison with the predicted lifecycle carbon for the proposed development units. The proposed development house types will achieve the RIAI 2025 target of <800 $kgCO_2e/m^2$ and the 2030 target of <625 $kgCO_2e/m^2$ based on the predicted figure of 500 $kgCO_2e/m^2$ for the house types.

RIAI have a 2030 higher target of <450 $kgCO_2e/m^2$. Based on the current assessment the predicted figure of 500 $kgCO_2e/m^2$ for the housing units is not currently meeting this higher target. However, it is close to this target and given the ongoing commitment to sustainable development that the project developer (Marina Quarter Ltd./Glenveagh Properties) have it is likely that in the future this higher target can be achieved.

The London Energy Transformation Initiative (LETI) Climate Emergency Design banding system for residential properties was also used for comparison with the house units.

The LCA carbon intensity of 500 $kgCO_2e/m^2$ (stage A – C) and upfront carbon (A1 – A5) of 356 $kgCO_2e/m^2$ indicates that the house units are within the LETI B band. According to the LETI carbon alignment document, banding B is considered a robust target performance.

Table 14.9 Comparison Against Industry Embodied Carbon Benchmarks

Metric	Glenveagh Embodied Carbon ($kgCO_2e/m^2$)	Target	Target Achieved
RIAI 2025 Target (Embodied Carbon (A – C) $kgCO_2e/m^2$)	500	<800	Y
RIAI 2030 Target (Embodied Carbon (A – C) $kgCO_2e/m^2$)	500	<625	Y
RIAI 2030 Higher Target (Embodied Carbon (A – C) $kgCO_2e/m^2$)	500	<450	N
LETI Embodied Carbon Band B – Upfront Carbon	356	400	Y
LETI Embodied Carbon Band B – Lifecycle Embodied Carbon	500	625	Y

14.8.1.2 Operational Phase

14.8.1.2.1 Operational Energy Usage

The proposed development has been designed to reduce the impact to climate where possible. A number of measures have been incorporated into the design to ensure the operational phase emissions are minimised. The primary elements with respect to reducing climate impacts and optimising energy usage are summarised in Section 14.9.1 and are based on information provided within the *Utilities & Energy Sustainability Report* prepared by PMEP Consulting in relation to the proposed development.

14.8.1.2.2 Operational Traffic Emissions

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There is the potential for increased traffic volumes to impact climate during the operational phase. To provide for a worst-case assessment and to assess potential cumulative impacts, the traffic data has included specific cumulative developments within the area (see Traffic & Transportation Assessment for further details).

The predicted concentrations of CO_2e for the future years of 2028 and 2043 are detailed in Table 14.9. These are significantly less than Ireland's national 2028 and 2030 targets set out under EU legislation (targets beyond 2030 are not available) and the 2030 sectoral emissions ceilings. It is predicted that in 2028 the proposed development will increase CO_2 emissions by 109 tonnes CO_2e. This equates to 0.0003% of the 2028 national emission ceiling or 0.002% of the 2030 Transport sector emissions ceiling (see Table 14.9). Similarly low increases in CO_2 emissions are predicted to occur in 2043 with emissions increasing by 115 tonnes CO_2e. This equates to 0.0004% of the 2030 national emission ceiling or 0.002% of the 2030 Transport sector emissions ceiling (Table 14.9).

In addition, bicycle parking and electric vehicle parking and charging infrastructure will be provided as part of the parking requirements at the proposed development which will promote the use of more sustainable methods of transport.

Table 14.10 Traffic Emissions GHG Impact Assessment

Year	Scenario	CO_2e (tonnes / annum)
2028	Do Nothing	1,034
	Do Something	1,143
2043	Do Nothing	1,162
	Do Something	1,276
Increment Change in 2028		109
National Emission Ceiling 2028 (Tonnes) Note 1		**35,625,332**
Impact in 2028 (as % of national emissions ceiling)		0.0003%
Transport Sector 2030 Emission Ceiling		**6,000,000**
Impact in 2028 (as % of transport sector emissions ceiling)		0.002%
Increment Change in 2043		115
National Emission Ceiling 2030 (Tonnes) Note 1		**27,722,000**
Impact in 2043 (as % of national emissions ceiling)		0.0004%
Impact in 2043 (as % of transport sector emissions ceiling)		0.002%

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

14.8.1.3 GHGA Significance of Effects

The TII guidance states that the following two factors should be considered when determining significance:

- The extent to which the trajectory of GHG emissions from the project aligns with Ireland's GHG trajectory to net zero by 2050; and
- The level of mitigation taking place.

The level of mitigation described in Section 14.9 has been taken into account when determining the significance of the proposed development's GHG emissions. Based on the carbon emissions intensity and policy measures the project developer has in place, it can be concluded that the proposed development is aligned with Ireland's GHG trajectory to net zero by 2050. Therefore, according to the TII significance criteria described in Section 14.4.2.3 and Table 14.4, the significance of the GHG emissions during the construction and operational phase is minor adverse. The proposed development has mitigated some GHG impacts where possible.

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In accordance with the EPA guidelines (EPA, 2022), the above significance equates to a significance of effect of GHG emissions during the construction and operational phase which is ***direct, long-term, negative*** and ***slight***, which is overall ***not significant***.

14.8.2 Climate Change Risk Assessment

14.8.2.1 Construction and Demolition Phase

A detailed CCRA of the construction and demolition phase has been scoped out, as discussed in Section 14.4.3 and Section 14.8.2.2. There are no residual medium or high risk vulnerabilities to climate change hazards. Therefore, a detailed CCRA is not required (TII, 2022a). However, consideration has been given to the proposed development's vulnerability to the following climate change hazards with best practice mitigation measures proposed in Section 14.8:

- Flood Risk due to increased precipitation, and intense periods of rainfall. This includes fluvial and pluvial flooding;
- Increased temperatures potentially causing drought, wildfires and prolonged periods of hot weather;
- Reduced temperatures resulting in ice or snow; and
- Major Storm Damage including wind damage.

14.8.2.2 Operational Phase

The sensitivity and exposure of the development to various climate hazards must first be determined to then determine the vulnerability of the proposed development to climate change. Flooding (coastal, pluvial, fluvial), extreme heat, extreme cold, wildfire, drought, extreme wind, lightning, hail, landslides and fog have been considered as climate hazards in the context of the proposed development.

The sensitivity of the proposed development to the climate hazards is assessed irrespective of the project location. Table 14.11 details the sensitivity of the proposed development on a scale of high (3), medium (2) and low (1). Once the sensitivity has been established the exposure of the proposed development to each of the climate hazards is determined. This is the likelihood of the climate hazard occurring at the project location and is also scored on a scale of high (3), medium (2) and low (1). The product of the sensitivity and exposure is then used to determine the overall vulnerability of the proposed development to each of the climate hazards as per Table 14.5. The results of the vulnerability assessment are detailed in Table 14.11.

Table 14.11 Climate Change Vulnerability Assessment

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Climate Hazard	Sensitivity	Exposure	Vulnerability
Flooding (Coastal, Pluvial, Fluvial)	2 (Medium)	1 (Low)	1 (Low)
Extreme Heat	1 (Low)	2 (Medium)	2 (Low)
Extreme Cold	1 (Low)	2 (Medium)	2 (Low)
Wildfire	1 (Low)	1 (Low)	1 (Low)
Drought	1 (Low)	1 (Low)	1 (Low)
Extreme Wind	1 (Low)	1 (Low)	1 (Low)
Lightning & Hail	1 (Low)	1 (Low)	1 (Low)
Landslides	1 (Low)	1 (Low)	1 (Low)
Fog	1 (Low)	1 (Low)	1 (Low)

The sensitivity and exposure of the area was determined with reference to a number of online tools and with input from the various discipline specialists on the project team. It was concluded that the proposed development does not have any significant vulnerabilities to the identified climate hazards as described in the below sections. All vulnerabilities are classified as low.

14.8.2.2.1 Flooding

A *Site Specific Flood Risk Assessment* (SSFRA) was undertaken by IE Consulting and is submitted as part of this planning application. This document was reviewed to inform the climate change vulnerability assessment and assess the potential for flooding at the proposed development site.

The SSFRA has identified the primary potential flood risks are in relation to tidal and pluvial flooding. However, the SSFRA has concluded that there is a low risk of flooding at the proposed development location provided the recommendations within the SSFRA are included in the development design.

The SSFRA has assessed against the 'Mid-Range Future Scenario' which is in line with the "Medium Risk" RCP4.5 scenario. Therefore, the sensitivity to flooding has been categorised as 2 (Medium) as the design only mitigates the medium risk future scenario; allowing an additional 30% for future climate change related rainfall in the drainage calculations would align with the "High Risk" RCP8.5 scenario. However, the risk of flooding at the proposed development is still considered Low overall.

14.8.2.2.2 Extreme Wind, Fog, Lightning & Hail

In relation to extreme winds, the buildings shall be designed to the appropriate standards to account for the relevant wind loadings events for RCP4.5 and RCP8.5. If required as part of the building design, lightning protection shall be provided for. Hail and fog are not predicted to significantly affect the building due to its design.

14.8.2.2.3 Wildfires

In relation to wildfires, the *Think Hazard!* tool developed by the Global Facility for Disaster Reduction and Recovery (GFDRR, 2025), indicates that the wildfire hazard is classified as low for the Louth area. This means that there is between a 4% and 10% chance of experiencing weather that could support a problematic wildfire that may cause disruptions and low but tangible risk of life and property loss in any given year. Future climate modelling indicates that there could be an increase in the weather conditions which are favourable to fire conditions. These include increases in temperature and

prolonged dry periods. However, based on the low risk of wildfire and the project location in a more suburban it can be concluded that the proposed development is of low vulnerability to wildfires.

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14.8.2.2.4 Landslides

The Geological Society of Ireland (GSI) landslide susceptibility mapping database (GSI, 2025) was reviewed to inform the risk from landslides at the proposed development. There have not been any historical landslide events in the vicinity of the proposed development and the area is of low susceptibility to future landslides. Therefore, the vulnerability of the proposed development to landslides is classed as low.

14.8.2.2.5 Extreme Temperatures (Heat & Cold) & Drought

Extreme temperatures, both extreme heat and extreme cold, have the potential to impact the building materials and some related infrastructure. However, high quality, durable building materials will be selected for the proposed development at the detailed design stage. Throughout detailed design phase, the architects will be using guidance documents to inform with design detail decisions including; the EU Commission *Technical Guidance on Adapting Buildings to Climate Change* (European Commission, 2021a), LETI emergency design guide (LETI, 2020), and the latest available IPCC report. In addition, should updated EuroCodes be published prior to completion of detailed design, which will include consideration for climate impacts, these design standards will be taken into account. The proposed development has been designed to reduce the impact to climate where possible. This will primarily be achieved through a high-performance building envelope, including airtight construction, enhanced insulation, and energy-efficient glazing, which will reduce reliance on HVAC and renewable energy systems. These measures not only minimize energy demand but also enhance resilience to extreme temperature events, ensuring year-round thermal comfort and long-term sustainability.

In relation to the landscaping elements of the proposed development, the landscape planting specifications are a majority mix that comply with the All Ireland Pollinator Plan/Native Species Guidance and will withstand Ireland's extreme climatic conditions. In periods of high temperatures certain species can withstand drought however, a Management Maintenance Plan that details the regular watering requirements during such conditions is also provided as part of the landscape specifications for the proposed development. Therefore, the risk of severe impacts from extreme temperatures and drought is low.

14.8.2.2.6 Summary

Overall, the proposed development has at most low vulnerabilities to the identified climate hazards. Therefore, no detailed risk assessment is required.

14.8.2.3 CCRA Significance of Effects

With design mitigation in place, there are no significant risks to the proposed development as a result of climate change. In accordance with the EPA Guidelines (EPA, 2022), the significance of effect of the impacts to the proposed development as a result of climate change are ***direct, long-term, negative*** and ***imperceptible***, which is overall ***not significant*** in EIA terms.

14.8.3 Cumulative Effects

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With respect to the requirement for a cumulative assessment the IEMA (IEMA, 2022) and TII (TII, 2022a) guidance on which the assessment is based states that "*the identified receptor for the GHG Assessment is the global climate and impacts on the receptor from a project are not geographically constrained, the normal approach for cumulative assessment in EIA is not considered applicable. By presenting the GHG impact of a project in the context of its alignment to Ireland's trajectory of net zero and any sectoral carbon budgets, this assessment will demonstrate the potential for the project to affect Ireland's ability to meet its national carbon reduction target. This assessment approach is considered to be inherently cumulative*".

The traffic data used for the operational phase assessment included cumulative traffic from existing and permitted developments in the surrounding area. Therefore, this impact assessment is cumulative.

As per the above, the cumulative impact of the proposed development in relation to GHG emissions is considered ***direct, long-term, negative*** and ***slight***, which is overall ***not significant*** in EIA terms.

14.8.4 Summary

The following table summarises the identified likely significant effects on climate due to the proposed development before mitigation measures are applied.

Table 14.12 Summary of Likely Significant Effects in the absence of mitigation

Likely Significant Effect in accordance with EPA Terminology	Quality	Significance	Extent	Probability	Duration	Type
GHG emissions from construction materials & activities and operational energy usage	Negative	Not significant - slight (minor adverse as per Table 14.3)	National	Likely	Long-term	Direct
Climate change and related vulnerability of the proposed development	Negative	Not significant - slight	Local	Likely	Long-term	Direct

14.9 Mitigation Measures

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14.9.1 Incorporated Design Mitigation

A number of measures have been incorporated into the design of the development to reduce the impact on climate wherever possible. These measures are outlined in further detail in the application drawings, *Architects Design Statement* (prepared by JFA Architects) and *Utilities & Energy Sustainability Report* prepared by PEMP Consulting and submitted as part of the planning application for the proposed development. The development will be in compliance with the requirements of the Near Zero Energy Building (NZEB) Standards and will achieve a Building Energy Rating (BER) in line with the NZEB requirements.

Such measures included in the proposed development to reduce the impact to climate from energy usage are:

- The residential units will aim to achieve a Building Energy Ratio (BER) of A2 (25-49 kwh/m^2/yr);
- Achieve air tightness standards of 3 m^3/m^2/hr;
- Ensure thermal bridging details are designed to achieve thermal bridging factors of 0.08W/m^2K for the residential units and 0.15 W/m^2k for the apartment units;
- Energy Performance Coefficient (EPC) < 0.30;
- Carbon Performance Coefficient (CPC) < 0.35;
- Renewable Energy Ratio (RER) > 0.20;
- Meet or exceed minimum U-Value standards identified in Part L 2022 Dwellings;
- Use of natural ventilation will be maximised to reduce the requirement for mechanical alternatives;
- Air Source Heat Pumps are being considered as a viable option to provide space heating and domestic hot water within the dwellings;
- Exhaust Air Heat Pumps are being considered where mechanical ventilation is required;
- Solar photovoltaic panels are being considered to fulfil the renewable energy requirement. These have the benefit of providing an alternative renewable energy source for the housing units;
- Use of natural daylight will be maximised to reduce the need for artificial lighting;
- Where artificial lighting is required, this will be in the form of energy efficient LED lighting; and
- Bicycle parking and infrastructure to support electric vehicle (EV) car charging has been incorporated into the development to provide an alternative, more sustainable modes of transport.

These identified measures will aid in reducing the impact to climate during the operational phase of the proposed development in line with the goals of the Climate Action Plan.

A number of measures have been incorporated into the design of the development to mitigate against the impacts of future climate change. For example, adequate attenuation and drainage have been incorporated into the design of the development to avoid potential flooding impacts as a result of increased rainfall events in future years. These measures have been considered when assessing the vulnerability of the proposed development to climate change (Section 14.8.2.2). Landscape planting

elements have been chosen with consideration for climate change impacts in future years. The landscape planting specifications are a majority mix that comply with the All Ireland Pollinator Plan/Native Species Guidance and will withstand Ireland's extreme climatic conditions. In periods of high temperatures certain species can withstand drought however, a Management Maintenance Plan that details the regular watering requirements during such conditions is also provided as part of the landscape specifications for the proposed development.

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14.9.2 Construction and Demolition Phase Mitigation

Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. The following measures to reduce the embodied carbon of the construction works are:

- Appointing a suitably competent contractor who will undertake waste audits detailing resource recovery best practice and identify materials can be reused/recycled.
- Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods.
- Ensure all plant and machinery are well maintained and inspected regularly.
- Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site.
- Sourcing materials locally where possible to reduce transport related CO_2 emissions.

The project developer, Marina Quarter Ltd. (Glenveagh Properties), has committed to achieving Net Zero by 2050 across its whole business. Therefore, the proposed development will be built with carbon reduction and sustainability in mind and will include reductions of embodied emissions during the construction phase. Glenveagh Properties have published a Net Zero Transition Plan and Annual Reports which detail a commitment to achieving Net Zero by 2050.

The above listed measures are supported by Glenveagh Properties PLC's *Net Zero Transition Plan 2023*, published in March 2023, which identifies the sources of Glenveagh Properties PLC's emissions and proposed measures to reduce these. A commitment to achieve a 55% reduction in Scope 3 (construction methods) emissions intensity (tCO_2e per 100 m^2 of complete floor area) by 2031 (using 2021 as the baseline year) will involve supplier engagement to make informed procurement decisions, engaging with subcontractors to support their transition to less carbon intensive fuels (diesel and gas oil is currently the norm) and investing in innovation of designing and building homes to reduce their associated embodied carbon. A reduction target of 46.2% by 2031 is also set in the plan for Scope 1 and 2 emissions (company operations). All targets have been validated by the Science Based Targets initiative (SBTi).

The Science Based Targets initiative (SBTi) is a corporate climate action organisation, incorporated as a charity, which develops standards, tools and guidance enabling companies to set GHG emissions reductions targets in line with net-zero by 2050 at the latest. Science-based targets show companies and financial institutions how much and how quickly they need to reduce their GHG emissions to prevent the worst effects of climate change (SBTi, 2024a). Glenveagh Properties PLC is one of the over 4,000 companies and financial institutions who have had their emission reduction targets validated by the SBTi (Glenveagh's targets can be searched in the SBTi's target dashboard (SBTi, 2024b)).

Glenveagh Properties PLC's *Full Year 2024 Results*, published in March 2025, identified that Scope 3 emissions are 7% below the 2021 baseline, measured on an intensity basis (tCO_2e per $100m^2$). This is primarily due to the focus on the energy efficiency of the residential units. Scope 1 and 2 emissions decreased by 47% compared to 2021 baseline, which can be attributed to the first full year HVO (hydrotreated vegetable oil) was used across all sites as a replacement to diesel.

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In terms of impact on the proposed development due to climate change, during construction the Contractor will be required to mitigate against the effects of extreme rainfall/flooding through site risk assessments and method statements. The Contractor will also be required to mitigate against the effects of extreme wind/storms, temperature extremes through site risk assessments and method statements. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, and this will require consideration during construction. During construction, the Contractor will be required to mitigate against the effects of fog, lighting and hail through site risk assessments and method statements.

Throughout detailed design and construction phase, guidance documents to inform with design detail decisions shall be reviewed, e.g. the EU Commission *Technical Guidance on Adapting Buildings to Climate Change* (European Commission, 2021a), LETI emergency design guide (LETI, 2020), and the latest IPCC report.

14.9.3 Operational Phase Mitigation

The proposed development has been designed to reduce the impact on climate as a result of energy usage during operation. These measures are outlined in Section 14.9.1 above as incorporated design mitigation. No further operational phase mitigation is proposed.

14.10 Residual Impact Assessment

The impact to climate as a result of a proposed development must be assessed as a whole for all phases. The proposed development will result in some impacts to climate through the release of GHGs. TII reference the IEMA guidance which states that the crux of assessing significance is "*not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050*". The proposed development has proposed some best practice mitigation measures and is committing to reducing climate impacts where feasible. As per the assessment criteria in Table 14.3 the residual impact of the proposed development in relation to GHG emissions is considered minor adverse, this equates to a ***direct, long-term, negative*** and ***slight***, impact which is overall ***not significant*** in EIA terms.

In relation to climate change vulnerability, it has been assessed that there are no significant risks to the proposed development as a result of climate change. The residual effect of climate change on the proposed development is considered ***direct, long-term, negative*** and ***imperceptible***, which is overall ***not significant*** in EIA terms.

14.10.1 Summary of Post-mitigation Effects

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

Table 14.13 Summary of Effects Post Mitigation

Likely Significant Effect in accordance with EPA Terminology	Quality	Significance	Extent	Probability	Duration	Type
GHG emissions from construction materials & activities and operational energy usage	Negative	Not significant (minor adverse as per Table 14.3)	National	Likely	Long-term	Direct
Climate change and related vulnerability of the proposed development	Negative	Not significant	Local	Likely	Long-term	Direct

14.10.2 Cumulative Residual Effects

With respect to the requirement for a cumulative assessment the IEMA (IEMA, 2022) and TII (TII, 2022a) guidance on which the assessment is based states that "*the identified receptor for the GHG Assessment is the global climate and impacts on the receptor from a project are not geographically constrained, the normal approach for cumulative assessment in EIA is not considered applicable. By presenting the GHG impact of a project in the context of its alignment to Ireland's trajectory of net zero and any sectoral carbon budgets, this assessment will demonstrate the potential for the project to affect Ireland's ability to meet its national carbon reduction target. This assessment approach is considered to be inherently cumulative*".

The traffic data used for the operational phase assessment included cumulative traffic from existing and permitted developments in the surrounding area. Therefore, this impact assessment is cumulative.

As per the above, the cumulative impact of the proposed development in relation to GHG emissions is considered ***direct, long-term, negative*** and ***slight***, which is overall ***not significant*** in EIA terms.

14.11 Risk of Major Accidents or Disasters

As detailed in Section 14.8.2.2, climate change has the potential to alter weather patterns and increase the frequency of rainfall in future years. However, the potential for flooding on site has been reviewed and adequate attenuation and drainage have been provided for to account for increased rainfall in future years. The proposed development has been assessed as having only low vulnerabilities to

various climate change related hazards and there is no significant risk to the site as a result of climate change. Therefore, the impact will be neutral and imperceptible.

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14.12 Worst Case Scenario

Worst case estimates have been used as part of this assessment. As a result, Section 14.8 details the worst-case impact for the proposed development.

14.13 Interactions

Interactions are dealt with in Chapter 16 of this EIAR.

14.14 Monitoring

There is no monitoring required for the construction or operational phases.

14.15 Summary of Mitigation and Monitoring

The following table summarises the Construction and Demolition Phase mitigation measures. No monitoring is required.

Table 14.14 Summary of Construction and Demolition Phase Mitigation and Monitoring

Likely Significant Effect	Mitigation	Monitoring
Impact of proposed development greenhouse gas emissions on climate.	• Appointing a suitably competent contractor who will undertake waste audits detailing resource recovery best practice and identify materials can be reused/recycled. • Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods. • Ensure all plant and machinery are well maintained and inspected regularly. • Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site. • Sourcing materials locally where possible to reduce transport related CO_2 emissions.	None proposed.
Vulnerability of proposed development to future climate change.	• Contractor will be required to mitigate against the effects of extreme rainfall/flooding, extreme winds/storms, temperature extremes, fog, lightning and hail through site risk assessments and method statements. • All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures.	None proposed.

The following table summarises the Operational Phase mitigation measures. No monitoring is required.

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Table 14.15 Summary of Operational Phase Mitigation and Monitoring

Likely Significant Effect	Mitigation	Monitoring
Impact of proposed development greenhouse gas emissions on climate.	Incorporated design mitigation relating to operational energy usage. See Section 14.9.1 for further details.	None proposed.
Vulnerability of proposed development to future climate change.	Incorporated design mitigation regarding drainage design, landscaping requirements, building design. See Section 14.8.2.2 for further details.	None proposed.

14.16 Conclusion

This chapter has reviewed and analysed the potential and the predicted impacts of the proposed development with regards to climate. These impacts have been considered for both the construction and operational phases of the proposed development. The cumulative impact of the proposed development and surrounding developments have also been considered.

Provided all mitigation measures as set out in this chapter, the overall predicted effect of the proposed development is not significant in relation to GHG emissions and climate change risk.

14.17 References and Sources

- Civil Engineering Standard Method of Measurement (CESMM) (2013) Carbon and Price Book database.
- Construction Industry Federation (2021) Modern Methods of Construction
- Louth County Council (LCC) (2024) Louth County Council Climate Change Action Plan 2024 -2029
- Department of Environment, Climate and Communications (DECC) (2025) Climate Action Plan (CAP) 2025
- Department of Environment, Climate and Communications (DECC) (2023) Long-term Strategy on Greenhouse Gas Emissions Reductions (draft)
- Department of Environment, Climate and Communications (DECC) (2024) National Adaptation Framework (NAF)
- Environmental Protection Agency (2020a) State of the Irish Environment Report (Chapter 2: Climate Change)
- Environmental Protection Agency (2020b) Research 339: High-resolution Climate Projections for Ireland – A Multi-model Ensemble Approach'
- Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports
- Environmental Protection Agency (2024) Ireland's Provisional Greenhouse Gas Emissions 1990-2023
- Environmental Protection Agency (2024a) National Climate Change Risk Assessment (NCCRA)
- Environmental Protection Agency (2024d) Ireland's Greenhouse Gas Emissions Projections 2023-2050

- Environmental Protection Agency (2024e) Ireland's Climate Change Assessment Synthesis Report
- Environmental Protection Agency (2024f) Updated High-resolution Climate Projections for Ireland Research Report: 471
- Environmental Protection Agency (EPA) (2021a) Critical Infrastructure Vulnerability to Climate Change Report No. 369
- European Commission (2013) Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment
- European Commission (2014) 2030 Climate and Energy Policy Framework
- European Commission (2017) Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report
- European Commission (2021a) Technical guidance on the Climate Proofing of Infrastructure in the Period 2021-2027
- European Commission (2021b) 2030 EU Climate Target Plan
- European Commission (2021b) Forging a climate-resilient Europe - the new EU Strategy on Adaptation to Climate Change.
- European Union (2018) Regulation 2018/842 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No. 525/2013
- Glenveagh Properties PLC (2023) Net Zero Transition Plan 2023
- Glenveagh Properties PLC (2025) Full Year 2024 Results
- Global Facility for Disaster Reduction and Recovery (GFDRR) (2025) Think Hazard!
- Government of Ireland (2015) Climate Action and Low Carbon Development Act
- Government of Ireland (2019) Climate Action Plan 2019
- Government of Ireland (2020) Climate Action Plan 2021
- Government of Ireland (2021) Climate Action and Low Carbon Development (Amendment) Act 2021 (the 2021 Climate Act) (No. 32 of 2021)
- Government of Ireland (2022) Climate Action Plan 2022
- Government of Ireland (2023) Long-term Strategy on Greenhouse Gas Emissions Reductions
- Institute of Environmental Management & Assessment (IEMA) (2020a) Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation
- Institute of Environmental Management & Assessment (IEMA) (2020b) GHG Management Hierarchy
- Institute of Environmental Management & Assessment (IEMA) (2022) Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating their Significance
- LETI (2020) Climate Emergency Design Guide
- Met Éireann (2023b) TRANSLATE: One Climate Resource for Ireland. [Online] Available at: https://www.met.ie/science/translate
- Met Éireann (2025a). Ireland's 30-year Climate Averages. Available from: https://www.met.ie/climate/30-year-averages
- Met Éireann (2025b) Met Éireann's 2024 *Climate Statement Available at: https://www.met.ie/annual-climate-statement-for-2024*
- Science Based Targets initiative (SBTi) (2024a) Science Based Targets initiative - About Us. [Online] Available at: https://sciencebasedtargets.org/about-us

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- Science Based Targets initiative (SBTi) (2024b) Science Based Targets Dashboard (beta). [Online] Available at: https://sciencebasedtargets.org/target-dashboard
- The Geological Society of Ireland (GSI) (2025) Landslide Susceptibility Mapping Database
- Transport Infrastructure Ireland (2022a) PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document
- Transport Infrastructure Ireland (2022b) PE-ENV-01106: Air Quality Assessment of Specified Infrastructure Projects
- Transport Infrastructure Ireland (2024) GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document

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Dundalk, Co. Louth

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Main Statement

Volume II

CHAPTER 15

Cultural Heritage

May 2025

McCutcheon Halley
CHARTERED PLANNING CONSULTANTS

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15 Cultural Heritage: Archaeology & Built Heritage

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15.1 Introduction

IAC Archaeology [IAC] has prepared this chapter on behalf of Marina Quarter Ltd to assess the effect, if any, on the archaeological, architectural, and cultural heritage resource of the proposed residential development at lands to the south of Bóthar Maol and to the west of Blackrock Road, Haggardstown, Dundalk, County Louth (ITM 706868/804389).

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 vicinity of the application area 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 (Chartered Institute for Archaeologists 2014).

This leads to the following:

- determining the presence of known cultural heritage sites that may be affected by the proposed development;
- assessment of the likelihood of finding previously unrecorded archaeological remains during the construction programme;
- determining the impact upon the setting of known cultural heritage sites in the surrounding area; and
- production of detailed mitigation measures based upon the results of the above research.

15.2 Expertise & Qualifications

This chapter was prepared by Faith Bailey (MA, BA (Hons), MIAI, MCIfA). Faith has over 21 years of experience in archaeological, architectural, and cultural heritage consultancy, and has been responsible for the production of Environmental Impact Assessment Reports [EIAR] and assessments for all aspects of development nationwide.

Faith holds a BA in Archaeology from the University of Wales, Lampeter and a Masters in Cultural Landscape Management from the same institution. She is a licence eligible archaeologist and a member of the Chartered Institute for Archaeologists and the Institute for Archaeologists of Ireland. Faith has been involved in the preparation of EIARs for the following projects:

- Hollystown, Site 4. EIAR chapter for a residential development in County Dublin
- Blessington, Phase 2. EIAR chapter for a residential, park and distribution road in County Wicklow
- Balbriggan, Phase 3. EIAR chapter for a residential development in County Dublin

15.3 Proposed Development

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The proposed development is described in Chapter 2. The development generally comprises of 502 no. residential units, comprising 1, 2, 3 and 4 bed units in a mix of maisonettes, terraced and semi-detached units, with 1 no. detached bungalow unit; Creche building and all associated site and development works including landscaping and amenity areas, infrastructure and services, and new entrance from Blackrock Road, with additional pedestrian/cycle access from Bóthar Maol.

15.3.1 Aspects Relevant to this Assessment

The aspects of the development that are relevant to this assessment are the excavation and enabling works that will be carried out during the construction of the development and the presence of the development within the landscape during the operation of the development.

15.4 Methodology

15.4.1 Baseline

A study area, defined as 500m from the boundary of the proposed development area, was assessed to inform this report. Research was undertaken in two 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 site.

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, receiving environment and study area, as follows:

- Record of Monuments and Places for County Louth;
- Sites and Monuments Record for County Louth;
- 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;
- The Louth County Development Plan 2021-2027;
- Place name analysis;
- Aerial photographs;
- Excavations Bulletin (1970-2025); 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 RMP. SMR sites are also listed on a website maintained by the DoHLGH – www.archaeology.ie.

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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 National Monuments Act 1930. Preservation Orders make any interference with the site illegal. Temporary Preservation Orders can be attached under the National Monuments (Amendment) Act 1954. These perform the same function as a Preservation Order but have a time limit of 6 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 [NMI] 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.

Development Plans contain a catalogue of all archaeological sites and protected structures within the county. The Louth County Development Plan 2021-2027 was consulted to obtain information on cultural heritage sites in and within the immediate vicinity of the proposed development.

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.

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 and Google Earth.

Excavations Bulletin is a summary publication that has been produced every year since 1970. This 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. This information is also available online (www.excavations.ie) from 1970-2025.

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The National Inventory of Architectural Heritage [NIAH] is a state initiative established under the provisions of the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999 tasked with making a nationwide record of significant local, regional, national and international 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.

15.4.2 Field Inspection

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 archaeological, architectural, and cultural heritage field inspection was carried out on the 29th June 2023 and entailed the following:

- Walking the proposed development and its immediate environs.
- Noting and recording the terrain type and land usage.
- Noting and recording the presence of features of archaeological, architectural, or historical significance.
- Verifying the extent and condition of any recorded sites.
- Visually investigating any suspect landscape anomalies to determine the possibility of their being anthropogenic in origin.

15.4.3 Relevant Legislation & Guidance

The following legislation, standards and guidelines were consulted as part of the assessment:

- 2014 EIA Directive (2014/52/EU);
- National Monuments Act, 1930 to 2014;
- The Planning and Development Acts, 2000 (as amended);
- Heritage Act, 1995 (as amended);
- Draft Advice Notes on Current Practice (in the preparation of Environmental Impact Statements), 2017, EPA;
- Guidelines on the Information to be Contained in Environmental Impact Assessment Report, 2022, EPA;
- Frameworks and Principles for the Protection of the Archaeological Heritage, 1999, (formerly) Department of Arts, Heritage, Gaeltacht, and Islands; and
- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 2000 and the Local Government (Planning and Development) Act 2000.

15.4.4 Consultation

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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, receiving 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.
- Louth County Council: Planning Section.
- Trinity College Dublin, Map Library: Historical and Ordnance Survey Maps.

Pre-planning consultation was also held with Louth County Council as part of the LRD process.

15.4.5 Definitions

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 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.

15.4.6 Assessment Methodology - Potential Effects

The quality and type of an effect can be classed as one of the following (as per the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports [EPA 2022]:

- Negative effect: A change which reduces the quality of the environment, for example a change that will detract from or permanently remove an archaeological or cultural heritage site from the landscape;
- Neutral effect: A change which does not affect the quality of the environment; or
- Positive effect: A change which improves the quality of the environment, for example a change that improves or enhances the setting of archaeological or cultural heritage sites.

The below terms are used in relation to the archaeological, architectural and cultural heritage and relate to whether a site will be physically affected upon or not:

- Direct effect: Where an archaeological/cultural heritage feature or site is physically located within the footprint of the proposed development and entails the removal of part, or all, of the monument or feature; and

- Indirect effect: Where a feature or site of archaeological or cultural heritage merit or its setting is located in close proximity to the footprint of a development.
- Neutral: No effects (either negative or positive) are predicted.

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15.4.7 Significance of Effects

The definition of the significance of effects are as per the most recent EPA Guidelines (2022) and include *Imperceptible, Not Significant, Slight, Moderate, Significant, Very Significant and Profound.* The definition of each of these levels under the EPA Guidelines are included in Chapter 1 of this EIAR.

15.5 Difficulties Encountered

No difficulties were encountered during the compilation of this assessment.

15.6 Baseline Environment

15.6.1 Archaeological, Architectural and Historical Background

The proposed development area is located at lands to the south of Bóthar Maol and to the west of Blackrock Road, within the townlands of Haggardstown and Marshes Upper, Parishes of Haggardstown and Dundalk, Barony of Upper Dundalk, County Louth. The development area comprises a greenfield site in the townland of Haggardstown, located to the east of Dundalk Golf Course. The site extends north along Blackrock Road before turning west along Hardy's Lane, providing for a connection to the existing wastewater drainage network at Finnabair Crescent. There is one recorded monument partially within the redline boundary for the proposed development area, where it extends along the existing Hardys Lane, a souterrain (LH007-080) (Figure 15.1). There are an additional nine recorded archaeological sites within the 500m study area of the proposed development area.

There are seven structures included on the RPS within 500m of the proposed development (Figure 15.1). All seven protected structures are also included in the NIAH Building Survey. The closest structures comprise The Square, Northsides 1-5 (RPS 012-004a-e, NIAH 13824001-3), which are located c. 416m south of the proposed development area. No Architectural Conservation Areas or demesne landscapes (recorded in the NIAH survey) are located within the proposed development area.

15.6.1.1 Prehistoric Period

15.6.1.1.1 Mesolithic Period (c. 8000–4000 BC)

Although recent discoveries may push back the date of human activity by a number of millennia (Dowd and Carden 2016), the Mesolithic period is the earliest time for which there is clear evidence of prehistoric activity in Ireland. During this period people hunted, foraged, and gathered food and appear to have led a primarily mobile lifestyle. The presence of Mesolithic communities is most commonly evidenced by scatters of worked flint material, a by-product of the production of flint

implements. Another common type of Mesolithic sites are rubbish middens. These consist largely of shells and are commonly discovered in coastal regions or at the edge of lakes.

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Perhaps the most well-known example of Mesolithic archaeological remains in County Louth is located at the raised beaches at Rockmarshall (RMP LH008-026), located on the southern coast of the Cooley Peninsula, c. 5km to the northeast of the proposed development area, which contained evidence of later Mesolithic tools and seafood remains such as oysters and periwinkles. Evidence from both this and another site at Greenore, c. 17km to east-northeast, also in Cooley, indicates that such sites were in use up until the advent of agriculture in the region. It should be noted that sea levels, and therefore beaches, have changed since the Mesolithic period and it is likely that the shoreline was significantly different in the distant past. Two middens of possible Mesolithic or prehistoric date (LH012-056 and LH012-070) have been recorded within Haggardstown, located c. 2.7km to the southeast of the proposed development area. These sites indicate that Mesolithic groups were frequenting the wider environs of the proposed development area. This likely includes the River Fane, c. 1.9km south.

Figure 15-1 Site location showing recorded archaeological and architectural heritage sites within the study area

15.6.1.1.2 Neolithic Period (c. 4000–2500 BC)

During this period communities became less mobile and their economy became based on agriculture, i.e. the rearing of stock and cereal cultivation. The Mesolithic-Neolithic transition was marked by major social change. Communities expanded and moved to more permanent settlements. This new sedentary lifestyle afforded the development of agriculture, which demanded an altering of the

physical landscape. Forests were rapidly cleared and field boundaries were constructed. Pottery was also being produced, probably for the first time. The advent of the Neolithic period also marked the beginning of the megalithic tomb tradition. There are four main types of megalithic tombs in Ireland, namely the Court Cairn, Portal tomb, Passage tomb and Wedge tomb; of which the latter style straddles the Neolithic to Bronze Age transition. These monuments represent communal burial places but also clearly served a ritual role to the living populations.

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The primary evidence for the Neolithic period in Louth is recorded from megalithic tombs, the majority of which are court tombs located in the north Louth area at the foot of the Cooley Mountains. There are no recorded monuments dating to the Neolithic within the vicinity of the proposed development area. However, archaeological investigations (Bennett 2006:1368, Licence No. 06E0484) in the southern part of Haggardstown, c. 1.4km southeast of the proposed development area, revealed an early Neolithic house, in close proximity to a late Bronze Age enclosure and habitation settlement, indicating that there was settlement in this area, at least intermittently, in the prehistoric period. Though archaeological evidence suggests that the area around Dundalk was not densely settled until the late Neolithic/early Bronze Age, after 3200 BC, when rock art along with numerous worked flints were deposited on Ballybarrack Hill, c. 3.5km northwest.

15.6.1.1.3 Bronze Age (c. 2500–800 BC)

This period is marked by the use of metal for the first time. As with the transition from Mesolithic to Neolithic, the transition into the early Bronze Age was accompanied by changes in society. Both the initial knowledge of metalworking as well as the continual demand for raw materials such as tin indicate that trade networks and cultural contacts had proliferated. copper was mined intensively to produce copper and bronze tools and weapons, while other metals such as gold were sourced through river panning. Compared to the megalithic tombs of the Neolithic, the nature of funerary burial was simpler in the Bronze Age. Most burials were of individuals rather than groups, and these were interred 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, but not always, accompanied by a pottery vessel. Sometimes mounds were constructed over the burials.

Over 7,000 burnt mounds or *fulacht fia* sites have been recorded in the country and c. 1,500 examples excavated, making them the most common prehistoric monument in Ireland (Waddell 2022). These sites consist of horseshoe-shaped mounds of heat-affected stone and charcoal-rich soil in close proximity to one or more troughs. The trough was used to heat water by adding stones, previously heated on a hearth. Traditionally, these sites were interpreted as cooking sites (O'Kelly 1954) while interpretations see them as sweat lodges and breweries. Dating evidence from a growing number of burnt mounds, suggests activities resulting in burnt mounds were carried over a span of 3,500 years in Ireland (Hawkes 2018). The Bronze Age has long been believed to have seen the peak of this activity. They are typically located in areas where there is a readily available water source, often in proximity to a river or stream or places with a high water table. In many cases, the sites have been disturbed by later agricultural activity and are no longer visible on the field surface. Nevertheless, even disturbed spreads of burnt mound material often preserve the underlying associated features, such as troughs, pits and gullies, intact. An example of such a feature is located c. 1.1km to the west in Haggardstown (LH007-129), which was revealed during an archaeological excavation in 1999 (Bennett 1999:610, Licence No. 98E0440ext).

There was a relatively dense settlement of Dundalk and its environs in the Bronze Age with groups of cist burials, pit burials, standing stones, and rock art coupled with the cutting back of woodlands and establishment of grains and cereals suggesting a larger population in the area. More than 20% of all Irish rock art sites are found in Louth (Cooney 2000, 142). Further evidence for Bronze Age habitation has been recorded during excavations at Mullagharlin and the northern part of Haggardstown, where a Bronze Age circular structure, burnt mounds and a kiln were excavated under licence 98E0442ext, c. 1.1km to the west. A large late Bronze Age enclosure was excavated, c. 1.6km to the southeast of the proposed development area (Bennett 2006:1367, Licence No. 06E0485), along with two circular Bronze Age houses on the same site (Bennett 2006:1368, Licence No. 06E0484).

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15.6.1.1.4 Iron Age (c. 800 BC-AD 500)

There is increasing evidence for Iron Age settlement and activity in recent years as a result of development-led excavations as well as projects such as the Late Iron Age and Roman Ireland (Cahill Wilson 2014). Yet this period is distinguishable from the rather rich remains of the preceding Bronze Age and subsequent early medieval period, by a relative paucity within the current archaeological record. The Iron Age in Ireland is problematic for archaeologists as few artefacts dating exclusively to this period have been found and without extensive excavation, it cannot be determined whether several monument types, such as ring barrows or standing stones, date to the late Bronze Age or Iron Age. There was significant continuity in the Iron Age, with earlier monuments re-used in many cases. There are no known monuments in the vicinity of the proposed development area that would suggest a specifically Iron Age presence in this area but given the level of Bronze Age activity in the landscape, it is likely the area continued to see activity into late prehistory.

16.4.1.2 Early Medieval Period (AD 500–1100)

The early medieval period is depicted in the surviving sources as an almost entirely rural based society. Territorial divisions were based on the túath, or petty kingdom, with Byrne (1973) estimating that there may have been at least 150 kings in Ireland at any given time. This period, with a new religious culture and evolving technologies, saw significant woodland clearance and the expansion of grassland. A new type of plough and the horizontal mill were two innovations that improved agriculture and allowed for the population to increase. Consequently, from c. AD 500 onwards, the landscape became well settled, as evidenced by the profuse distribution of ringforts, which were constructed to protect rural farmsteads and which are usually defined as a broadly circular enclosure. 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). The closest ringfort (LH012-069001) lies c. 997m south of the proposed development area and was discovered during excavations in 1995 (Bennett 2006:1367, Licence No. 95E0126). The lack of other ringforts nearby is a reflection of farming practices and land clearances over the last 200 years, rather than a true reflection of the distribution of ringforts in County Louth.

The fairly widespread occupation of the study area in the centuries preceding the arrival of the Anglo-Normans is well attested to by the large number of souterrains (or underground passages) that have been recorded. In Louth, over 300 are known, with over fifty per cent of these being found between Castletown River (just north of Dundalk) and Fane River (just south of Haggardstown). Souterrains are generally regarded as having had a defensive or protective function, as evidenced by the complex

construction of many of the sites, with narrow winding passages, deliberate obstructions, and small chambers. Raiding was endemic during the early medieval period and souterrains may have served to house portable valuables and non-combatants during a raid. Sometimes it is possible that a souterrain may indicate the site of a destroyed ringfort.

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Several enclosures, souterrains and areas of early medieval activity have been identified in the landscape surrounding the proposed development area, discovered during excavations in the 1980s (Bennett 1980-84:0137-8; LH007-080-086, LH007-139-040). A further souterrain was identified during the monitoring of topsoil stripping (Bennett 1999:610, Licence No. 98E0440ext) at the Xerox site c. 1.2km west of the proposed development area in 1999. Archaeological test trenching in the area (Bennett 2001:858, Licence No. 01E0015) has also recorded early medieval activity c. 773m west of the proposed development area. The discovery of souterrain ware pottery, shell remains, and human and animal bone represents evidence of a possible multi-period enclosed settlement site.

Before the arrival of the Anglo-Normans in AD 1185, Dundalk was within the territory of the *Uí Chonaill Mhuirthemne* (Gosling 1991). This local túath controlled the areas of *Cuailgne* and *Mag Muirtheimne*, which roughly equate with the modern baronies of Lower and Upper Dundalk. It has been noted (Gosling 1993, 46) that the boundaries of this kingdom seemingly roughly correspond with the dense concentration of souterrains in north Louth, leading to the interpretation that the *Conaille Muirtheimne* built/excavated more souterrains than their neighbours.

Though nominally a branch of the *Ulaid* (an overkingdom in Antrim and Down), the *Conaille Muirtheimne* appear to have been subject to the north Dublin-based kingdom of *Brega* at the time of its greatest political cohesion, c. 600-650 A.D. The earliest appearance of the *Conaille Muirtheimne* in the annals is in 688 AD as allies of the Knowth branch of Brega's *Síl nÁeda Sláine* dynasty, who were fighting another branch of the *Síl nÁeda Sláine* in an internal feud at the battle of *Imblech Pich* (Emlagh, County Meath). This was a key event in the political fragmentation of the Síl nÁeda Sláine. The *Conaille Muirtheimne* were later subsumed by the central Ulster-based overkingdom of *Airgialla* in the early 12th century. The *Airgialla* in turn became absorbed into the O'Carroll Kingdom which had its capital at Louth village, c. 11km west-southwest of the proposed development. More on the *Airgialla* follows further below.

There is a late prehistoric/early medieval site at Castletown, also known as *Dún Dealgan*, c. 3.1km north-northwest, which later became an Anglo-Norman castle (LH007-118007) in the 12th century. There are literary references to *Dún Dealgan* in early medieval texts such as the *Mesca Ulad* (The Intoxication of the Ulstermen), where it is described as one of the chief places of assembly in Ulster during the festival of Samhain, second only to Emain Macha (Navan Fort, Country Armagh).

Haggardstown Old Church (LH012-014), c. 957m southeast of the development area, is associated with St. Fursey (died AD 650) who was a prominent Irish saint in the early medieval period. St. Fursey (also known as Fursa, Fursy, Forseus, and Furseus) was born in Connacht, becoming active in the church there, before going on to conduct Christian missions to Anglo-Saxon England and Merovingian France. He is mentioned in early Irish sources such as the Annals of Ulster and was the subject of several hagiographies. Haggardstown Old Church is not to be confused with the other Saint Fursey's Catholic Church, built c. 1855, and situated c. 1.5km southwest of the proposed development.

15.6.1.2 Medieval Period (AD 1100–1600)

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The piecemeal conquest by the Anglo-Normans of Ireland, which commenced in AD 1169, had a fundamental impact on the Irish landscape. Their presence was strongest in Leinster, and it was mainly in this province that land was carved up and granted to the newly arrived lords who participated. The main success of the Anglo-Norman occupation was the welding of scattered territories into a cohesive unit through the introduction of the English form of shire government. The rural landscape became a network of manorial centres; these units would generally contain a castle (motte and bailey), a manorial house and a number of dwellings, with extensive surrounding acreage. During the 14th to 16th centuries, tower houses were the typical residence of the Irish gentry and are a common feature in the Irish landscape.

Airgialla was an independent principality which consisted of a portion of the Province of Meath and the entirety of Armagh and Monaghan. The O'Carrolls were Princes of *Airgialla* and of the barony of Louth in which they especially dominant. In 1183, John de Courcy, an Anglo-Norman knight, conquered *Airgialla*, and it was afterwards known by the English variously as Uriel and Oriel. The followers of de Courcy and de Lacy then settled in the area and called it English Oriel. Later, in 1210 the County of Louth was formed from it by King John of the Anglo-Norman Plantagenet dynasty. Many castles were erected for the purpose of enabling the settlers to continue in possession.

During the initial Anglo-Norman conquest, the land surrounding Dundalk was granted to the Anglo-Norman Bertram III de Verdon after he arrived in Ireland in 1185. He did not receive official confirmation of his land until 1189, when *Murchadh O'Cerbhaill*, the Lord of Louth, died. The motte and bailey castle (LH007-118007) at Castletown in Dundalk town, c. 3.1km north-northwest, marks this initial phase of Anglo-Norman activity. Unlike many of his contemporaries, de Verdon was not encouraged over to Ireland by the need to acquire an inheritance, since he was already the head of a wealthy family and had close ties to the King. These close links may have encouraged him to leave Ireland so soon after arriving to support his king in the Third Crusade in 1190, and he died at Jaffa, modern day Tel Aviv, in 1192, never returning to Ireland (Gosling 1993, 252).

Haggardstown is situated south of Dundalk, which marked the northernmost limit of Anglo-Norman settlement and administration in Ireland. It was, therefore, within the boundary of the Pale and the archaeological record testifies to its colonial nature. Around the 13th century, the Anglo-Normans constructed a motte and bailey in Haynestown (LH012-022) c. 2.9km to the southwest. These medieval earthworks take the form of a very steep-sided mound of earth with a flat top and were constructed during the early phases of Anglo-Norman settlement in the 12th and 13th centuries.

The townland of Haggardstown was previously known as Stamanaran with a laneway called Bothar Maol denoting the border between it and the neighbouring townland of Marshes Upper, the name 'Bothar Maol' may refer to a flat-topped hillock in the area (Sharkey 2004). Haggardstown contains two castles or tower house sites (LH012-010 and LH012-012) located within c. 1km of the development area. One known as 'Caislean Uachtrach Baile Sagairt' of which no visible surface traces remain but it is believed that the two castles or tower houses were located on either side of the village of Haggardstown, which also contained a church (LH012-014), known as 'Tseapeall Baile Sagart'. In 1364, the place is first referred to as 'The Hagard', though the 'Church of Stamaran' is mentioned in 1431. In the 16th century, historical documents refer to 'the church of Haggarde...Farmer of the Hagarde', 'the

parish of Haggard' and 'the manor of Haggarde'. The place is first named 'Haggards - towne' in 1629 (ibid.).

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15.6.1.3 Post-Medieval Period (AD 1600-1800)

The 17th century witnessed the concentrated and systematic reduction of all of Ireland to English authority, largely through conflicts and the forced settlements known as The Plantations. In 1641 a war between the King and Parliament was sparked off by the rebellion of the Catholics in Ulster and resulted in 11 years of conflict and turmoil. In 1649, Oliver Cromwell and his army landed in Ireland to return the colony of Ireland to English rule. As part of the process of achieving colonial dominion, a number of surveys and mapping programmes were completed throughout the post-medieval period. The thirty years between 1658 and 1688 were years of comparative peace and some recovery and change after the ravages of the Cromwellian decades. Although there was confusion about land ownership among the upper classes, the tenant farmers actually working the land came to enjoy a period of relative prosperity, being paid good prices for wool, cattle, grain and butter.

The post-medieval history of Haggardstown is linked with the division of the medieval manor and Vill of Staghmacaneren (Haggardstown). By the 17th century, the manor was divided into two separate parts: Little Haggardstown to the west and Great Haggardstown to the east. John Burnell of Balgriffin held half of the manor of Great Haggardstown before 1534 at which point his lands were confiscated following an unsuccessful rebellion and subsequently granted in 1525 to John Fitzsimmons of Dublin and Ballybarrack, with the other part of Great Haggardstown held by the Nugent family of Delvin. The Down Survey 1656-58 noted that the forfeiting landowners in the 580 acres of Great Haggardstown were Laurence Dowdall of Athlumney and Garret Talbot of Carstown, and the 126 acres of Little Haggardstown were held by Sir Christopher Bellew. Following the Restoration of the monarchy in 1660 the wife of Laurence Talbot was able to gain a life interest in Haggardstown.

The 18th and 19th centuries witnessed a more pacified Ireland and the political climate settled; this saw a dramatic rise in the establishment of large residential houses around the country. Often these occupied areas on the outskirts of towns. This was largely due to the fact that after the turbulence of the preceding centuries, the success of the Protestant cause and the effective removal of any political opposition, the country was at peace. The large country house was only a small part of the overall estate of a large landowner and provided a base to manage often large areas of land that could be dispersed nationally. During the latter part of the 18th century, the establishment of a parkland context (or demesnes) for large houses was the fashion. Although the creation of a parkland landscape involved working with nature, rather than against it, considerable construction effort went into its creation. Earth was moved, field boundaries disappeared, streams were diverted to form lakes and quite often roads were completely diverted to avoid travelling anywhere near the main house or across the estate. Whilst the designed landscapes possessed an ornamental form, they still retained a valuable function; providing grazing for livestock and habitats for game. Multiple demesne landscapes and large houses were established throughout County Louth during this period. Clermont Park and the demesne landscape are the closest to the proposed development, the north-eastern extent of which is located c. 1.8km to the southwest.

15.6.2 Summary of Previous Archaeological Fieldwork

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A review of the Excavations Bulletin (1970–2025) has revealed that the proposed development area was subject to a programme of geophysical survey (Nicholls 2018, Licence No. 18R0036), followed by archaeological testing, in 2018 (O'Connell 2018, Licence No. 18E0417).

The geophysical survey identified a number of small-scale positive responses and weak trends that were interpreted as likely resulting from natural geological variation or modern disturbance (Figure 15.2). No anomalies that were definitively interpreted as archaeological were identified.

A total of 15 test trenches were excavated across the proposed development area in order to target those geophysical anomalies that were interpreted as containing the most archaeological potential (Figure 15.2). No archaeological features were recorded during these investigations within the proposed development area.

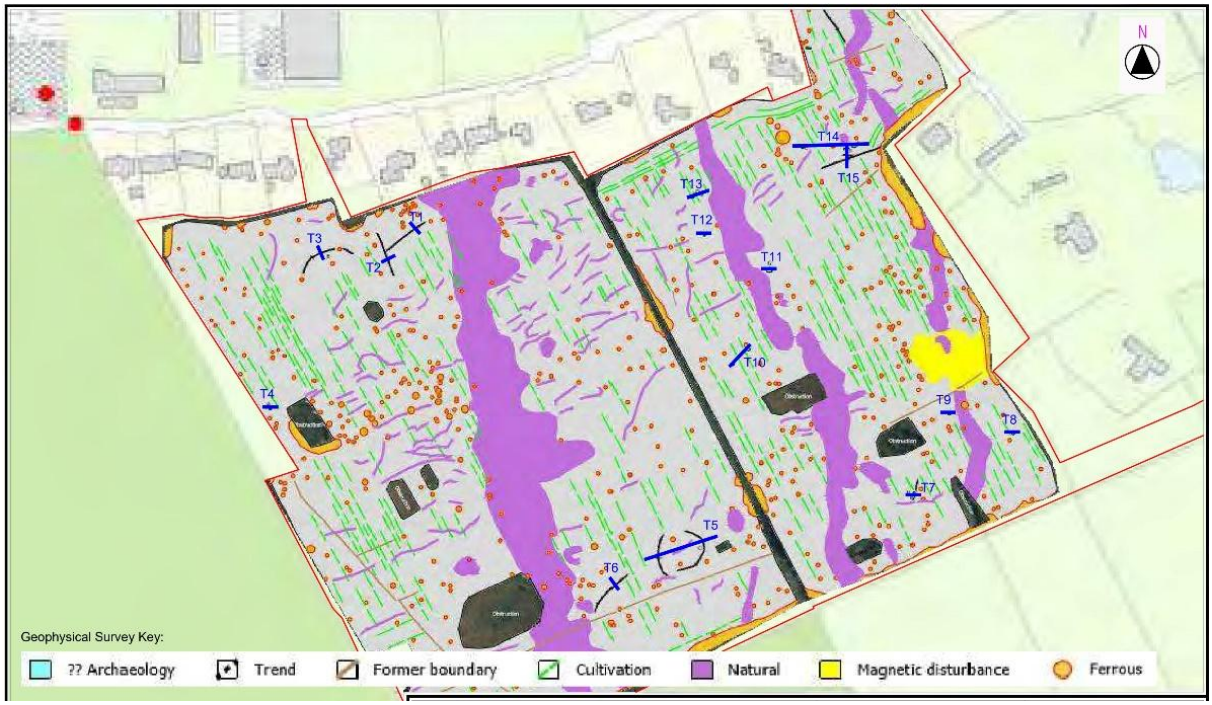

Figure 15-2 Results of 2018 geophysical survey and location of test trenches (after O'Connell 2018

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Further investigations have been carried out within the study area, which are summarised below.

In 1980 a souterrain was excavated either along or immediate adjacent to Hardy's Lane, which forms part of the proposed development (LH007-080). The site consisted of a passage (length 14.5m overall, width 1m), extending northwest for 8m and then curving gently east for 6.5m. A second passage (length 3m, width 0.7m) extended north from the middle of the first passage and terminated at the east end of a gallery (length 3.5m, width 1m), aligned east-west.

Excavations in this area (Bennett 1980-84:0137) and 1985 (Bennett 1985:40) included the identification of an early medieval habitation site, along with over 50 sherds of Souterrain Ware, an

iron belt buckle, a plain bronze strap-end and 20-30 struck flint flakes. A hoard of eight Hiberno-Norse silver pennies, with a deposition date of AD 995-1000 were also discovered.

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An archaeological complex containing five souterrains and two enclosures (LH007-080-086, LH007-139-040) was discovered c. 78m to the northwest of the proposed development area during excavations in advance of industrial development during the 1980s (Gowen 1982). The archaeological sites were preserved by record.

Archaeological testing (Bennett 2017:247, Licence No. 17E0342) following geophysical survey (Licence No. 17R0053) was undertaken with the Finnabair Business Park, c. 352m to the northwest of the proposed development area. Features identified and excavated consisted of six linear features, one curvilinear feature, 13 post-holes, seven stake-holes and one pit. The finds recovered comprised 20 sherds of post-medieval or later pottery and three sherds of prehistoric pottery. Several post-medieval linear features were also identified.

Further excavations (Bennett 2018:655, Licence No. 18E0004) at Finnabair Business Park in 2018, c. 490m to the northwest, revealed Bronze Age features, including post-built structures dating to 1210-1000 cal. BC.

Excavations in 1981 (Bennett 1980-84:0138) were carried out along the path of the Inner Relief Road, c. 310m to the southwest of the proposed development area. A completely intact souterrain (LH007-081) was discovered along with associated Souterrain Ware, approximately 12 whetstones, a leaf-shaped arrowhead of chert, a small bronze ring-pin and a bronze cruciform belt-buckle tongue.

The following investigations (Table 15.1) did not identify anything of archaeological significance.

Table 15-1 Archaeological investigations that did not encounter archaeological features

Licence No.	Location	Distance to Development	Reference
99E0112	Marshes Upper	c. 207m northwest	Bennett 1999:626
22E0253	Hardy's Lane, Marshes Upper	c. 50m north	Bennett 2022:061
15E0419	Haggardstown	c. 396m south	Bennett 2015:269

In December 2024, a programme of archaeological monitoring was carried out over three days within the proposed development area, as part of permitted SHD residential development on the site. A haul road and house foundations in the southeast corner of the site were subject to topsoil stripping, all of which was monitored by an archaeologist (Figures 15.1-2). Topsoil ranged in depth from 0.25m to 0.6m and this sealed natural subsoils, comprising mid-yellow orange clay with bandings of brown and greyish white clay, with gravel deposits and abundant sub-angular and angular stones. No features of archaeological potential were noted during the course of the works.

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Figure 15-3 Aerial view of areas subject to archaeological monitoring in December 2024

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Figure 15-4 Top soil strip of haul road, facing north

15.6.3 Cartographic Analysis

15.6.3.1 Down Survey of the Barony of Upper Dundalk, c. 1655-56

This map was designed to depict land ownership within the Baronies of Ireland and as such does not depict accurate topographical detail; however, the town of Dundalk is shown, along with the Dundalk harbour and the River Fane to the north of the proposed development area. The lands to the south of Dundalk are not marked with a large degree of detail. Haggardstown is shown as 'Greathaggars' and 'Little Haggar'. This is bisected by a route way travelling in a north-south direction.

To the west, the parish of Haynestown is marked. The proposed development area is located within the area marked as 'Greathaggers towne' but to the east, within the larger part of the townland a chapel, a large house and some smaller houses are marked. These may represent LH012-010 (castle) and LH012-063 (church). No buildings or features are marked within the approximate location of the proposed development area.

15.6.3.2 Matthew Wren's Topographical Survey of County Louth, 1766

This map is more detailed than the Barony map but is not accurate with regards to building locations. The general road network and topography are shown, along with buildings of a more substantial nature. The proposed development area is located within open land adjacent to the coast. 'Hagers

Town' is marked along with the castle and church (LH012-010 and LH012-063). No buildings or features are marked within the approximate location of the proposed development area.

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15.6.3.3 Taylor and Skinner's Map of County Louth, 1777 (Figure 15.3)

This map provides more detail and accuracy of the landscape containing the proposed development. The area itself is shown as an open greenfield within 'The Marshes' to the southeast of Dundalk town. No features are shown within the immediate vicinity of the proposed development area although the castle and church (LH012-010 and LH012-063) are marked to the southeast.

15.6.3.4 First Edition Ordnance Survey Map, 1836, scale 1:10560 (Figure 15.4)

This is the first accurate map of the landscape containing the proposed development area. The majority of the proposed development area is located within Haggardstown townland. The northern portion of the site is located within Marshes Upper townland. Bóthar Maol is present to the north of the site and a group of structures are marked to the immediate east of the development area. East of these structures is pond, fed by a network of watercourses that then discharge into the sea. The Blackrock Road to the east is marked, along with the beginnings of Hardy's Lane, which at this point in time is an access lane to a structure west of Seaview Cottage.

15.6.3.5 Second Edition Ordnance Survey Map, 1868, scale 1:10560

There are no major changes to note within the proposed development area itself within this map. The group of structures to the immediate east of the site remain present, although a 'Thrashing Machine' is now annotated within the complex. The pond to the east of these structures is unchanged although the complex of water channels is more extensive. To the north, Hardy' Lane still operates as an access lane to a structure.

15.6.3.6 Ordnance Survey Map, 1909, scale 1:2500

This map shows that the proposed development area remains unchanged from the previous cartographic coverage, with the exception of a pump annotated in the north-western extent of the site. To the east, the group of agricultural buildings remain present, but now operate as outbuildings to a new house, annotated as Mountain View, located c. 50m east-northeast of the proposed development area. The gardens surrounding the house are characterised by trees with a main access running from the Blackrock Road to east. Although the house dates to the turn of the 20th century, the gardens possess a demesne style layout.

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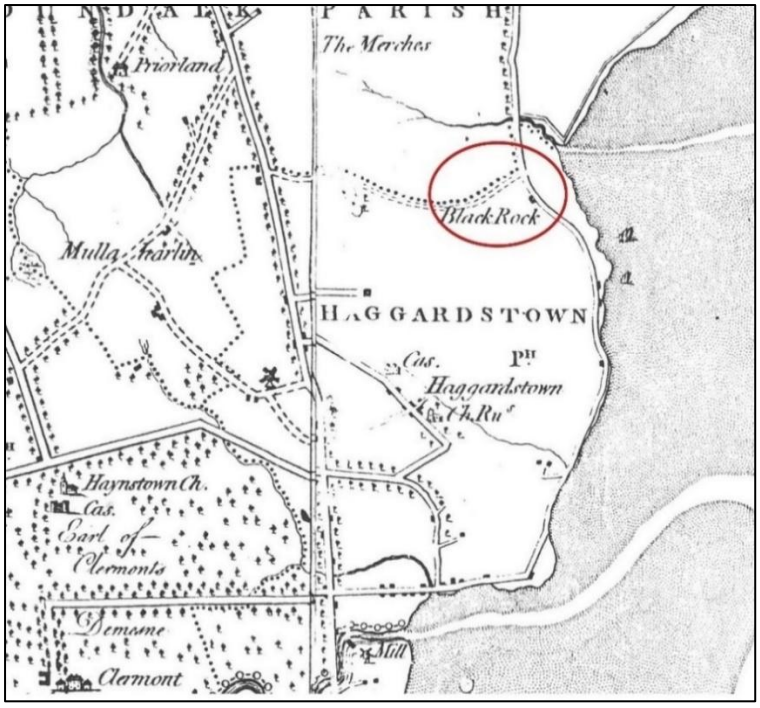

Figure 15-5 Taylor and Skinner's Map of County Louth (1777), showing the approximate location of the proposed development area

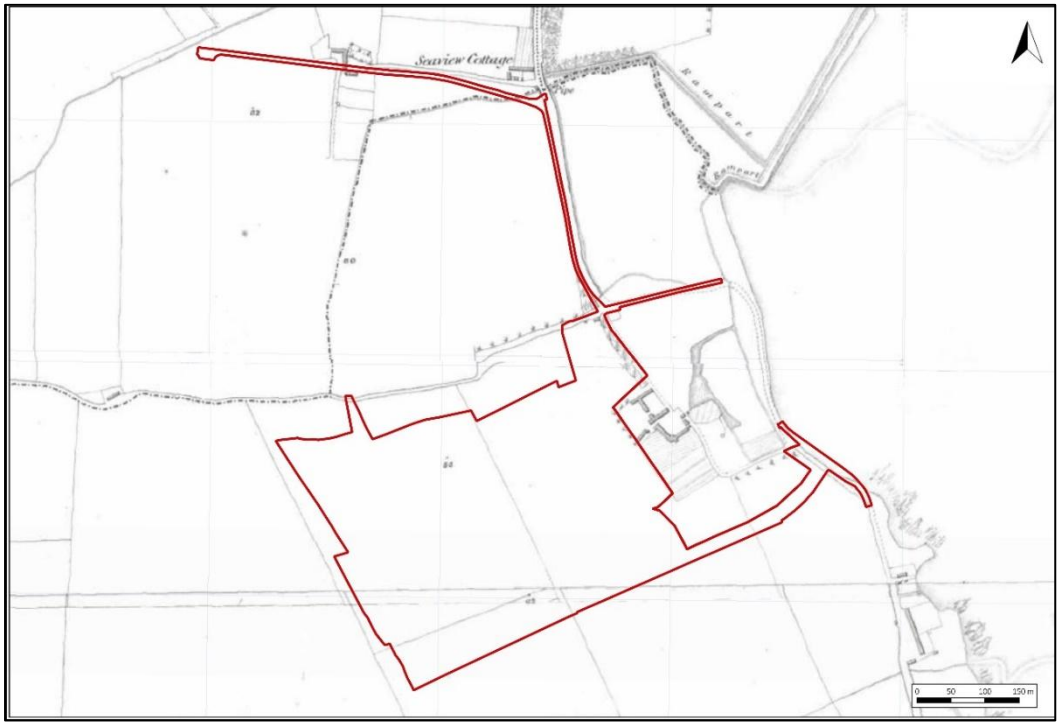

Figure 15-6 Extract from the first edition OS map (1836), showing the proposed development area

15.6.4 County Development Plan

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15.6.4.1 Record of Monuments and Places

The Louth County Development Plan 2021-2027 recognises the statutory protection afforded to all RMP sites under the National Monuments Legislation (1930–2014). The Development Plan lists a number of aims and objectives in relation to archaeological heritage (Appendix 15.2).

There is one recorded monument partially within the redline boundary for the proposed development area, where it extends along the existing Hardys Lane. This is the site of a souterrain excavated in 1980 (LH007-080). Although the site has been preserved by record, it remains marked within the RMP map.

There are an additional ten recorded archaeological sites within the 500m study area of the proposed development area (Table 15.2; Figure 15.1; Appendix 15.1). This includes a redundant record (LH007-120) for which the zone of notification is located c. 27m northwest of the proposed development area. While this area has been reclassified within the current record, it is marked within the RMP map and as such retains statutory protection. This area contains five excavated souterrains and two excavated enclosures (LH007-082-086, AH007-139/140).

There are no National Monuments or monuments under Preservation Order within the vicinity of the proposed development area.

Table 15-2 Recorded archaeological sites within the study area

RMP No.	Location	Classification	Distance from Development	Statutory Protection
LH007-080	Marshes Upper	Souterrain	0m	Yes
LH007-120	Marshes Upper	Redundant Record	c. 27m northwest	Yes
LH007-086	Marshes Upper	Souterrain	c. 72m northwest	Yes
LH007-085	Marshes Upper	Souterrain	c. 108m northwest	Yes
LH007-140	Marshes Upper	Enclosure	c. 108m northwest	Yes
LH007-084	Marshes Upper	Souterrain	c. 164m northwest	Yes
LH007-183	Marshes Upper	Souterrain	c. 203m northwest	Yes
LH007-139	Marshes Upper	Enclosure	c. 203m northwest	Yes
LH007-082	Marshes Upper	Souterrain	c. 238m northwest	Yes
LH007-081	Marshes Upper	Souterrain	c. 300m southwest	Yes
LH007-107/079	Marshes Upper	Souterrain	c. 334m northwest	Yes

15.6.4.2 Record of Protected Structures

The Louth County Development Plan 2021-2027 recognises the value of the built heritage and is committed to the protection and enhancement of this heritage by providing measures for the protection of architectural heritage. These include the establishment of a Record of Protected

Structures [RPS] and the designation of Architectural Conservation Areas [ACAs], which are detailed in Appendix 15.3.

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There are seven structures included on the RPS within 500m of the proposed development (Table 15.3; Figure 15.1). All seven protected structures are also included in the NIAH Building Survey and are located over 400m from the site.

Table 15-3 Protected Structures within the study area

RPS No.	Name	Designation	Distance from Development
012-004a	The Square, northside 1	RPS and NIAH	c. 416m south
012-004b	The Square, northside 2	RPS and NIAH	c. 416m south
012-004c	The Square, northside 3	RPS and NIAH	c. 416m south
012-004d	The Square, northside 4	RPS and NIAH	c. 416m south
012-004e	The Square, northside 5	RPS and NIAH	c. 416m south
012-005	The Square, Southside	RPS and NIAH	c. 469m south
012-006	Brunker Lodge	RPS and NIAH	c. 500m south

15.6.4.3 Architectural Conservation Areas

An Architectural Conservation Area is defined in the Louth County Development Plan 2021-2027 as;

> "a place, area, group of structures or townscape that is of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest or value, or contributes to the appreciation of Protected Structures".

There are no Architectural Conservation Areas within the study area of the proposed development area.

15.6.5 National Inventory of Architectural Heritage

15.6.5.1 Building Survey

A review of the architectural survey was undertaken as part of this assessment and included buildings within the 500m study area. There are seven structures listed on the NIAH building survey, which are all are protected structures (Table 15.4; Figure 15.1; Appendix 15.3).

Table 15-4 NIAH Structures within the study area

RPS No.	Name	Designation	Distance from Development
13824001	The Square, northside 1	RPS and NIAH	c. 416m south
13824002	The Square, northside 2	RPS and NIAH	c. 416m south

13824003	The Square, northside 3-5	RPS and NIAH	c. 416m south
13824004	Ashville	RPS and NIAH	c. 469m south
13824005	Brunker Lodge	RPS and NIAH	c. 500m south

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15.6.5.2 Garden Survey

The first edition Ordnance Survey map of County Dublin (1836) shows the extent of demesne landscapes as shaded portions of land within the overall landscape. These were established as a naturalised landscaped setting for the large houses of the landed gentry. Not all demesne landscapes depicted on the OS map are listed by the NIAH; however, they should still be considered to have heritage value.

There are no demesne landscapes, as described within the NIAH garden survey, within the study area of the proposed development area.

The demesne style landscape established in association with Mountain View House is located to the immediate east of the proposed development area. This relatively small area is not included in the NIAH survey, but it does retain the mature ornamental planting, along with a main access from the east; a service access from the north and a number of post medieval outbuildings. Mountain View House, whilst being of local heritage note, is not a protected structure, nor included in the NIAH building survey.

15.6.6 Topographical Files

Information on artefact finds from the study area in County Louth has been recorded by the NMI since the late 18th century. Location information relating to these finds is important in establishing prehistoric and historic activity in the study area. There are a number of stray finds recorded from within the townland of Haggardstown. These are listed below in Table 15.5.

Table 15-5 Stray archaeological finds recorded from within the study area

NMI No.	Townland	Description
-	Haggardstown	Stone whorls (4)
-	Haggardstown	Faunal remains from midden deposits
1978:272-274	Haggardstown	Plough pebble and pot sherds (2) from St. Fursey's Graveyard
1999:12	Haggardstown	Sherds of a glazed jug (6) from quarry
2004:141	Haggardstown	Quartz plough pebble
2012:23-27	Haggardstown	Sherd of brown glazed ware (possibly 19th century)

15.6.7 Aerial Photographic Analysis

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Inspection of the aerial photographic coverage of the proposed development area held by the Ordnance Survey (1995–2013), Google Earth (2005–2025) and Bing Maps revealed that the proposed development area has remained largely unchanged since 1995. No previously unrecorded sites of archaeological potential were noted within the proposed development area. The remains of a possible circular enclosure may be located within the grounds of a golf course c. 75m south-southeast of the proposed development area. This is apparent as a pasture mark in some of the aerial coverage and possesses a diameter of c. 35m.

15.6.8 Cultural Heritage

The term 'cultural heritage' can be used as an over-arching term that can be applied to both archaeology and architectural sites; however, it also refers to more ephemeral aspects of the environment, which are often recorded in folk law or tradition or possibly date to a more recent period. The archaeological sites discussed above should be considered cultural heritage and the townlands and placename analysis detailed below are also of cultural heritage significance.

Mountain View House and gardens, located to the immediate east of the proposed development area is considered to possess cultural heritage significance. The house is not listed in the RPS or NIAH, but dates to the turn of the 20th century and whilst it has been significantly extended to the north, it retains heritage characteristics in the form of architectural features. The gardens are mature and a mature woodland belt separates the house and gardens from the proposed development area. The main eastern access has been reconfigured with a modern entrance in recent years.

15.6.9 Townlands

The townland is an Irish land unit of considerable longevity as many of the units 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 development area is within two townlands.

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 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 40 perches to 1 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.

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The proposed development area is located primarily within the townland of Haggardstown, within the Parishes of Haggardstown and Dundalk, Barony of Upper Dundalk, County Louth. The proposed development includes part of the townland boundary between Haggardstown and Marshes Upper, where it extends along an existing roadway. This townland boundary constitutes a cultural heritage feature but has been removed within the footprint of the proposed development area to facilitate the construction of the existing roadway in the past.

15.6.10 Place Name Analysis

Townland and topographic names are an invaluable source of information on topography, land ownership and land use within the landscape. They also provide information on the history; archaeological monuments and folklore of an area. A place name may refer to a long-forgotten site and may indicate the possibility that the remains of certain sites may still survive below the ground surface. The Ordnance Survey surveyors wrote down townland names in the 1830s and 1840s when the entire country was mapped for the first time. Some of the townland names in the study area are of Irish origin and through time have been anglicised. The main references used for the place name analysis are Irish Local Names Explained by P.W Joyce (1870) and www.logainm.ie.

A description and a possible explanation of each place name in the environs of the proposed development area are provided in Table 15.6.

Table 15-6 Placename Analysis

Name	Derivation	Possible meaning
Haggardstown	Baile Hagaird	The manor of the Hagard
Marshes Upper	Na Méirsí Uachtaracha	Marsh land
Marsh South	An Méirse Theas	Marsh land
Dundalk	Dún Dealgan	The fort of Delga

15.6.11 Field Inspection

The field inspection was carried out on the 29th June 2023 and sought to assess the site, its previous and current land use, the topography, and any additional information relevant to the report. During the course of the field investigation the proposed development area and its immediate surrounding environs were inspected. As described earlier in the chapter, archaeological monitoring of initial construction works was carried out within the site in December 2024, over of the course of three days. Nothing of archaeological significance was identified at this time.

The main portion of the proposed development area is formed by two large, former arable fields, which are now under long grass and scrub. The fields are bordered to the north by modern residential development that fronts onto Bóthar Maol. The western boundary, which separates the site from the golf course, is formed by a row of tall coniferous trees. Lands to the south comprise part of the golf

course and arable fields. The main eastern boundary to the proposed development area is formed by lands associated with individual houses including Mountain View House. This is a mature boundary with mature planting that screens the development area from the main structure.

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The northern portions of the fields slope gently to the north (see Figures 15.7 and 15.8), whilst the remaining sections are relatively level, but naturally undulating in places. Areas of natural outcropping are present across the southern portions of the fields.

The proposed access road will run from the Blackrock Road to the east, across fields to the southeast portion of the proposed development area. A low stone wall separates the road from the waterlogged ground to the west of the road (Figure 15.9 and 15.10), which will be crossed by the new access route. To the west of this waterlogged area the route will cross an open field that has a moderate eastly slope.

Mountain View House is not visible from the main portion of the proposed development area, although it can be viewed from the Blackrock Road (Figure 15.11). It was designed to occupy an eastern slope, overlooking Dundalk Bay and its eastern elevation is its principal façade. The entrance to the property is not contemporary with the structure, comprising a reconfigured modern recessed gate way.

The northern section of the proposed development runs along the existing Blackrock Road and Hardy's Lane. These are established roadways in the landscape and service modern residential and industrial development.

No previously unrecorded features of archaeological potential were noted during the course of the field inspection. The position and presence of Mountain View House was noted, as well as an area of waterlogged ground adjacent to the Blackrock Road, which can be considered to possess archaeological potential, due to the proximity of the coast line.

Figure 15-7 Western portion of the proposed development area, facing southeast

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Figure 15-8 Eastern portion of the proposed development area, facing southeast

Figure 15-9 Stone wall bounding Blackrock Road, facing southeast

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Figure 15-10 Waterlogged ground adjacent to Blackrock Road, facing west-southwest

Figure 15-11 Mountain View House and entrance, facing west

15.7 The 'Do Nothing' Scenario

If the proposed development were not to proceed there would be no negative effect on the archaeological, architectural or cultural heritage resource.

Given the zoning and planning context, it is reasonable to expect that a similar residential development could be proposed for the site and in such case similar effects as described above would be expected.

15.8 Potential Significant Effects

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15.8.1 Construction and Demolition Phase

15.8.1.1 Archaeology

Geophysical survey, archaeological testing within the proposed development area in 2018 and a limited programme of archaeological monitoring (December 2024) has confirmed that there are no large-scale archaeological complexes located within the proposed development area. It remains possible that small-scale or isolated archaeological features may survive within the site, outside of the footprint of the excavated test trenches. Groundworks associated with the development may have a direct, permanent, negative effect on these remains. Effects may range from moderate to very significant, depending on the nature, extent, and significance of the archaeological remains that may be present. Effects have the potential to be significant in EIAR terms.

The route of the proposed access road will pass through a waterlogged area that possesses archaeological potential and will cross a further greenfield. These areas may contain buried archaeological remains. Groundworks associated with the construction of the road may have a direct, permanent, negative effect on any such remains that may be present. Effects may range from moderate to very significant, depending on the nature, extent, and significance of any archaeological remains that may be present. Effects have the potential to be significant in EIAR terms.

The northern section of the proposed development area will pass through the zone of notification associated with a recorded souterrain site: LH007-080 at Hardy's Lane. This site, along with associated early medieval remains, was excavated in 1980 and preserved by record. As such, any works along Hardy's Lane that are associated with the proposed development, will have no effect on the monument, as it no longer exists in the landscape and its surrounding environs have been fully developed.

15.8.1.2 Architecture

A small section of stone boundary wall that bounds Blackrock Road will be removed during the construction phase. This is a direct, negative and permanent effect but is considered slight in terms of significance of effect, as the majority of the feature will be preserved. The wall is not subject to statutory protection and the effect is not considered to be significant in EIAR terms.

15.8.1.3 Cultural Heritage

There are no predicted effects upon the cultural heritage resource during the construction phase.

15.8.2 Operational Phase

15.8.2.1 Archaeology

There are no predicted effects upon the archaeological heritage resource during the operational phase.

15.8.2.2 Architecture

There are no predicted effects upon the architectural resource during the operational phase.

15.8.2.3 Cultural Heritage

There are no predicted effects upon the cultural heritage resource during the operational phase. Mountain View House will be screened from the proposed development by its own mature gardens, and as such no negative impacts are predicted on the setting of the structure.

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15.8.3 Cumulative Effects

All proposed developments within the 500m study area have been reviewed in order to identify any cumulative effects that may present, when considered with the development under assessment in this chapter. As any archaeological remains within the proposed development area will either be preserved in-situ or by record, no cumulative effects have been identified at construction phase. The operational phase will not result in effects on the archaeological, architectural or cultural heritage resource and as such no cumulative effects have been identified.

15.8.4 Summary

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

Table 15-7 Summary of Construction Phase Likely Significant Effects in the absence of mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Impact on previously unrecorded archaeological remains as a result of excavations	Negative	Moderate to very significant (depending on the sensitivity of any remains uncovered)	Unknown	Possible	Permanent	Direct
Impact on stone boundary wall along Blackrock Rd	Negative	Slight	Defined	High	Permanent	Direct

15.9 Mitigation Measures

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15.9.1 Construction and Demolition Phase Mitigation

15.9.1.1 Archaeology

A programme of archaeological testing, which will assess the remaining portions of the proposed development area and the route of the access road, will be carried out prior to the commencement of construction. The works will be undertaken by an archaeologist under licence to the National Monuments Service of the DoHLGH. Dependant on the results of the assessment, further mitigation may be required, such as preservation by record or in situ and/or archaeological monitoring. Any further mitigation will require approval from the DoHLGH.

15.9.1.2 Architecture

The section of boundary wall that bounds Blackrock Road will be subject to a photographic record prior to removal and the removal of the feature will be subject to archaeological monitoring.

15.9.1.3 Cultural Heritage

No mitigation is required.

15.9.2 Operational Phase Mitigation

No mitigation is required at Operational Phase.

15.10 Residual Effect Assessment

15.10.1 Construction and Demolition Phase

Following the completion of the mitigation measures detailed in section 15.9, there will be no significant negative residual effects on the archaeological resource. If archaeological remains are identified within the development area and subject to archaeological excavation (preservation by record), there will be a slight negative residual effect on the archaeological resource. This is not considered significant in EIAR terms.

15.10.2 Operational Phase

N/A

15.10.3 Summary of Post-mitigation Effects

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

Table 15-8 Summary of Construction and Demolition Phase Effects Post Mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type

Impact on previously unrecorded archaeological remains as a result of excavations	Negative	Slight	Unknown	Possible	Permanent	Direct
Impact on stone boundary wall along Blackrock Rd	Negative	Imperceptible	Defined	High	Permanent	Direct

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15.10.4 Cumulative Residual Effects

No cumulative residual effects have been identified, as no cumulative effects have been identified as a result of the development going ahead.

15.11 Risk of Major Accidents or Disasters

This is not relevant to the archaeological, architectural and cultural heritage resource.

15.12 Worst Case Scenario

Under a worst-case scenario, the proposed development would disturb previously unrecorded and unidentified archaeological deposits and artefacts without proper excavation and recording being undertaken.

15.13 Interactions

Interactions are dealt with in Chapter 16 of this EIAR.

15.14 Monitoring

The mitigation measures detailed above would also function as a monitoring system to allow the further assessment of the scale of the predicted effects and the effectiveness of the mitigation measures.

15.15 Summary of Mitigation and Monitoring

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

Table 15-9 Summary of Construction and Demolition Phase Mitigation and Monitoring

Likely Significant Effect	Mitigation	Monitoring
Impact on previously unrecorded archaeological remains as a result of excavations	Programme of archaeological test trenching to be carried out prior to the commencement of construction.	Ongoing assessment of potential impacts, based on the results of testing, which may lead to additional

		mitigation measures (preservation in-situ or by record)
Impact on section of stone boundary wall along Blackrock Rd	Record prior to construction and monitoring of removal.	N/a

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15.16 Conclusion

In order to identify any small scale or isolated archaeological features that may survive within the proposed development area, a programme of archaeological testing, which will assess the remaining portions of the site (not already subject to testing) and the route of the access road, will be carried out prior to the commencement of construction. The works will be undertaken by an archaeologist under licence to the National Monuments Service of the DoHLGH. Dependant on the results of the assessment, further mitigation may be required, such as preservation by record or in situ and/or archaeological monitoring. Any further mitigation will require approval from the DoHLGH.

The section of boundary wall that bounds Blackrock Road will be subject to a photographic record prior to removal and the removal of the feature will be subject to archaeological monitoring.

No effects at operation stage have been identified and following completion of the above mitigation, there will be no significant residual effects on the archaeological, architectural and cultural heritage resource.

15.17 References and Sources

Bennett, I. (ed.) 1987-2010. Excavations: Summary Accounts of Archaeological Excavations in Ireland. Bray. Wordwell.
Buckley, V. and Sweetman, P. 1991. 'Archaeological Survey of County Louth', Dublin: Stationery Office.
Byrne, F. J. 1973. 'Irish Kings and High Kings', London.
Cahill Wilson, J. 2014. 'Late Iron Age and Roman Ireland, Discovery Programme Report Series No. 8, Discovery Programme', Wordwell.
Chartered Institute for Archaeologists (2020a) 'Standards & Guidance for Field Evaluation'.
Chartered Institute for Archaeologists (2020b) 'Standards & Guidance for Archaeological Excavation'.
Chartered Institute for Archaeologists (2020c) 'Standards & Guidance for an Archaeological Watching Brief (Monitoring)'.
Cooney, G. 2000. Landscapes of Neolithic Ireland. New York/Oxon. Routledge.
Culleton, E. 1999. 'Celtic and Early Christian Wexford', Four Courts Press.
Department of Arts, Heritage, Gaeltacht and the Islands. 1999a. 'Framework and Principles for the Protection of the Archaeological Heritage. Government Publications Office', Dublin.
Department of Arts, Heritage, Gaeltacht and the Islands. 1999b. 'Policy and Guidelines on Archaeological Excavation. Government Publications Office', Dublin.
Dowd, M. and Carden, R.F. 2016. 'First evidence of a Late Upper Palaeolithic human presence in Ireland. Quaternary Science Reviews 139, 158-163'.
Duffy, S. (ed.) 2005. Medieval Ireland: An Encyclopaedia. New York/Oxon. Routledge.
Environmental Protection Agency. 2017. 'Draft Advice Notes on Current Practice (in the preparation of Environmental Impact Statements'), Dublin. Government Publications Office.

Environmental Protection Agency. 2022. 'Guidelines on the Information to be Contained in Environmental Impact Statements'. Dublin. Government Publications Office.
Gosling, P. 1993. 'From Dún Delca to Dundalk: the Topography and Archaeology of a Medieval Frontier Town', Dundalk: Co Louth Archaeological and Historical Society.
Gowen, M. 1982. 'Excavation of Two Souterrain Complexes at Marshes Upper, Dundalk, Co. Louth)'. Unpublished report prepared by the Royal Irish Academy.
Hawkes, A. 2018. 'The Archaeology of Prehistoric Burnt Mounds in Ireland'. Oxford. Archaeopress.
Lewis, S. 1837. 'Topographical Dictionary of Ireland', (online edition).
Louth County Development Plan 2021-2027.
McErlean, T. 1983. 'The Irish Townland System of Landscape Organisation. In T. Reeves-Smity and F. Hammond (eds), Landscape Archaeology in Ireland, 315-339', U.K. British Archaeological Reports.
National Monuments Service, Department of Housing, Local Government and Heritage. Sites and Monuments Record, County Louth.
National Museum of Ireland. Topographical Files, County Louth.
Nicholls, J. 2018. Geophysical Survey Report Lands in Haggardstown, Blackrock, Co. Louth. Licence No. 18R0036. Unpublished report prepared by Target Geophysics.
O'Connell, A. 2018. 'Haggardstown, Blackrock, Co. Louth: Archaeological Assessment (Licence No. 18E0417)'. Unpublished report prepared by Archer Heritage Planning Ltd.
O'Sullivan, A., McCormick, F., Kerr, T.R., Harney, L. 2014. Early Medieval Ireland, AD 400-1100: The Evidence from Archaeological Excavations. Dublin. Royal Irish Academy.
Sharkey, N. 2004. 'The Parish of Haggardstown & Blackrock: A History'. Noel Sharkey Books.
Stout, M. 1997. The Irish Ringfort. Dublin. Four Courts Press.
Stout, G. and Stout, M. 1997. 'Early Landscapes: from Prehistory to Plantation. In F.H.A. Aalen et al. (eds), Atlas of the Irish Rural Landscape', Cork. Cork University Press.
Waddell, J. 2022. The Prehistoric Archaeology of Ireland (New Edition). Dublin. Wordwell.

Cartographic Sources

Sir William Petty, Down Survey Map of the Barony of Dundalke, c. 1654-56
Matthew Wren, A Topographical Survey of County Louth, 1766
Taylor and Skinner's Map of County Louth, 1777
Ordnance Survey Maps of County Louth 1836, 1868 and 1909

Electronic Sources

www.excavations.ie – Summary of archaeological excavation from 1970-2025.
www.archaeology.ie – DoHLGH website listing all SMR sites.
www.heritagemaps.ie – The Heritage Council web-based spatial data viewer which focuses on the built, cultural and natural heritage.
www.googleearth.com – Satellite imagery of the proposed development area.
www.bing.com– Satellite imagery of the proposed development area.
www.geohive.ie– Ordnance Survey Ireland National Townland and Historical Map Viewer (including Aerial imagery 1995-2013)
www.logainm.ie – Placenames Database of Ireland, developed by Fiontar (DCU) and The Placenames Branch (DoTCAGSM).

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Main Statement

Volume II

CHAPTER 16

Interactions of the Foregoing

May 2025

McCutcheon Halley
CHARTERED PLANNING CONSULTANTS

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16 Interactions of the Foregoing

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16.1 Introduction

The construction, demolition, operational and cumulative impacts of the proposed development have been assessed within each chapter of the EIAR. In practice many impacts have slight or subtle interactions with other disciplines. This chapter highlights those interactions which are considered to potentially be of significant nature.

The potential impacts arising from the interactions were identified early in the preparation of the EIAR / design process and therefore have been avoided through (i) design measures or (ii) the specific mitigation measures outlined in the EIAR chapters and summarised in Chapter 17.

16.2 Population and Human Health

This chapter pertaining to the Population and Human Health aspects of the Proposed Development, has the potential to interact with the following environmental topics:

- Landscape & Visual (Chapter 5)
- Material Assets: Traffic &Transport (Chapter 6)
- Material Assets: Built Services (Chapter 7)
- Noise & Vibration (Chapter 12)
- Air Quality (Chapter 13)
- Climate (Chapter 14)

During the construction and operational phases, the following aspects have potential to interact with population and human health:

16.2.1 Landscape & Visual

The transformation of the existing site into a construction zone will temporarily affect the landscape and visual amenity, particularly on-site and in the immediate vicinity. Elements such as site hoarding, machinery, and partially completed structures may create minor visual disruptions. However, existing natural screening, such as trees and topography, will help mitigate these impacts by partially obscuring views of the construction activities. Dust and limited vegetation removal may create minor, short-term disturbances. The significance of these effects is slight, as they are short-term, local, and consistent with baseline construction activities.

In the operational phase, well-designed green spaces will create positive, long-term effects on the landscape and visual environment and human health. These will have significant effects by enhancing visual amenity and improving access to recreational areas, supporting physical and mental well-being. The extent is **local**, are **significant** and these are **likely** effects with proper implementation.

16.2.2 Material Assets: Traffic and Transport

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During construction phase, increased construction traffic, including deliveries of materials and operation of heavy vehicles, may result in temporary, negative effects on the local road network. These activities may cause slight effects such as noise, dust, and minor road safety risks. The significance of these effects is slight, as they cause noticeable changes to the local environment but are **short-term**, **local**, **significant** and consistent with typical construction activities.

In the operational phase, the development's proximity to services, amenities, and high-quality public transport will promote **positive, long-term** effects by encouraging active travel modes (e.g., walking and cycling). These will have significant effects on population and human health by enhancing physical health and reducing car dependency.

16.2.3 Material Assets: Built Services

During the construction phase, excavation and utility-related activities may cause temporary, adverse effects, local in extent, through potential risks such as contact with live electricity lines or minor service disruptions. The significance is slight, as these short-term effects are unlikely with proper mitigation and are typical of construction activities.

In the operational phase, the provision of reliable modern built services (e.g., electricity, gas, water, telecommunications) will promote **significant positive**, **long-term** effects by ensuring consistent access to essential utilities. These will have significant effects on population and human health, supporting well-being. The extent is local, and these are likely effects.

16.2.4 Noise & Vibration

During the construction phase, activities such as excavation and machinery operation may cause temporary, negative effects on noise and vibration, local in extent. The significance is slight, as these short-term effects are typical of construction, likely with proper mitigation, and affect local receptors.

In the operational phase, well-designed site layouts with noise barriers and green buffers will promote positive, long-term effects by creating quieter living environments. These will have **significant** effects on population and human health, supporting physical and mental well-being. The extent is **local**, and these are **likely** effects.

16.2.5 Air Quality

During the construction phase, activities such as excavation and vehicle movements may cause temporary, negative effects on air quality, local in extent. Dust and emissions may result in slight effects on residents' health and well-being, mitigated by dust suppression measures (e.g., site management). The significance is subtle, as these short-term effects are typical of construction, likely with proper mitigation, and affect local receptors.

In the operational phase, proximity to public transport and amenities, alongside new internal cycle routes, pedestrian infrastructure, and green spaces, will promote positive, long-term effects by encouraging active travel and filtering air pollutants. These will have significant effects on population and human health, supporting health and well-being. The extent is local, and these are likely effects.

16.2.6 Climate

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During the construction phase, activities such as transportation and machinery operation may cause **temporary, negative** effects on climate, local in extent, through greenhouse gas emissions. These may result in slight effects on population and human health, mitigated by emission controls. The **significance is slight**, as these **short-term** effects are typical of construction, likely with proper mitigation.

In the operational phase, the energy-efficient design of the scheme (i.e inclusion of EV charging and will promote positive, long-term effects by reducing electricity consumption and CO2 emissions. These will have significant effects on population and human health, supporting sustainability and well-being. The extent is **local**, and these are **likely** effects.

16.3 Landscape & Visual

This chapter pertaining to the Landscape & Visual aspects of the Proposed Development, has the potential to interact with the following environmental topics

- Population & Human Health (Chapter 4)
- Biodiversity (Chapter 11)
- Cultural Heritage (Chapter 15)

During both the construction and operational phases, the following aspects have potential to interact with landscape and visual:

16.3.1 Cultural Heritage

The nearest designated built heritage sites are sufficiently distant from the site, so no significant landscape or visual effects are predicted on either due to intervening vegetation and built environment.

16.3.2 Population & Human Health

Potential effects on residential amenity are generally considered a planning matter and should be judged collectively and not just by Landscape Architects. As noted within "Residential Visual Amenity Assessment" Technical Guidance Note 2/19 (RVAA):-

> *"The threshold at which a residential property's visual amenity becomes an issue of Residential Amenity has sometimes been described as the point when 'the effect(s) of the development on the 'private interest' is so great that it becomes a matter of 'public interest'. The planning system is only concerned with public interest."* (Reference: RVAA Section 5.2)

The design process took into account visual impact to local residential properties with those in proximity at Bóthar Maol and to the east off Blackrock Road being the most appreciable considerations. Landscape works to the boundary areas were designed into the scheme to minimise potential visual effects and assist in integration of the proposed development when viewed from these closest housing areas. Likely landscape and visual effects will be most pronounced during the

construction and initial operation stages, after which landscape mitigation measures will be increasingly effective in integrating the development into the landscape and reduce landscape and visual impacts on properties.

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16.3.3 Biodiversity

The proposed landscape works were reviewed by the project ecologist and plant species include significant indigenous species and other ecology measures are included which will have a positive effect as it matures on local ecology and diversity. The species selected for woodlands and hedgerows to be planted as part of this development are based on those listed in the *All-Ireland Pollinator Plan 2021-2025.*

16.4 Material Assets: Traffic and Transport

This chapter pertaining to the Traffic and Transport aspects of the Proposed Development, has the potential to interact with aspects of the following chapters of this EIAR:

- Population & Human Health (Chapter 4)
- Material Assets: Waste (Chapter 8)
- Land & Soils (Chapter 9)
- Noise & Vibration (Chapter 12)
- Air Quality (Chapter 13)

During both the construction and operational phases, the following aspects have potential to interact with Traffic and Transport.

16.4.1 Population and Human Health

Interactions are likely to be most noticeable during the construction stage. These are associated with increased construction traffic, including deliveries of materials and operation of heavy vehicles, may give rise to noise, dust, and road safety risks on the local road network. Noise and dust may adversely affect the health and well-being of nearby residents. Increased vehicle movements also pose safety risks for pedestrians and cyclists, potentially limiting access to local amenities and impacting physical activity levels.

An assessment of the potential impact of the Proposed Development on Population and Human Health is included in Chapter 4 of this EIAR.

16.4.2 Land & Soils

Interactions are likely to be most noticeable during the construction stage. Where possible, it is intended to retain and re-use the excavated soil and subsoil on the site for engineering fill and landscaping. However, where required, unsuitable soil and subsoil will be removed offsite in accordance with all statutory legislation. There is also a requirement to import soil, subsoil and aggregate materials during the construction phase of the Proposed Development.

An assessment of the potential impact of the Proposed Development on Lands, Soils and Geology is included in Chapter 9 of this EIAR.

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16.4.3 Air Quality

An assessment of the potential impact of the Proposed Development in the form of impacts on air quality associated with the Proposed Works are laid out in Chapter 13 - 'Air Quality.

Two main elements are considered:

- The potential increase in dust during construction; and
- Impacts on air quality as a result of increased traffic during both the construction and operational phases.

16.4.4 Noise & Vibration

An assessment of the potential impact of the Proposed Development in the form of noise impacts associated with the Proposed Works are laid out in Chapter 12 - 'Noise and Vibration'.

Three main traffic-related elements are considered:

- The increase in noise caused by construction vehicles; and
- The increase in noise caused by vehicles entering and leaving the site during both construction and operation; and
- Increases in noise caused by additional traffic on the external road network during both construction and operation.

16.4.5 Material Assets: Waste

The proposed development will require the removal of excavated soil and transportation to appropriate waste facilities during the Construction Phase.

An assessment of the potential impact of the Proposed Development on Waste is included in Chapter 8 of this EIAR.

16.5 Material Assets: Built Services

This chapter pertaining to the Material Assets: Built Services aspects of the Proposed Development, has the potential to interact with the following environmental topics

- Population & Human Health (Chapter 4)
- Land & Soils (Chapter 9)
- Water & Hydrology (Chapter 10)

During both the construction and operational phases, the following aspects have potential to interact with built services:

16.5.1 Population & Human Health

There is adequate capacity in existing infrastructure for the construction and operational stages of the proposed development. A risk to the human health of the installer from built services can occur as a result of any excavation work in areas where built services exist, through coming into contact with live electricity lines or damaging live gas or watermains. With the implementation of appropriate mitigation measures, the impact of the proposed built services on human health is likely to be negligible.

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16.5.2 Land & Soils

Construction of the proposed development will require the removal of topsoil and earthworks to facilitate the construction of the road and infrastructure service provision, storage systems, etc. These initial and short-term adverse impacts would be ameliorated through the re-use of soils for fill, levelling and landscaping works resulting in a neutral impact. Additionally, trench excavations to facilitate site service installation will result in exposure of subsoils to potential erosion and subsequent sediment generation. Mitigation measures are outlined in Chapter 9 Land & Soils (i.e. service trenches to be backfilled as soon as practicable to minimise potential erosion of subsoils).

16.5.3 Water & Hydrology

The proposed development is designed to comply with the recommendations of the GDSDS, including the provision of SUDS, and is therefore unlikely to have any residual impacts in terms of the impact on hydrology and hydrogeology.

16.6 Material Assets: Waste

This chapter pertaining to the Material Assets: Waste aspects of the Proposed Development, has the potential to interact with the following environmental topics

- Population & Human Health (Chapter 4)
- Material Assets: Traffic & Transport (Chapter 6)
- Land & Soils (Chapter 9)
- Biodiversity (Chapter 11)

During both the construction and operational phases, the following aspects have potential to interact with Waste:

16.6.1 Population & 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 of this EIAR.

16.6.2 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 11 of this EIAR (Biodiversity).

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16.6.3 Land & Soils

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 9.

16.6.4 Material Assets: Traffic & Transport

The proposed development will require the removal of excavated soil and transportation to appropriate waste facilities during the Construction Phase. Potential impacts on traffic are addressed in Chapter 6 of this EIAR.

16.7 Land & Soils

This chapter pertaining to the Lands aspects of the Proposed Development, has the potential to interact with the following environmental topics

- Population & Human Health (Chapter 4)
- Landscape & Visual (Chapter 5)
- Material Assets: Traffic & Transport and Waste (Chapters 6 + 8)
- Biodiversity (Chapter 11)
- Water & Hydrology (Chapter 10)
- Air Quality and Climate (Chapters 13 + 14)

During the construction and operational phase of the Proposed Development, the following aspects have potential to interact with land and soils:

16.7.1 Population & 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 standards and health and safety legislative requirements will be implemented during the construction phase of the Proposed Development that will be protective of site workers.

16.7.2 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 11 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.

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16.7.3 Water

An assessment of the potential impact of the Proposed Development on the hydrological and hydrogeological environment is included in Chapter 10 of this EIAR. In the absence of avoidance, remedial and mitigation measures, piling during the construction phase of the Proposed Development, may potentially create pathways for potential sources of contamination in shallow soils to enter underlying groundwater. Procedures for the protection of the receiving water environment are set out in Chapter 10 of this EIAR.

16.7.4 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 of the Proposed Development. An assessment of the potential impact of the Proposed Development on air quality and climate is included in Chapters 13 and 14 of this EIAR.

16.7.5 Landscape & Visual

During the construction phase and into the operational phase of the Proposed Development, the site landscape will undergo a change from undeveloped lands to residential and retail / commercial land use with associated landscaping. An assessment of the potential impact of the Proposed Development on the receiving landscape is included in Chapter 5 of this EIAR.

16.7.6 Material Assets: Traffic & Transport and Waste

Where possible, it is intended to retain and re-use the excavated soil and subsoil on the site for engineering fill and landscaping. However, where required, unsuitable soil and subsoil will be removed offsite in accordance with all statutory legislation. There is also a requirement to import soil, subsoil and aggregate materials during the construction phase of the Proposed Development. An assessment of the potential impact of the Proposed Development on the Material Assets (Traffic and Transport) and Material Assets (Waste) are included in Chapter 6 and Chapter 8 of this EIAR respectively

16.8 Water

This chapter pertaining to the water & hydrology aspects of the Proposed Development, has the potential to interact with the following environmental topics

- Population & Human Health (Chapter 4)

- Material Assets: Built Services (Chapter 7)
- Land & Soils (Chapter 9)
- Biodiversity (Chapter 11)

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During the construction and operational phase of the Proposed Development, the following aspects have potential to interact with water & hydrology:

16.8.1 Population & Human Health

An assessment of the potential impacts of the Proposed Development on human health is included in Chapter 4 - Population and Human Health 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.

16.8.2 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 is included in Chapter 11 - Biodiversity of this EIAR such as potential pollution of waterbodies impacting on flora and fauna in the absence of mitigation measures.

Chapter 11 - Biodiversity of this EIAR addresses 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.

16.8.3 Land & Soils

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 9 - Land, Soil and Geology. 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.

16.8.4 Material Assets: Built Services

An assessment of the potential impact of the Proposed Development on the material assets including built services and infrastructure has been set out in Chapter 15 – Material Assets (Site Services) of this EIAR.

During the construction phase of the Proposed Development discharges of water to the public foul sewer will be in accordance with the necessary discharge licence issued by UE under Section 16 of the Local Government (Water Pollution) Acts and Regulations.

During the operation phase of the Proposed Development, any discharges to the public foul sewer and water supply to the Proposed Development will be under consent from UE.

16.9 Biodiversity

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This chapter pertaining to the ecological and biodiversity aspects of the Proposed Development, has the potential to interact with aspects of the following chapters of this EIAR:

- Landscape & Visual (Chapter 5)
- Material Assets: Waste (Chapter 8)
- Land & Soils (Chapter 9)
- Water (Chapter 10)
- Noise & Vibration (Chapter 12)
- Air Quality (Chapter 13)

During the construction and operational phases, the following aspects have potential to interact with biodiversity:

16.9.1 Land & Soils

An assessment of the potential effects of the Proposed Development on the existing land, soils and geological environment; with emphasis on the effects of the Proposed Development on the receiving soils underlying the Site during the Proposed Development, is described in Chapter 9 - '*Land, Soils and Geology*' of this EIAR. These impacts are considered to be relevant to the ecological sensitivities associated with the Site of the Proposed Development discussed in this Chapter; and mitigation measures addressing these potential effects are described in full in Chapter 9. The bulk removal of soils, sands and gravel at the Site can have implications for biodiversity. Natural regeneration of native and local seeds is the preferred option for re-vegetating areas to be retained for biodiversity.

16.9.2 Water

The key environmental interaction with biodiversity is water. An assessment of the potential impact of the Proposed Development on the hydrological and hydrogeological environment is described in Chapter 10 - '*Hydrology and Hydrogeology*' of this report as well as in this Chapter, to ensure the quality (pollution and sedimentation) and quantity (surface water run-off) of water is of the appropriate standard. Interactions between hydrology and biodiversity can occur through effects on water quality, arising, for example from an accidental pollution event during the Construction and/or Operational Phase. This interaction has the potential to result in adverse effects on habitats and fauna that are hydrologically linked to the Site in the absence of mitigation.

16.9.3 Air Quality

An assessment of the potential impact of the Proposed Development on air quality is included in Chapter 13 of this EIAR. Dust emissions arising from the Construction Phase of the Proposed Development were identified as having potential effects on local biodiversity. Once dust minimisation measures are implemented, adverse effects on biodiversity are not predicted to be significant.

16.9.4 Noise & Vibrations

An assessment of the potential effects of the Proposed Development in the form of excess noise and vibrations associated with the Proposed Works are laid out in Chapter 12 - '*Noise and Vibrations*'.

These effects are considered to be relevant to the ecological sensitivities associated with the Site of the Proposed Development discussed in this Chapter; and mitigation measures addressing these potential effects are both referenced in this Chapter and described in full in Chapter 12. There is potential for interactions between noise and sensitive fauna, e.g., birds, that occur in adjacent habitats from increased noise levels during the Construction Phase. However, as described, noise related effects are not deemed to be significant.

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16.9.5 Landscape & Visual

An assessment of the potential effects of the Proposed Development on the surrounding landscape character is outlined in Chapter 5 – '*Landscape and Visual Impact*'. These effects are considered to be relevant to the ecological sensitivities associated with the Site of the Proposed Development discussed in this Chapter. Landscaping at a development site can have significant implications for biodiversity, however, significant adverse effects on local biodiversity are not predicted.

16.9.6 Material Assets: Waste

Construction waste arising from site operations could negatively affect local fauna through entrapment, for example. However, appropriate waste management practices on site will ensure no significant effects occur to local biodiversity.

16.10 Noise and Vibration

This chapter pertaining to the noise and vibration aspects of the Proposed Development, has the potential to interact with the following environmental topics

- Population & Human Health (Chapter 4)
- Material Assets: Traffic & Transport (Chapter 6)

During both the construction and operational phases, the following aspects have potential to interact with noise and vibration.

16.10.1 Material Assets: Traffic & Transportation

This chapter incorporates data from the Traffic & Transportation and Population to assess the potential noise impacts from both construction and operational traffic associated with the development. Average Annual Daily Traffic (AADT), vehicle speeds, and vehicle types (including HGVs) have been considered to calculate the additional noise generated by the development, relative to the baseline conditions.

16.10.2 Population & Human Health

In this EIAR, the Noise and Vibration chapter has been developed in close coordination with the Population and Human Health chapter to assess the potential impacts of noise on nearby sensitive receptors. The locations of residential areas, schools, and other noise-sensitive sites identified have informed the selection of assessment locations for noise modelling. Predicted noise levels from both construction and operational phases have been evaluated in terms of their potential effects on human

health, including annoyance and disturbance. This integrated approach ensures that the assessment considers not only technical compliance with noise limits, but also the broader implications for community well-being.

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16.11 Air Quality

This chapter pertaining to the air quality aspects of the Proposed Development, has the potential to interact with the following environmental topics

- Population & Human Health (Chapter 4)
- Material Assets: Traffic & Transport (Chapter 6)
- Land & Soils (Chapter 9)
- Biodiversity (Chapter 11)
- Climate (Chapter 14)

During both the construction and operational phases, the following aspects have potential to interact with air quality.

16.11.1 Population & 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 having an overall insignificant impact, therefore air quality impacts from the proposed development are not expected to have a significant impact on population and human health.

16.11.2 Land & Soils

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between air quality and land and soils in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and land and soils during the construction phase. There are no potentially significant interactions identified between air quality, and land, soils and hydrogeology during the operational phase.

16.11.3 Biodiversity

Dust generation can occur during extended dry weather periods due to construction traffic along haul routes and construction activities such as excavations and infilling works. Dust emissions can coat vegetation leading to a reduction in the photosynthesising ability as well as other effects. There are designated ecological sites within 250m of the proposed development site area. Significant dust impacts are not predicted beyond this distance. Dust mitigation measures will be implemented on site as set out in Section 13.9.1. With the implementation of these mitigation measures dust emissions

will be minimised and impacts will be ***short-term, negative and imperceptible*** with respect to biodiversity, which is overall ***not significant*** in EIA terms.

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There are interactions between air quality and biodiversity during the operational phase. Sections of the Dundalk Bay SAC and Dundalk Bay SPA are within 200m of road links impacted by the proposed development. Emissions generate by operational traffic have the potential to impact ecological receptors. An ecological assessment of the change in annual average daily traffic on roads close to the site was conducted. The impact of the interactions between air quality and biodiversity are considered to be ***direct, long-term, negative*** and ***slight*** during the Operational Phase, which is overall ***not significant.***

16.11.4 Climate

Air quality and climate have interactions due to the emissions from the burning of fossil fuels during the construction and operational phases generating both air quality and climate impacts. Air quality modelling outputs are utilised within the Climate Change Chapter (chapter 14). There is no impact on climate due to air quality however the sources of impacts on air quality and climate are strongly linked.

16.11.5 Material Assets: Traffic & Transportation

There can be a significant interaction between air quality and traffic. This is due to traffic-related pollutants that may arise. In the current assessment, traffic derived pollutants which may affect Air Quality have been deemed not significant. Therefore, the impact of the interaction between air quality and traffic is not significant.

16.12 Climate

This chapter pertaining to the climate aspects of the Proposed Development, has the potential to interact with the following environmental topics

- Material Assets – Traffic & Transport (Chapter 6)
- Material Assets – Waste (Chapter 8)
- Land & Soils (Chapter 9)
- Air Quality (Chapter 13)

During both the construction and operational phases, the following aspects have potential to interact with climate.

16.12.1 Land & Soils

The impact of flood risk has been assessed and the surface water drainage network will be designed to cater for increased rainfall in future years as a result of climate change. The effect of the interactions between climate and land, soils, geology and hydrology are ***direct, short-term, negative*** and ***imperceptible*** during the construction phase and ***direct, long-term, negative*** and ***imperceptible*** during the operational phase, which is overall ***not significant*** in EIA terms.

16.12.2 Air Quality

Air quality and climate have interactions due to the emissions from the burning of fossil fuels during the construction and operational phases generating both air quality and climate impacts. Air quality modelling outputs are utilised within the Climate Chapter. There is no impact on climate due to air quality. However, the sources of impacts on air quality and climate are strongly linked.

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16.12.3 Material Assets: Traffic & Transportation

During the construction and operational phase, there is the potential for interactions between climate and traffic. Vehicles accessing the site will result in emissions of CO_2, a greenhouse gas. The effects of the proposed development on climate are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the effects of the interactions between traffic and climate are considered to be ***direct, short-term, negative*** and ***not significant*** during the construction phase and ***direct, long-term, negative*** and ***not significant*** during the operational phase, which is overall ***not significant*** in EIA terms.

16.12.4 Material Assets: Waste

Waste management measures will be put in place to minimise the amount of waste entering landfill, which has higher associated embodied carbon emissions than other waste management such as recycling. The effect of the interactions between waste and climate are considered to be ***direct, short-term, negative*** and ***not significant*** during the construction phase and ***direct, long-term, negative*** and ***not significant*** during the operational phase, which is overall ***not significant*** in EIA terms.

16.13 Cultural Heritage

No interactions have been identified during the course of this assessment.

16.14 Conclusion

The table below presents the Interactions with Potential for Significant Impacts Before the Implementation of Mitigation Measures between the various environmental topics.

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Table 16-1 Interactions with Potential for Significant Impacts Before the Implementation of Mitigation Measures

Interaction	Population & Human Health		Landscape & Visual		MA Traffic		MA Built Services		MA Waste		Land & Soils		Water		Biodiversity		Noise & Vibration		Air Quality		Climate		Cultural Heritage	
	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op
Popul + Human Health			✓	✓	✓	✗	✓	✓	✓	✗	✓	✗	✓	✗	✗	✗	✓	✗	✓	✓	✓	✓	✗	✗
Landscape and Visual	✓	✓			✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Material Assets-Traffic	✓	✓	✗	✗			✗	✗	✓	✗	✓	✗	✗	✗	✗	✗	✓	✗	✓	✓	✗	✗	✗	✗
Material Assets-Built Services	✓	✗	✗	✗	✗	✗			✗	✗	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Material Assets-Waste	✗	✗	✗	✗	✗	✗	✗	✗			✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Land & Soils	✗	✗	✗	✗	✓	✗	✓	✗	✓	✗			✓	✗	✓	✗	✗	✗	✓	✗	✓	✗	✗	✗
Water	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗			✓	✓	✗	✗	✗	✗	✗	✗	✗	✗
Biodiversity	✗	✗	✗	✓	✗	✗	✗	✗	✓	✓	✓	✗	✓	✗			✗	✗	✓	✗	✗	✗	✗	✗
Noise & Vibration	✓	✗	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗			✗	✗	✗	✗	✗	✗
Air Quality	✓	✓	✗	✗	✓	✓	✗	✗	✗	✗	✓	✗	✗	✗	✓	✗	✗	✗			✓	✓	✗	✗
Climate	✗	✓	✗	✗	✓	✓	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✓	✓			✗	✗
Cultural Heritage	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗		

Con. - Construction Phase | Op. - Operational Phase | ✓ - Potential Significant Interaction | ✗ - No Significant Interaction

Haggardstown LRD

Dundalk, Co. Louth

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Main Statement

Volume II

CHAPTER 17

Summary of Mitigation and Monitoring Measures

May 2025

McCutcheon Halley
CHARTERED PLANNING CONSULTANTS

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17 Summary of Proposed Mitigation Measures

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17.1 Introduction

Article 5(1) of the EIA Directive sets out what the developer has to include as a minimum in the EIA Report including mitigation or compensation measures: measures to avoid, prevent or reduce, and offset any identified adverse effects on the environment shall be provided by the developer (Article 5(1)(c) and Annex IV.7).

This chapter summarises the mitigation measures proposed for the construction and operational stage of the proposed development as set out in the preceding assessments contained in Chapters 4 to 15.

All the mitigation measures proposed within the individual specialists' assessments will be incorporated into the Construction and Environmental Management Plan (CEMP) prior to works commencing on-site.

Where indicated 'None', the expert has deemed there is no requirement for mitigation or monitoring measures having regard to the likely potential for impact on the receiving environment.

17.2 Incorporated Design Mitigation Measures

The measures outlined in Table 17-1 have been incorporated into the design of the proposed development for the Demolition & Construction and Operational Stage, as appropriate.

Table 17-1 Incorporated Design Mitigation Measures

Aspect	Incorporated Design Mitigation
Population & Human Health	▪ The proposed development complies with the Building Regulations 1997 to 2024 (the Building Regulations), which provide for the safety and welfare of people in and around buildings. The Building Regulations cover matters such as structure, fire safety, sound, ventilation, conservation of fuel and energy, and access, all of which safeguard users of the buildings and the health of occupants. ▪ The proposed development complies with the requirements of Part M of the Building Regulations and incorporates the principles of universal design so that the development will be readily accessible to all, regardless of age, ability, or disability. ▪ The proposed design will segregate pedestrians and bicycle traffic from motorised traffic. The integration of energy efficient measures into the design will provide for healthier living standards for future occupants, less dependence on fossil fuels and associated improved air quality ▪ The availability of on-the-doorstep public open spaces and amenity areas will provide a high quality environment for the residents and will encourage sustainable modes of outdoor access for a wide age group.
Landscape & Visual	▪ Green Infrastructure and Connectivity including circulation paths providing a safe environment for walkers, runners and cyclists linking the core and linear open spaces; ▪ Maintain a significant swathe of open space within the central part of the development in the H1 Open Space Zoned Lands; ▪ Open space management plans contains areas that can be managed to encourage habitats creation;

Aspect	Incorporated Design Mitigation
	▪ Natural surveillance of all open spaces with houses fronting these areas; ▪ Provision of playgrounds to cater for the recreational and educational requirements of children of residents. ▪ Due regard has been given with the landscape design coordinating with engineers in terms of Sustainable Urban Drainage Systems (SuDS) as required in terms of swales, compensation areas and retained watercourses or culverts; ▪ Biodiversity and habitat creation or enhancement including planting of over 600 no. 'semi-mature' or 'extra-heavy standard' size trees to give instant impact and provide enclosure and screening. Further landscape works include woodland planting (1,285m²), new hedgerows (596 linear meters), and shrub planting (6,855m²); ▪ Plants selected are predominantly indigenous and species based on those in the "All-Ireland Pollinator Code 2021-2025" to ensure successful plant establishment that will merge visually and ecologically into this area.
Material Assets: Traffic & Transport	▪ An internal site layout that has been designed in accordance with DMURS, which prioritises pedestrian and cycle movement over vehicular movements, creating a safer environment for those on foot or bike. ▪ The entire site, and external access junction proposals, has been the subject of a Stage 1 / 2 Road Safety Audit, which has assessed safety aspects for all modes of transport. The following changes were made to the design in response to the Audit: - Additional signage and surfacing details were added to the drawings to clarify a pedestrian refuge zone at the R617 / Site Access junction. - Tactile paving was added to the junction between the site access path and Bothar Maol. - A corner radius was adjusted on an internal street, to allow two cars to pass more easily.
Material Assets: Built Services	▪ Surface Water runoff from the proposed development will be managed in accordance with the requirements of the Greater Dublin Strategic Drainage Study (GDSDS), the Construction Industry Research and Information Association's Sustainable Drainage Systems Manual (CIRIA SuDS) and Louth County Council Water Services Department (LCC WSD), with Surface Water attenuation and retention included as part of the main Surface Water drainage system. The Surface Water management proposals shall serve to reduce the overall impact of the proposed development on the existing environment. The proposed scheme shall incorporate SuDS treatment process which intercepts Surface Water run-off and treats the water by two stages of filtration and treatment through natural material and conveying this water to storage facilities. ▪ The proposed Wastewater drainage system was designed in accordance with the Uisce Éireann Code of Practice for Wastewater Infrastructure IW-CDS-5030-02, IS EN 12056:2000 Gravity Drainage Systems inside Buildings, I.S. EN752: 2017 Drain & Sewer Systems outside Buildings and the Building Regulations Technical Guidance Document Part H. The proposed drainage system will therefore be designed with appropriate capacity for the development to ensure self-cleansing velocities are achieved to reduce the risk of blockages and odours. ▪ The proposed watermain infrastructure is designed in accordance with Uisce Éireann's 'Code of Practice for Water Infrastructure IW-CDS-5020-03 and provides appropriate capacity for the development to minimise the risk associated with low service pressure. ▪ All proposed power cables within the development will be buried underground or internal within buildings and will be installed according to the relevant ESB Networks specifications.

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Aspect	Incorporated Design Mitigation
	▪ There is no gas infrastructure on the subject site and it is not proposed to provide gas as a utility within the proposed development. ▪ The proposed telecommunications infrastructure within the development will be buried underground or internal within buildings.
Material Assets: Waste	▪ Buildings have been designed with material efficiency in mind. This will reduce the amount of materials used in the building fabric and minimising the waste during construction; ▪ Measures to achieve on-site and off-site reuse and recycling of waste have been identified; and ▪ Dedicated, secure waste segregation areas have been selected for the duration of the enabling works. The dedicated waste storage areas within the waste segregation points will house all bins and skips for the storage of segregated construction waste generated. All containers will be marked with clear signage which will identify which waste types are to be placed into each container
Land & Soils	▪ The design and specification for all buildings will be in accordance with current Building Regulations, including radon protection measures appropriate to a 'High' Radon Area.
Water & Hydrology	▪ 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. ▪ With regard to the proposed discharge of treated operational surface water from the Proposed Development to the two (2No.) unnamed streams, SuDS measures and petrol interceptor are incorporated in the fundamental scheme design. ▪ Foul water and water supply infrastructure will comply with UE Code of Practice for Wastewater Infrastructure (IW-CDS-5030-03), UE's Code of Practice for Water Infrastructure (IW-CDS-5020-03), IS EN 752 Drain and Sewer Systems outside Buildings, IS EN 12056 Gravity Drainage Systems inside Buildings and the Building Regulations Technical Guidance Document Part H Drainage and Wastewater.
Biodiversity	The Proposed Development includes several embedded design features that may act to avoid or mitigate negative effects that would likely occur in the absence of these features. However, as opposed to typical mitigation measures, the implementation of these features is integral to the design and completion of the Proposed Development, and as such the impact assessments are performed with consideration of these features as integrated parts of the Proposed Development. All considered embedded design features that may act to mitigate negative impacts on local ecology and environment are listed below. **SuDS:** ▪ Bioretention areas ▪ Tree pits & unlined tree pit trenches ▪ Unlined permeable paving ▪ Filter drains ▪ Detention basins ▪ Attenuation tanks ▪ Petrol/oil separators ▪ Flow Control Devices ▪ Rainwater harvesting at the creche **Landscape Design:** ▪ Retention of majority of existing hedgerows ▪ Additional native shrub and tree planting throughout. **Lighting Design:** ▪ Bat sensitive lighting approach designed in coordination with an Ecologist.

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Aspect	Incorporated Design Mitigation
Noise & Vibration	<u>Noise</u> ▪ Based on the layout of the dwellings, the central amenity space where the majority of large gatherings are likely to take place, is screened to a high degree at the NSL's due to the proposed dwellings surrounding the space. ▪ Additionally, the distances between amenity spaces and the sensitive receptors also provides attenuation due to the distance attenuation rule. <u>Vibration</u> None
Air Quality	None
Climate	A number of measures have been incorporated into the design of the development to reduce the impact on climate wherever possible. These measures are outlined in further detail in the application drawings, *Architects Design Statement* (prepared by JFA Architects) and *Utilities & Energy Sustainability Report* prepared by PEMP Consulting and submitted as part of the planning application for the proposed development. The development will be in compliance with the requirements of the Near Zero Energy Building (NZEB) Standards and will achieve a Building Energy Rating (BER) in line with the NZEB requirements. Such measures included in the proposed development to reduce the impact to climate from energy usage are: ▪ The residential units will aim to achieve a Building Energy Ratio (BER) of A2 (25-49 kwh/m^2/yr); ▪ Achieve air tightness standards of 3 m^3/m^2/hr; ▪ Ensure thermal bridging details are designed to achieve thermal bridging factors of 0.08W/m^2K for the residential units and 0.15 W/m^2k for the apartment units; ▪ Energy Performance Coefficient (EPC) < 0.30; ▪ Carbon Performance Coefficient (CPC) < 0.35; ▪ Renewable Energy Ratio (RER) > 0.20; ▪ Meet or exceed minimum U-Value standards identified in Part L 2022 Dwellings; ▪ Use of natural ventilation will be maximised to reduce the requirement for mechanical alternatives; ▪ Air Source Heat Pumps are being considered as a viable option to provide space heating and domestic hot water within the dwellings; ▪ Exhaust Air Heat Pumps are being considered where mechanical ventilation is required; ▪ Solar photovoltaic panels are being considered to fulfil the renewable energy requirement. These have the benefit of providing an alternative renewable energy source for the housing units; ▪ Use of natural daylight will be maximised to reduce the need for artificial lighting; ▪ Where artificial lighting is required, this will be in the form of energy efficient LED lighting; and ▪ Bicycle parking and infrastructure to support electric vehicle (EV) car charging has been incorporated into the development to provide an alternative, more sustainable modes of transport. ▪ adequate attenuation and drainage have been incorporated into the design of the development to avoid potential flooding impacts as a result of increased rainfall events in future years. ▪ Landscape planting elements have been chosen with consideration for climate change impacts in future years. The landscape planting specifications are a majority mix that comply with the All Ireland Pollinator Plan/Native Species Guidance and will withstand Ireland's extreme climatic conditions. In periods of high temperatures certain species can

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Aspect	Incorporated Design Mitigation
	withstand drought however, a Management Maintenance Plan that details the regular watering requirements during such conditions is also provided as part of the landscape specifications for the proposed development.
Cultural Heritage	None

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17.3 Mitigation Measures

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The recommended mitigation measures for the Construction & Demolition and Operational Phases are summarised in Tables 17-2 and 17-3 below.

Table 17-2 Construction and Demolition Mitigation

Aspect	Construction and Demolition Mitigation
Population & Human Health	▪ An *Outline Construction and Environmental Management Plan (CEMP)* for the proposed development is included in the application documentation. The Outline CEMP will be updated by the contractor(s), submitted to the Council prior to commencement, and implemented by the selected contractor (s) after any consent is received.. ▪ All construction personnel will be required to understand and implement the requirements of the CEMP and shall be required to comply with all legal requirements and best practice guidance for construction sites. ▪ The CEMP provides for a construction phase management structure to ensure that environmental protection and mitigation measures are put in place. The CEMP requires that these measures will be checked, maintained to ensure adequate environmental protection. The CEMP also requires that records will be kept and reviewed as required to by the project team and that the records will be available on site for review by the planning authority. ▪ All construction personnel will attend induction and training classes as required to ensure that the CEMP is effectively implemented. The CEMP will comply with all appropriate legal and best practice guidance for construction sites. ▪ Project supervisors for the construction phase will be appointed in accordance with the Health, Safety and Welfare at Work (Construction Regulations) 2013 (as amended), and a Preliminary Health and Safety Plan will be formulated during the detailed design stage which will address health and safety issues from the design stages, through to the completion of the construction phases.
Landscape & Visual	▪ A key consideration in landscape terms during the construction period is ensuring the provision of a suitable top surface growing medium (i.e. soil) to ensure successful establishment on soft landscape treatments. ▪ Materials or rock excavated from the existing site will be crushed for re-use where possible thus negating the requirement for import of additional fill. ▪ All topsoil will be retained for use on site with much of it being reused in the retained open spaces. ▪ Retention of boundary vegetation and erection of screen hoarding; ▪ The internal and boundary hedgerows will be managed to remove dead, dying and dangerous branches and any colonising scrub or brier. The works will also entail removal of trees on site suffering from Ash die-back disease. For retained trees, the recommendations given in BS5837:2012 Guide for trees in relation to construction will be adopted to ensure site and tree safety. ▪ Minimise hedgerow and tree removal and time any canopy reduction or cutting to winter months; ▪ Construction of the new footpath and crossing on Bóthar Maol will entail Tree Surgeon being engaged with reference to potential impacts on Tree No. 59 Sycamore and requirement in the tree root protection zone for a no-dig solution for the proposed footpath construction; and ▪ Control of disturbance including dust, mud, noise, lighting.
Material Assets: Traffic & Transport	▪ Traffic impacts during the construction stage will be mitigated through the implementation of a Construction Traffic Management Plan (CTMP), which will be agreed with LCC. A

Aspect	Construction and Demolition Mitigation
	Framework CTMP, which sets out the principles to be followed, forms part of the wider Outline Construction and Environmental Management Plan submitted with this application. The CTMP sets out the principles by which construction traffic will be planned for, managed, and monitored, to ensure that any impacts on local communities, vulnerable users and road users, will be minimised as far as possible.
Material Assets: Built Services	▪ The Contractor shall prepare and implement a Demolition and Construction Phase Surface Water Management Plan that ensures avoidance and minimisation of effects. Surface Water storage in excavations shall be directed to on-site settlement ponds, where silt removal will be facilitated prior to discharge off site at a controlled and agreed rate in accordance with the greenfield runoff rates for the site. In order to reduce and minimise the risk on impacting the existing water environment from material spillages, all oils, solvents and paints used during construction will be stored within temporary bunded areas or chemical storage containers. ▪ The demolition and construction phase discharge of Wastewater to the existing 600mm wastewater sewer to the north-west of the subject site shall comply with the conditions of a Discharge Licence from Uisce Éireann. During construction, all new sewers shall be pressure tested, and CCTV surveyed in accordance with the Uisce Éireann Standards to identify potential defects and such defects, should they arise, shall be repaired prior to the connection. ▪ During demolition and construction, the watermains shall be tested in accordance with the requirements of Uisce Éireann (such as pressure testing, water main disinfection, water quality analysis, etc) prior to connection. ▪ The ESB shall install all of the new incoming supplies to the proposed development. The ESB shall also liaise with residents and keep existing customers fully informed of any brief outages which may be required due to the diversion and undergrounding of the existing overhead 38kV lines or connections to the proposed development. The Contractor shall ensure that construction works on site adhere to the ESB Networks / HSA "Code of Practice for Avoiding Danger from Overhead Electricity Lines". ▪ The relevant utility provider shall install the new incoming supplies to the proposed development and shall liaise with existing customers to advise of possible outages in order to facilitate the connections. The works shall be carried out such that they minimise disruption to surrounding areas.
Material Assets: Waste	<u>Waste Management</u> ▪ Waste materials will be separated at source and will follow the Construction Waste Management Plan (CWMP) contained within the Outline CEMP (DOBA, 2025) and Contractor(s) Construction Environmental Management Plan (CEMP); ▪ 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; ▪ A policy of 'as needed' ordering and strict purchasing procedures will be implemented to prevent waste arisings as far as possible; ▪ 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 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; ▪ The waste materials generated during the Construction Phase will be stored in suitably size receptables and transferred offsite for appropriate processing, recycling and recovery;

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Aspect	Construction and Demolition Mitigation
	▪ 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 a last resort and only after recycling or recovery options have been ruled out; ▪ A suitably competent and fully permitted waste management company will be employed to manage 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); ▪ 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; ▪ It is not envisaged that there will be any hazardous waste generated throughout the construction works however, in the event that hazardous soil, or historically deposited waste is encountered during the site bulk excavation phase, the contractor will notify Louth County Council and provide a Hazardous / Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant mitigation, destination for disposal/treatment, in addition to information on the authorised waste collector(s). Only authorised facilities will be used and as a result of this. The potential impacts at any authorised receiving facility sites will have been adequately assessed and mitigated as part of the statutory consent procedures; ▪ Waste generated by construction workers 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; and ▪ All waste quantities and types will be recorded and quantified, and records will be retained onsite for the duration of the Construction Phase. ▪ The Contractor shall, prior to the commencement of the works, nominate and appointan adequately trained Construction Waste Manager (CWM) with overall responsibility for implementation of the CWMP contained within the Outline CEMP. The Contractor's CWM shall be responsible for the following: - • Instructing all site personnel to comply with the specific provisions of the CWMP, in particular the Objectives regarding the prevention, reduction, re-use and recycling. • Ensuring that copies of the CWMP will be made available to all relevant personnel on site. • Informing through regular training of all site personnel of the objectives of the plan and their responsibilities in relation to compliance with the plan. • Ensuring that where training is required regarding the handling and management of Wastes on site that this is provided to staff as required to ensure they can: - ○ Distinguish reusable materials from materials suitable for recycling ○ Ensure maximum segregation at source ○ Co-operate with the Contractor's management regarding stockpiling of reusable material and ensure separation of materials for recovery ○ Identify and liaise with operates of recovery outlets • Informing Contractor staff and Sub-Contractors of content of the plan and for maintaining and keeping detailed records

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Aspect	Construction and Demolition Mitigation
	• An appropriate staff member from each Sub-Contractor on the site shall be assigned the direct responsibility to ensure that the discrete operations stated in the CWMP are performed on an on-going basis. In the event of the CWM leaving the project team, the Contractor will nominate a suitable replacement <u>Invasive Species</u> ▪ The contractor will prepare a project specific Invasive Alien Plant Species (IAPS) standard operating procedure document, in advance of work commencement. The document will be prepared by an IAPS specialist and will cover the bio-security measures to be taken, including the maintenance of records, to screen for the introduction of IAPS on-site, and to enable their tracing if such an introduction occurs; and to ensure no transmission of IAPS offsite. The measures include: • Validation that all machinery / vehicles are free of IAPS, prior to their first introduction to site; • Certification from the suppliers that all imported soils and other fill/landscaping materials are free of IAPS; • A regular schedule of site inspections across the IAPS growing seasons, for the duration of the construction works programme; • Validation that all machinery / vehicles are free of IAPS, prior to leaving the site; and ▪ Appropriate and effective site biosecurity hygiene to ensure that no IAPS are transmitted off-site for the duration of the proposed works
Land & Soils	▪ An Outline Construction Environmental Management Plan (OCEMP) has been prepared by DOBA (DOBA, 2025; submitted with the planning application under separate cover). The OCEMP address construction waste, construction environmental management (including a surface water management plan) and construction traffic management. Following appointment, the contractor will be required to further develop the OCEMP and prepare and project specific CEMP, for approval by Louth County Council prior to any works commencing. The project specific CEMP will provide detailed construction phasing, waste management and methods to manage and prevent any potential emissions to ground and surface water with regard to the relevant industry standards (e.g., Guidance for Consultants and Contractors, CIRIA-C532', CIRIA, 2001). The project specific CEMP will take cognisance of measures outlined in the EIAR and OCEMP submitted with the planning application. ▪ The project specific 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. ▪ Contract and procurement procedures will ensure that all imported aggregates and materials required for the construction of 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 and materials will be subject to management and control procedures which will 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. ▪ 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 procures set out in the OCEMP (DOBA, 2025) and the project specific CEMP in order to protect ground and minimise airborne dust. The normal measures

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	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. Furthermore, as documented in the OCEMP (DOBA, 2025a), a minimum 1.8m hoarding will also be provided around the site works to minimise the dispersion of dust from the working areas. ▪ Soil and subsoil materials to be reused within the Proposed Development (i.e., for engineering fill and landscaping) will be subject to an assessment of the suitability for use in accordance with engineering and environmental specifications for the Proposed Development. This will include: - Define the criteria by which the suitability of the soils for reuse will be assessed (e.g., analytical parameters and limits), the engineering requirements such as geotechnical parameters for the material to be used within the works. - Delineation of areas where excavated soil is intended for disposal off-site as waste, and where it is intended for reuse on site. - Identification and recording of the location from where the soil will be excavated and its proposed reuse location and function. - Engineering assessment to confirm its suitability for reuse. - Any proposed treatment or processing required to enable its reuse, as well as any associated treatment permits, or licences required. ▪ 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 OCEMP (DOBA, 2025) and the project specific CEMP which will be prepared by the main contractor in advance of construction works commencing. ▪ Where possible, stockpiling of soil and stone on-site 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 (watercourse and drain). As documented in the OCEMP (DOBA, 2025), stockpiles of loose material will be a minimum of 20m from drains. When a stockpile has been sampled for re-use or waste classification purposes, it shall be considered to be complete, and no more soil shall be added to that stockpile prior to removal. An excavation/stockpile register shall be maintained on-site. ▪ Prior to site works commencing, the OCEMP (DOBA, 2025) will be updated to reflect specific measures to minimise waste generation and resource consumption, including providing details of proposed waste contractors and destinations for each waste stream. ▪ The reuse of suitable excavated soil and bedrock for the proposed development (i.e., landscaping or engineering) will be undertaken in accordance with the engineered design and landscape plan for the proposed development. As documented in the OCEMP (DOBA, 2025), rock reusability testing carried out by the applicant show the existing rock is suitable for use as 6F2 capping material across the site subject to appropriate material testing and grading onsite. Soil including topsoil and subsoil will be segregated and stored appropriately to prevent deterioration of soil structure and quality to ensure the material will be suitable for re-use onsite. ▪ Surplus material, not suitable for re-use on-site, will be segregated, and stockpiled appropriately for removal off-site. For any excavated material identified for removal offsite, while assessment and approval of acceptance at a destination re-use, recovery site or

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	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. - Stockpiles will be a minimum of 20m from drains. ▪ Any waste generated from construction activities, including concrete, asphalt and soil stockpiles, will be managed in accordance with the procedures outlined in the OCEMP (DOBA, 2025) and the project specific CEMP (to be developed by the main contractor in advance of construction works commencing) and will be stored onsite in such a manner as to: - Prevent environmental pollution (bunded 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. - Prevent hazards to site workers and the general public during Construction stage (largely noise, vibration and dust). ▪ All surplus materials and any waste will be removed off-site in accordance with the requirements outlined in the OCEMP (DOBA, 2025) and the project specific CEMP (to be developed by the main contractor in advance of construction works commencing) 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 offsite. ▪ Where appropriate, excavated soil and material intended for recovery or disposal offsite will require appropriate waste classification in order to select an appropriate receiving facility. Assessment of the excavated material will be carried out with due regard to the following guidance and legislation: - Environmental Protection Agency document entitled Waste Classification; List of waste and determining if waste is Hazardous or Non-Hazardous. - EU Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Directive 1999/31/EC (2002). - Environmental Protection Agency documented entitled Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities. - Environment Agency, 2018. Technical Guidance WM3: Guidance on the classification and assessment of waste.

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	- Any other guidance or legislation that might be applicable or relevant at the time of disposal. ▪ The re-use of soil and rock 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. ▪ As documented in the OCEMP (DOBA, 2025), Public roads outside the Site will be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary. Trucks entering / leaving the site will pass through a wheel washing system. The wheels of all Lorries will be cleaned prior to leaving the Site so that traffic leaving the Site compound will not generate dust or cause the build-up of aggregates and fine material in the public domain. This will be carried out in a dedicated wash down zone with dedicated site personnel. The correct use and management of these will be undertaken by the appointed contractor to ensure that there is no harm or impact to the receiving water environment. ▪ The use of cementitious grout during the construction of footpaths and other site infrastructure will be required. Any potential impact to water quality will be avoided through the use of appropriate design and methods that will be implemented by the Contractor and in accordance with the OCEMP (DOBA, 2025), the project specific CEMP (which will be developed by the main contractor in advance of construction works commencing) and relevant industry standards. ▪ Where possible precast concrete will be used for concrete works. However, where cast-in-place concrete is required (i.e., foundations, footpaths), all work will be carried out to avoid any contamination of the receiving water environment. All work must be carried out in dry conditions and be effectively isolated from any groundwater. ▪ The following mitigation measures are outlined in the OCEMP (DOBA, 2025). - Any in-situ concrete work to be lined and areas bunded (where possible) to stop any accidental spillage. - No direct discharges made to waters where there is potential for cement or residues in discharge. - Designated impermeable cement washout areas must be provided and which are to drain into the designated settlement tank on-site pending removal offsite. - Concrete batching will take place off site or in a designed area with an impermeable surface. - For concrete mixers, control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.

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	- Concrete wash down and wash out of concrete trucks will take place off site or in an appropriate facility. - All 'wash out' of concrete trucks will take place off site and any excess concrete is not to be disposed of on site. ▪ In addition to the measures set out in the OCEMP (DOBA, 2025), weathering forecasting should be utilised to plan dry days for concrete pours. Prior to pours, the designated area of the site shall be free of standing water and plastic covers will be ready in the case of sudden rainfall event. ▪ Fuelling and lubrication of equipment will be carried out in a designated area of the site away from any watercourses and drains (where not possible to carry out such activities offsite). ▪ As documented in the OCEMP (DOBA, 2025), any diesel, fuel or hydraulic oils stored on-site will be stored in designated areas, these areas will be bunded and located away from surface water drainage and features. The use of cleaning chemicals will be kept to a minimum. There will be clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage. Adequate security will be provided by the appointed contractor to potential pollutants against vandalism. ▪ 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. ▪ All fuel storage areas, which will be located outside of the predicted flood zone (IE Consulting, 2025), will be bunded in the site compound and will be clearly marked. As documented in the OCEMP (DOBA, 2025), the bund will be at least 50m away from drains, excavations, and other locations where it may cause contamination. Furthermore, no storage of hydrocarbons or any polluting chemicals will occur within 10m of the SAC/ SPA. Fuel will then be transported from the compound to the plant and equipment in mobile units based on need, a dedicated fuel fill point will be set up on site with all plant brought to this point for filling. ▪ Spill kits will be kept in these areas. Site crew will be trained in appropriate refuelling techniques. Equipment will not be left unattended during refuelling. Refuelling of construction machinery shall be undertaken in designated areas away from surface water drainage in order to minimise potential contamination of the water environment. Spill kits shall be kept in these areas in the event of spillages. ▪ As documented in the OCEMP (DOBA, 2025), the contractor will maintain an emergency response action plan which will cover any foreseeable risks. ▪ Emergency procedures will be developed by the main 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 through induction, toolbox talks, and method statements to ensure that all staff members are well-prepared and knowledgeable about the necessary steps to take in the event of an emergency (e.g., 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.

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	- 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 proposed development 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 to be implemented in the event of accidental fuel spillages. - 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. ▪ 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 offsite to a licensed facility. All waste from welfare facilities will be managed in accordance with the relevant statutory obligations by an appropriately authorised contractor. ▪ Any connection to the public foul drainage network during the construction phase of the Proposed Development will be undertaken in accordance with the necessary temporary discharge licences issued by UE
Water & Hydrology	▪ An Outline Construction Environmental Management Plan (OCEMP) has been prepared by DOBA (DOBA, 2025; submitted with the planning application under separate cover). The OCEMP address construction waste, construction environmental management (including a surface water management plan) and construction traffic management. Following appointment, the contractor will be required to further develop the OCEMP and prepare and project specific CEMP, for approval by Louth County Council prior to any works commencing. The project specific CEMP will provide detailed construction phasing, waste management and methods to manage and prevent any potential emissions to ground and surface water with regard to the relevant industry standards (e.g., Guidance for Consultants and Contractors, CIRIA-C532', CIRIA, 2001). The project specific CEMP will take cognisance of measures outlined in the EIAR and OCEMP submitted with the planning application. ▪ The project specific CEMP will be implemented for the duration of the construction phase, covering mitigation works that will be adopted as part of the construction works for the Proposed Development. The measures 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. - Management of accidental release of contaminants at the 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 site including but not limited to:

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	- CIRIA document entitled "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (2001). - CIRIA document entitled "Environmental Good Practice on Site (C741)" (2015). - Enterprise Ireland Oil Storage Guidelines (BPGCS005). - Environmental Protection Agency (EPA) document entitled "IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities" (2013). - CIRIA document entitled "SuDS Manual (C697)" (2007). - UK Environment Agency document entitled "UK Pollution Prevention Guidelines (PPG)" (2004). - CIRIA document entitled "Control of Water Pollution from Linear Construction Projects: Technical Guidance (C648)" (2006). - Inland Fisheries Ireland document entitled "Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters" (2016). ▪ There will be no direct discharge to groundwater or surface water during the construction phase of the Proposed Development. ▪ All run-off from the site or any areas of exposed soil will be managed as required with temporary pumping and following appropriate treatment as required. Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to onsite settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge at a controlled rate. Excavation works will be in accordance with the requirements of the Office of Public Works (OPW) and Inland Fisheries Ireland (IFI). ▪ Where dewatering of shallow groundwater is required or where surface water runoff must be pumped from the excavations, water will be managed in accordance with best practice standards (i.e., CIRIA C750), the OCEMP (DOBA, 2025), the project specific CEMP and regulatory consents to minimise the potential impact on the local groundwater flow regime within the soil and bedrock. ▪ All water leaving the site during construction will be desilted using standard techniques including silt busters and silt socks. Local silt traps will be established onsite, these will be reviewed and moved regularly as required. Where required, the water will also be directed through a hydrocarbon interceptor prior to discharge from the site. ▪ As documented in the OCEMP (DOBA, 2025), a buffer zone of 5m from the adjacent water course will be established by erecting a temporary fence along the length of the site in that area. This fence will comprise a silt curtain to prevent surface water runoff to the water course and will be retained in place for the duration of the construction period until soft landscaping of the buffer zone is implemented. ▪ Unauthorised discharge of water (groundwater / surface water runoff) to ground, drains or watercourses will not be permitted. Existing surface water drainage located along public roads (i.e., Bóthar Maol, the R172 Blackrock Road and Finnabair Crescent) will be protected for the duration of the 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 Louth County Council under Section 4 of the Local Government (Water Pollution) Act 1977, as amended in 1990 for discharges to surface water. ▪ As documented in the OCEMP (DOBA, 2025), a buffer zone of 20m will be maintained between onsite drains including the unnamed streams located along the eastern and northern boundaries of the site and stockpiles of loose materials. Stockpiles and runoff areas will have suitable silt barriers to prevent runoff of fines into the drainage systems.

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	▪ There may be a temporary increase in the exposure of the underlying shallow groundwater during excavation works. Surface water runoff will be prevented from entering open excavations with sandbags or other approved methods proposed by the appointed contractor. Furthermore, the appointed contractor will ensure that machinery does not enter the groundwater if encountered during construction. ▪ All works carried out within the wetland area in the eastern portion of the site (i.e., at the entrance to the Proposed Development) will be undertaken to prevent any erosion of sediment of other potential contamination of surface water runoff. Furthermore, the unnamed stream located at the eastern boundary of the site will be protected or temporary diversion put in place (i.e., straw bales, silt fences and/or sandbags) for the duration of the construction phase with cognisance to 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). ▪ To ensure protection of the downstream lands and watercourse on the eastern boundary there will be an installation of a silt curtain along the entire length of the boundary of the site where works are proposed; specifically, between the site works and the edge of the development site. The purpose of this membrane will be to prevent any sediment discharge from draining into the watercourse. These specific measures to include the silt curtain will be installed on-site at the preliminary Phase 1 stage of construction and remain in-situ and be adhered to until the development is complete. The project specific CEMP (which will be prepared by the main contractor in advance of construction works commencing) will identify how this silt curtain will be installed and maintained throughout the construction phase. ▪ A regular review of weather forecasts of heavy rainfall will be conducted, and a contingency plan will be prepared for before and after such events to minimise any potential nuisances. As the risk of the break-out of silt laden run-off is higher during these weather conditions, no work will be carried out during such periods where possible. ▪ All new infrastructure will be installed and constructed to the relevant codes of practice and guidelines. ▪ All surface water infrastructure will be pressure tested by an approved method during the construction phase and prior to connection to the public networks, all in accordance with Local Authority Requirements. ▪ Connections to the public network are be carried out to the approval and / or under the supervision of the Local Authority prior to commissioning. ▪ All new sewers will be inspected by CCTV survey post construction; to identify any possible physical defects for rectification prior to operational phase. ▪ In respect of surface water networks, during the construction period the system and traps will be inspected a minimum 4 times a year as the accumulation of silt is prevalent during this period. The number of inspections should be pro-active and if silting is found to be excessive in any of the apparatus the number of inspections will be raised accordingly and continually monitored and reviewed. ▪ Pipe ends associated with the surface water network will be blocked/capped off with proprietary fittings until connected to the completed storm-water system. ▪ The volume of fuel stored onsite will be kept to a minimum and there will be no bulk Fuelling and lubrication of equipment will be carried out in a designated area of the site away from any watercourses and drains (where not possible to carry out such activities offsite).

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	▪ As documented in the OCEMP (DOBA, 2025), any diesel, fuel or hydraulic oils stored on-site will be stored in designated areas, these areas will be bunded and located away from surface water drainage and features. It is noted that the use of cleaning chemicals will be kept to a minimum. There will be clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage. Adequate security will be provided by the appointed contractor to potential pollutants against vandalism. ▪ 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. ▪ All fuel storage areas, which will be located outside of the predicted flood zone (IE Consulting, 2025), will be bunded in the site compound and will be clearly marked. As documented in the OCEMP (DOBA, 2025), the bund will be at least 50m away from drains, excavations, and other locations where it may cause contamination. Furthermore, no storage of hydrocarbons or any polluting chemicals will occur within 10m of the SAC/ SPA. Fuel will then be transported from the compound to the plant and equipment in mobile units based on need, a dedicated fuel fill point will be set up on site with all plant brought to this point for filling. ▪ Spill kits will be kept in these areas. Site crew will be trained in appropriate refuelling techniques. Equipment will not be left unattended during refuelling. Refuelling of construction machinery shall be undertaken in designated areas away from surface water drainage in order to minimise potential contamination of the water environment. Spill kits shall be kept in these areas in the event of spillages. ▪ The use of cementitious grout during the construction of footpaths and other site infrastructure will be required. Any potential impact to water quality will be avoided through the use of appropriate design and methods that will be implemented by the Contractor and in accordance with the OCEMP (DOBA, 2025), the project specific CEMP (which will be developed by the main contractor in advance of construction works commencing) and relevant industry standards. ▪ Precast concrete will be used for concrete works. However, where cast-in-place concrete is required (i.e., foundations, footpaths), all work will be carried out to avoid any contamination of the receiving water environment. All work must be carried out in dry conditions and be effectively isolated from any groundwater. ▪ The following mitigation measures are outlined in the OCEMP (DOBA, 2025). - Any in-situ concrete work will be lined and areas bunded (where possible) to stop any accidental spillage. - No direct discharges made to waters where there is potential for cement or residues in discharge. - Designated impermeable cement washout areas must be provided which will drain into the designated settlement tank on-site pending removal offsite. - Concrete batching will take place off site or in a designed area with an impermeable surface. - For concrete mixers, control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum. - Concrete wash down and wash out of concrete trucks will take place off site or in an appropriate facility.

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	- All 'wash out' of concrete trucks will take place off site and any excess concrete will not be disposed of on site. ▪ In addition to the measures set out in the OCEMP (DOBA, 2025), weathering forecasting will be utilised to plan dry days for concrete pours. Prior to pours, the designated area of the site shall be free of standing water and plastic covers will be ready in the case of sudden rainfall event. ▪ Emergency procedures will be developed by the main 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 through induction, toolbox talks, and method statements to ensure that all staff members are well-prepared and knowledgeable about the necessary steps to take in the event of an emergency (e.g., 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. - 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. ▪ Stockpiled materials pending removal offsite or reuse onsite will be located in designated areas only and there will be no storage of materials within 20m of the onsite drains or the unnamed streams located along the eastern and northern boundaries of the site. Stockpiles will be located, arranged, and managed so that the risk to the receiving water from silt and contamination is minimised. ▪ Stockpiles and runoff areas following clearance will have suitable silt barriers to prevent runoff of fines into the drainage system. Stockpiles of earthwork and site clearance materials will be located on impermeable surface and covered with appropriate measures. In addition, silt traps will be placed in road gullies to capture any excess silt from the working areas. ▪ Welfare facilities have the potential, if not managed appropriately, to release organic and other contaminants to ground or surface water courses. All waste from welfare facilities will be managed in accordance with the relevant statutory obligations through either a temporary connection to mains foul sewer (subject to receipt of the relevant consent from UE) or by tankering of waste offsite by an appropriately authorised contractor. ▪ As documented in the OCEMP (DOBA, 2025), Public roads outside the Site will be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as

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	necessary. Trucks entering / leaving the site will pass through a wheel washing system. The wheels of all Lorries will be cleaned prior to leaving the Site so that traffic leaving the Site compound will not generate dust or cause the build-up of aggregates and fine material in the public domain. This will be carried out in a dedicated wash down zone with dedicated site personnel. The correct use and management of these will be undertaken by the appointed contractor to ensure that there is no harm or impact to the receiving water environment. ▪ Discharge from any vehicle wheel wash area will be directed to the onsite settlement tank for discharge to the UE foul network (subject to receipt of the relevant consent from UE) or by tankering of waste offsite by an appropriately authorised contractor. Any debris or sediment within the wheel-wash will be emptied periodically for disposal offsite at a licenced facility.
Biodiversity	**Mitigation 1: Robust Construction Environmental Management Plan (CEMP)** ▪ A CEMP based on the mitigation commitments presented in the various EIAR Chapters will be prepared for the Construction Phase. A planning stage CMP has been prepared for submission with the planning application (DOBA, 2025b), which entails an Environmental Management Section. This outline document provides a framework for the contractor to develop further as the project moves into the Construction Phase. ▪ The Construction Phase CEMP will collate and set out the environmental control measures required to minimise, and control adverse environmental impacts associated with the Proposed Development. It is intended that the CEMP will be a live document, which will capture all Construction Phase environmental mitigation measures included within the EIAR, NIS and any other measures which become apparent through the EIA consultation process and/or are prescribed through planning conditions etc. The CEMP will include enabling and decommissioning works. ▪ All construction and operations are to be carefully planned and implemented with a series of environmental management and control procedures. The CEMP will detail the general pollution prevention principles and measures which are to be implemented, water and sediment management measures to prevent pollution during the construction phase and measures to ensure the potential for pollution fuel, oil, chemicals and other construction materials is minimised. ▪ **The Contractor shall engage a suitably experienced ecologist, the Project Ecologist,** who will be a full member of a relevant professional institute such as CIEEM, have relevant experience in the management of ecological constraints during construction. The Project Ecologist shall be appointed sufficiently in advance of construction to arrange for any mitigation requirements to be incorporated into the CEMP and any site-specific method statements. ▪ In advance of commencement of the Construction Phase, the disused existing onsite well, securely located within a pump house in the north-western portion of the Site will be fully decommissioned by an experienced borehole specialist in accordance with relevant guidelines, *'Good practice for decommissioning redundant boreholes and wells'* (UK Environment Agency, 2012). This will ensure that redundant well is made both safe and structurally stable and will be suitably backfilled or sealed to prevent groundwater pollution and flow of water between different aquifer units. ▪ The construction management of the Site will take account of the recommendations of the Construction Industry Research and Information Association (CIRIA) guides '*Control of Water Pollution from Construction Sites'* and *'Groundwater control - design and practice'* to minimise as far as possible the risk of pollution.

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	▪ The Contractor shall take all necessary precautions **to prevent pollution or siltation of surface or groundwaters** from construction activities. The following management, control and mitigation measures will therefore be implemented: o Any groundwater temporarily dewatered during the construction of the attenuation basin, wastewater pumping station and any deep building foundations in localised areas in the eastern portion of the site will be treated via the installation of a temporary *in-situ* water treatment system; o This system will be designed and sized to ensure that all pumped groundwater water is treated prior to discharge to a selected onsite location (via a temporary soakaway). o The Contractor will be required to provide a site-specific dewatering plan, clearly setting out proposed excavation methodology, estimated dewatering rates, details of the proposed treatment system, and discharge location. o Surface water attenuation measures are to be designed which will not be overwhelmed by one-off adverse precipitation events. o Where practical, cut-off V drains will be utilised to divert water entering site and reduce the amount of water to be managed on-site. Attention will be given to the maintenance and protection of all drains and temporary channels to minimise scour and the mobilisation of suspended solids (e.g. lining with hessian or clean stone, check dams, silt fencing etc.). o Mud will be controlled at entry and exits to the site using wheel washes and/or road sweepers, and tools and plant will be washed out and cleaned in designated areas. Wheel washings will be contained and treated prior to discharge. o Runoff will be directed to and intercepted by temporary settlement lagoons. The size of the settlement lagoon will be determined from predicted flow rates and retention times based on sediment particle size and density. o Neither groundwater nor surface water runoff from the working areas will be permitted to discharge directly to the environment. Runoff generated within the site during construction will be filtered and treated to remove hydrocarbons and sediment. Total Suspended Solids (TSS), pH/EC and colour will be monitored daily and outlets from sedimentation ponds will incorporate a turbidity monitor with alarm at a high level. o Subject to consent, water that is unpolluted, aside from its silt content, may be pumped out over adjacent vegetated ground, where appropriate, with consideration given to groundwater level and saturation, wildlife importance and proximity to drainage channels. o In the event of surface water failing to meet the required standards water will be recirculated to the inlet of the sediment pond to provide further time for settlement. A penstock will be provided on the outlet from the sediment pond to control discharge from the site. o The performance of the surface water drainage network will be maintained and monitored throughout the construction of the proposed development, noting that the proposed storm system will include permanent hydrocarbon separators. o Where the Contractor utilises pumping to drain works areas, a back-up pump and generator must be provided on site for use in the event of the primary pump failing. o Procedures are to be put in place to ensure the identification, remediation and correct reporting of any silt or other pollution incidents that may occur. - During localised construction works around the northern and eastern drainage channels (to facilitate the installation of the proposed 2no.

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	outfalls/headwalls), any minor volumes of stripped soils will be stockpiled a minimum distance of 10m from each channel and will be appropriately covered. A temporary stormwater management system will be implemented by the Contractor. - Areas will be designated where stockpiles will be established in order to facilitate the efficient transfers of material within the site. Stockpiles will be stabilised as soon as possible (e.g. sealed, closed over, seeded or covered using geotextile mats), and bunded by earth or silt fences at the toe to intercept silt-laden runoff during rainfall events. - Appropriate working practices to avoid the repetitive handling of excavated substrates, minimise vehicle movements, limit the size, number and frequency of stockpiles, reduce the compaction and erosion of soils etc., and control the generation of dust. The implementation of a construction traffic management plan and controls on the locations of plant and materials will minimise the compaction and erosion of soil. Excavation is to be restricted during high winds and heavy rainfall to minimise dust generation and contaminated surface runoff. - Excavated materials will be inspected for signs of possible contamination, such as staining or strong odours. Should any be noticed, substrates are to be segregated and samples analysed for contaminants to determine an appropriate means of disposal to licensed/permitted facilities appropriate for the waste classification. - In order **to prevent any potential surface water/groundwater impacts via. release of hydrocarbon/chemical contaminants** the following standard measures will be implemented: o The Contractor will ensure all site personnel are trained in the handling of materials, the sensitive nature of the receiving environment, the drainage system and the consequences of accidental spillages. o Fuels, lubricants and hydraulic fluids for equipment used on the construction site, as well as any solvents, oils, and paints, will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to best codes of practice; o Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the proposed development for disposal or recycling; o Any spillage of fuels, lubricants or hydraulic oils will be immediately contained and the contaminated soil removed from the proposed development and properly disposed of; o All site vehicles used will be refuelled in bunded and adequately sealed and covered areas in the construction compound area. o Strict supervision of contractors will be adhered to in order to ensure that all plant and equipment utilised on-site is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the site. This will minimise the risk of groundwater becoming contaminated through site activity. o All oil stored on site for construction vehicles will be kept in a locked and bunded area; o Generators, pumps and similar plant will be placed on drip-trays to prevent contamination; o All site vehicles used will be refuelled in bunded areas;

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	○ All temporary construction fuel tanks will also be located in a suitably bunded area and all tanks will be double skinned. Relevant Material Safety Data Sheets along with oil absorbent materials will be kept on site in close proximity to any fuel storage tanks or bowsers during proposed site development works; and, ○ All fuel/oil deliveries to on-site oil storage tanks will be supervised, and records will be kept of delivery dates and volumes. ○ Fixed plant shall be self-bunded; mobile plant shall be in good working order, kept clean, fitted with drip trays where appropriate and subject to regular inspection. Drip trays will be covered, emptied regularly as required and disposed of off-site having regard for local waste management legislation. ○ Spill kits and oil absorbent material shall be carried with mobile plant and located at vulnerable locations around the site to reduce the risk of spillages entering the sub-surface or groundwater environment; booms shall be held on-site for works near drains or dewatering points. ○ Procedures are to be put in place to ensure the identification, remediation and correct reporting of any fuel, oil, chemical or other pollution incidents that may occur. In order **to prevent any potential surface water/groundwater impacts via. release of cementitious materials** the following measures will be implemented: ○ No mixing of concrete will be carried out on site. The measures detailed below will be employed where poured concrete is being used in the construction process; ○ The production, transport and placement of all cementitious materials will be strictly planned and supervised. Site batching/production of concrete will not be carried out on site and therefore these aspects will not pose a risk to the waterbodies present, namely any temporarily exposed groundwater, or local drainage channels, wetlands or Dundalk Bay; ○ Shutters will be designed to prevent failure. Grout loss will be prevented from shuttered pours by ensuring that all joints between panels achieve a close fit or that they are sealed; ○ Any spillages will be cleaned up and disposed of correctly; ○ Where concrete is to be placed by means of a skip, the opening gate of the delivery chute will be securely fastened to prevent accidental opening; ○ Where possible, concrete skips, pumps and machine buckets will be prevented from slewing over water when placing concrete; and, ○ Surplus concrete will be returned to batch plant after completion of a pour. ○ The Contractor will dispose of all alkaline wastewaters and contaminated stormwater offsite having regard for local waste management legislation. ▪ The Contractor 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. ▪ 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). ▪ All material to be disposed of off-site to a facility licensed having regard for local waste management legislation. Where material is to be stockpiled on site prior to disposal, the Contractor will control all run-off to prevent contamination of surrounding watercourses (via silt-fencing etc.).

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	▪ The CEMP will include an Emergency Response Plan (ERP) based on the Contractor's Risk Assessment, to be reviewed and approved by the Project Ecologist. The ERP will include (but not limited to): o Training of relevant staff, including cover staff, in the implementation of the ERP and the use of spill kits; o Procedures to be undertaken in the event of the release of any sediment into a watercourse, or any spillage of chemicals, fuel, oil or other hazardous materials or wastes; o Procedures to be undertaken in the event of any non-compliance incidents with any permit or licence, or other such risks that could lead to a pollution incident, including flood risks; o The number, specification and location of all spill kits which shall be carried/kept on the site; o Information on clean-up and reporting procedures; etc. ▪ While it is expected that the site drainage system will be installed and commissioned early in the site construction programme and will therefore be operational for much of the Construction Phase, there will be a period of the construction phase during which the site drainage system will not be operational. The CEMP is required to cover this period and to deal with other issues during the Construction Phase. ▪ The lighting of the Construction Site during the hours of darkness will be limited to the minimum required for security purposes. Lights will be carefully directed only where they are required e.g., gates, plant, equipment etc. Light-spill will be controlled and lights will not be allowed to illuminate the various field boundary hedgerows and treelines at the Site. The contractor will ensure that a dark corridor is provided for commuting/ foraging bats and other wildlife to move around the margins of the Site and the retained north-south central hedgerow during the night, for the duration of the Construction Phase. **Mitigation 2: Pre-Construction Ecology Walkover** ▪ A suitably qualified Ecologist will be instructed to carry out an ecological walkover of the Site **a minimum of one month prior to the commencement of works** (including enabling works). These pre-commencement surveys will confirm whether any changes in the status of flora and fauna have occurred at or near the Site since the previous surveys were conducted and will advise further mitigation measures etc., as required. The results of these pre-commencement surveys will be provided to Louth CoCo prior to commencement of works on Site. **Mitigation 3: Waterbird Sensitive Construction Program** ▪ The CEMP will include a section setting out the construction programme and will include all the environmental control measures required to avoid disturbance to waterbird species, as set out below. The CEMP will also set out general measures to manage noise and vibration from construction activities that may be employed at the Site. ▪ All rock breaking, blasting and other high-intensity construction activities as may be required within the site are to be programmed to take place outside the wintering season for coastal waterbird species (i.e. to **take place between May and September**) to ensure that disturbance to wintering species is avoided. ▪ All discrete elements of Site construction close to the shore of Dundalk Bay (establishment of the main site access, construction of the bus stop and installation of proposed outfall and site drainage and discharge infrastructure in the north-east) are to be programmed to take place outside the wintering season for coastal waterbird species

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	(i.e. to **take place between May and September**) to ensure that disturbance to wintering species is avoided. ▪ It is noted that the above timing of works must also take into account the breeding bird season, and the breeding season for Common Frog, particularly during the works proposed as part of installing the main entrance to the Site. The works within this marshy, scrubby area of the Site will need to be conducted in a manner that minimise impacts to both breeding and wintering birds, as well as Common Frogs. For this Site, given the various ecological constraints, the preferred time for vegetation removal, site clearance and the works within the marshy area at the proposed main entrance, is **within the months of September and October** as detailed in Section 11.9.3.4. **Mitigation 4: Timing of Vegetation Clearance** ▪ To ensure compliance with the Wildlife Act 2000 as amended, the removal of areas of vegetation will not take place within the nesting bird season (March 1st to August 31st inclusive) to ensure that no significant impacts (i.e., nest/egg destruction, harm to juvenile birds) occur as a result of the Proposed Development. Where any removal of vegetation within this period is deemed unavoidable, a qualified ecologist will be instructed to survey the vegetation prior to any removal taking place. Should nesting birds be found, then the area of habitat in question will be noted and suitably protected until the ecologist confirms the young have fledged. ▪ Table 11-18 (refer to Chapter 11) provides guidance for when vegetation clearance is permissible. Information sources include The Herpetological Society of Ireland, British Hedgehog Preservation Society's *Hedgehogs and Development* and *The Wildlife (Amendment) Act, 2000*. ▪ The preferred period for vegetation clearance is **within the months of September and October**. Vegetation will be removed in sections working in a consistent direction to prevent entrapment of protected fauna potentially present (e.g., Hedgehog). Where this seasonal restriction cannot be observed, a check for active roosts and nests, as well as signs of amphibians and Lizards, will be carried out immediately prior to any Site clearance by an appropriately qualified ecologist and repeated as required to ensure compliance with legislative requirements. **Mitigation 5: Invasive Species and Biosecurity Measures** ▪ No species of plant listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 were recorded at the Site during site surveys. As such, no significant risk of impacts relating to the spread of invasive plant species exists at the Site. Nevertheless, efforts should be made to remove such plants and minimise any risk of spread offsite. The potential exists for site operatives and machinery to result in the inadvertent spread of non-native plant species on site, should clothing, plant and machinery be contaminated with seed or fragments of such species prior to entry on site. ▪ Transport Infrastructure Ireland (2020) guidance '*The Management of Invasive Alien Plant Species on National Roads – Technical Guidance'* will be consulted with regards the treatment, removal and disposal of invasive flora at the Site. *Biosecurity Measures* The following measures will be adhered to, to avoid the introduction or dissemination of invasive species to and from the Site of the Proposed Development site. ▪ For the Construction Phase the contractor will prepare a project specific IAPS standard operating procedure document, in advance of work commencement. The document

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	should be prepared by an IAPS specialist and should cover the biosecurity measures to be taken, including the maintenance of records, to screen for the introduction of IAPS onsite, and to enable their tracing if such an introduction occurs; and to ensure no transmission of IAPS offsite. These measures to include: ○ Validation that all machinery / vehicles are free of IAPS, prior to their first introduction to site. ○ Certification from the suppliers that all imported soils and other fill/landscaping materials are free of IAPS ○ A regular schedule of site inspections across the IAPS growing seasons, for the duration of the construction works programme. ○ Validation that all machinery / vehicles are free of IAPS, prior to leaving the Site. ○ Appropriate and effective site biosecurity hygiene to ensure that no IAPS are transmitted off-site for the duration of the Proposed Works. **Mitigation 6: Protection of Small Mammals** ▪ As best-practise all construction-related rubbish on site e.g., plastic sheeting, netting etc. will be kept in a designated area and kept off ground level so as to prevent small mammals such as Hedgehogs from entrapment and death. ▪ Trenches/pits must be either covered at the end of each working day or include a means of escape for any animal falling in e.g., a plank or objects placed in the corner of an excavation. (Species such as badgers will continue to use established paths across a site even when construction work has started). ▪ Any temporarily exposed open pipe system will be capped in such a way as to prevent animals gaining access as may happen when contractors are off site. **Mitigation 7: Tree Protection** ▪ Protective tree fencing in compliance with BS 5837:2012 *'Trees in relation to design, demolition and construction – Recommendations'* will be erected prior to any Construction works being undertaken to prevent damage to the canopy and root protection areas of existing trees at the Site. The fencing should be signed off by a qualified arborist prior to Construction to ensure it has been properly erected. No ground clearance, earthworks, stock-piling or machinery movement will be undertaken within these areas. ▪ The project Arborist will be instructed prior to commencement on Site; to ensure that appropriate tree protection measures are in place. These measures will entail robust fencing around the root protection zones of all trees and hedgerows being retained on Site. ▪ An adequate level of signage will also be provided to highlight 'no work zones' and ensure that Site creep and damage to retained habitats does not occur. The vegetated margins of the Site and the main central north-south hedgerow are important habitats for birds, small mammals and bats at the Site. These must be sufficiently protected for the duration of the Construction Phase to ensure they remain effective habitat corridors. The project Arborist, the project Ecologist and the Site Manager will work together to ensure these habitats are protected for the duration of the project **Mitigation 8: Noise Control** ▪ Short-term increases in disturbance levels as a direct result of human activity and through increased generation of noise during the Construction Phase can have a range of impacts depending upon the sensitivity of the ecological receptor, the nature and duration of the disturbance and its timing.

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	▪ Noise generated during the Construction Phase of the Proposed Development could cause temporary disturbance to a number of faunal species in the vicinity of the Site of the Proposed Development. To minimise this disturbance, the following measures will be implemented: o Selection of plant with low inherent potential for generating noise. o Siting of plant as far away from sensitive receptors as permitted by site constraints. o Avoidance of unnecessary revving of engines and switch off plant items when not required. o Keep plant machinery and vehicles adequately maintained and serviced. o Proper balancing of plant items with rotating parts. o Keep internal routes well maintained and avoid steep gradients. o Minimise drop heights for materials or ensure a resilient material underlies. o Where noise originates from resonating body panels and cover plates, additional stiffening ribs or materials should be safely applied where appropriate. o Limiting the hours during which site activities likely to create high levels of noise are permitted. o Appointing a site representative responsible for matters relating to noise. o Monitoring typical levels of noise during critical periods and at sensitive locations. **Mitigation 9: Hedgehog Highways** ▪ By creating a number of separate private dwellings and gardens at a Site, the land becomes fragmented and largely inaccessible to species such as Hedgehog, which like to roam each night in search of food (garden pests e.g., slugs). This can easily be fixed by ensuring that the boundaries and barriers within and surrounding the Site i.e., garden fencing, railings and gates, are permeable for Hedgehogs. This can be achieved by: o the use of fence panels with 13 x 13 cm holes at ground level (Hedgehog holes), o leaving a sufficient gap beneath gates and leaving brick spaces at the base of brick walls. ▪ A variety of fence suppliers stock specific hedgehog-friendly fencing options, which can be easily incorporated at little or no additional cost. ▪ Hedgehog highways will be incorporated into the backgarden fences of the various dwellings at the Site of the Proposed Development, as well as the fencing along the vegetated outer boundaries of the Site. This will ensure habitat fragmentation for hedgehogs at the Site is minimised and will ensure habitat connectivity between the Site and the golf course and lands surrounding the Site is maintained. ▪ Including details of hedgehog-friendly features in the new homeowner's welcome pack will raise awareness and prevent homeowners from reversing these features, for instance blocking fence holes. **Mitigation 10: Protection of Common Frog** ▪ Based on the recommendations made within the Amphibian Survey Report (Gandola 2025) in Appendix 11.3, to mitigate the against colonisation of the construction zone by amphibians, excavation works will begin after the dispersal period of the current year's cohort of young amphibians (i.e, **excavation works will be completed between the period of September and early Februar**y). ▪ A suitably qualified and licenced Ecological Clerk of Works will be retained for the duration of the construction phase of the development. ▪ The contractor will ensure that the wetland habitats and any temporary waterlogged features are not inadvertently allowed to offer suitable breeding habitat for frogs for

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	prolonged periods of times. This includes leaving heavy machinery tracks and typical construction endeavours (e.g., percolation test pits, excavations for footings etc.) uncovered. Therefore, all excavation works will be completed as soon is feasible, or at least covered with sheeting to prevent access by wildlife. Where possible, heavy machine depressions will be smoothed out. The specific aim of appropriate mitigation at this Site will be to ensure that the construction works do not make the Site more favourable to any amphibian populations that may exist either on-site or on the adjoining golf course. ▪ If feasible, and deemed advisable by the Ecological Clerk of Works (ECoW) based on site conditions at the time of works, an appropriate exclusion barrier to prevent entry and divert any amphibians away from the works area within the marshy area may also offer increased certainty that the site retains an "amphibian free" status. Any installed fencing will be accompanied by an accompanying precautionary survey by the ECoW to ensure that amphibians are not present prior to the initiation of clearance works. This ensures animals will not be locked into the works area. ▪ In the event that amphibians (of any life stage) are detected, they will be captured and translocated outside of the Site's redline boundary by the ECoW. Immature or adult frogs or newts will be moved beyond the exclusion fence whereas tadpoles and spawn will be translocated to the nearest suitable waterbody within 1-2km distance. The area of wetland marsh adjacent and to the north of the Site's eastern access road will be sufficient. ▪ If any habitats, waterbody or flooded depressions need to be drained or pumped to facilitate works, it will be done under the supervision of a suitably experienced ecologist/ ECoW to ensure that no amphibians or their larvae are present before the habitat is infilled or otherwise destroyed. Mechanical pumps will be fitted with a fine mesh screen in order to negate the chances of frogs or their larvae being sucked into the impeller mechanism. All capture and translocation works should the be required will be undertaken immediately in advance of site clearance works and under specific licence from National Parks and Wildlife Service.
Noise & Vibration	<u>Noise</u> ▪ Best practice control measures for noise from construction sites are found within 5228 Code of practice for noise and vibration control on construction and open sites (2009 +A1 2014) Part 1"*Construction noise impacts are expected to vary throughout the project, depending on the distance between construction activities and noise-sensitive receptors. The contractor will implement best-practice noise control measures to minimise any adverse effects on off-site sensitive locations."* ▪ The best practice measures set out in BS 5228 (2009) Part 1 includes guidance on several aspects of construction site mitigation measures, this includes the: - selection of quiet plant and equipment; - noise control at source of the noise; - screening, and; - public liaison. <u>Selection of Plant and Equipment</u> ▪ The noise impact of all plant and equipment should be assessed prior to selection of plant for the project. Where an item of plant is identified as noisy with the potential to cause a negative noise impact it should be reviewed to check if there is an alternative quieter version of the same plant to undertake the same construction task. <u>Noise Control at Source</u>

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	▪ Where replacing a noisy item of plant is not viable or practical, consideration should be given to control that noise at source. This includes modifying the piece of plant or equipment to generate less noise, using dampening to control vibration induced noise or rattling. The following best practice measures will be applied:- - All plant and equipment to be switched off when idling. - The use of white noise reversing alarms. - Restriction on the dropping and loading of materials to less sensitive hours. - The use of local screening for noisy activities or works with hand tools. - Not dropping materials onto hard surfaces and using rubber mats etc for the dropping of materials. - Ensure all plant and equipment is well maintained and cleaned, all lubrication should be in line with manufacturers guidelines. <u>Screening</u> ▪ Screening when used correctly can be an effective method of reducing the construction noise impact on the NSL's. The use of site hoarding and careful selection of areas for noise works, using site offices and the buildings being constructed to screen noise from the works. ▪ Local screening of noisy works with the use of temporary acoustic barriers, examples are provided below: - https://ventac.com/acoustic-products/noisebreak-acoustic-barrier/ - https://echobarrier.com/ <u>Public Engagement</u> ▪ A public liaison officer (site manager) will be put forward by the contractor to liaise with the local residents on matters relating to noise. Residents should be informed of any noise works scheduled where there is the potential to generate high levels of construction noise or if specialist works etc need to be conducted out of the working hours. This person should also be the point of contact for all complaints and be responsible for reviewing the noise monitoring results and exceedances. <u>Site Specific Recommendations</u> ▪ Table below outlines the recommended site-specific noise mitigation measures based on the attenuation required in Table 11-13.

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<table>
<tr><th>Aspect</th><th>Construction and Demolition Mitigation</th></tr>
<tr><td></td><td>
<table>
<tr><th>Construction Stage</th><th>Recommended Noise Mitigation Measure</th></tr>
<tr><td>Site Setup</td><td>Erect a minimum 2.4m high site hoarding that blocks the line of sight between nois receiver.

Example construction for the site hoarding would be as follows:

• A 2.4m high and 9mm plywood (4.5 kg/m2). Barrier must be solid and not at the bottom or between adjacent panels

Local screening using the examples provided in General Recommendations section required around hand tools in addition to hoarding.

An absorptive lining should be considered for screening around hand tools will nee absorptive lining to avoid reflections increasing noise at other receivers.

On this project 5 NSL's have been identified it is recommended that a noise monitor sho on the boundary with the nearest noise sensitive locations closest to the works i.e. NSL' the most appropriate locations.</td></tr>
<tr><td>Substructure</td><td>Site hoarding to block line of sight. Local screening around noisy plant and equipment.

Noise monitoring as above</td></tr>
<tr><td>Superstructure</td><td>Local screening around saws/hammers where possible. Use external new building to from works where possible.

Noise monitoring as above</td></tr>
<tr><td>External finishes</td><td>Local screening around hand tools.

Noise monitoring as above</td></tr>
</table>
<u>Vibration</u>
Taking account of the distances to the works and notwithstanding ground conditions present, it is not anticipated that the vibration criteria outlined above will not be exceeded. However, it is recommended, precautionary vibration monitoring at the boundary with the nearest sensitive receptors is undertaken during construction (for vibration generating works).
</td></tr>
<tr><td>Air Quality</td><td><u>Communications</u>
▪ Develop and implement a stakeholder communications plan that includes community engagement before work commences on site;
▪ Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager/community liaison officer;
▪ Display the head or regional office contact information; and
▪ Develop and implement a Dust Management Plan (DMP), the final dust management plan will form part of the overall construction and environmental management plan which will formally be prepared by the appointed contractor(s) and submitted to Louth County Council post grant of planning permission.
<u>Site Management</u>
▪ Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken;
▪ Make the complaints log available to the local authority when asked;
▪ Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book; and
▪ Hold regular liaison meetings with other high risk construction sites within 250m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are</td></tr>
</table>

Aspect	Construction and Demolition Mitigation
	minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes. Monitoring ▪ Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the Louth Council when asked; and ▪ Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. Preparing and Maintaining the site ▪ Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible; ▪ Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site; ▪ Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period; ▪ Avoid site runoff of water or mud; ▪ Keep site fencing, barriers and scaffolding clean using wet methods; ▪ Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below; and ▪ Cover, seed or fence stockpiles to prevent wind whipping. Operating Vehicle/Machinery and Sustainable Travel ▪ Ensure all vehicles switch off engines when stationary - no idling vehicles; ▪ Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable; and ▪ 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. Operations ▪ Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems; ▪ Ensure an adequate water supply on the site for effective dust/particulate matter suppression/ mitigation, using non-potable water where possible and appropriate; ▪ Use enclosed chutes and conveyors and covered skips; Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate; and Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods. Waste Management ▪ Avoid bonfires and burning of waste materials. Measures Specific to Earthworks ▪ Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable; ▪ Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable; and ▪ Only remove the cover in small areas during work and not all at once.

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	Measures Specific to Construction ▪ Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place. Measures Specific to Trackout ▪ Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use; ▪ Avoid dry sweeping of large areas; ▪ Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport; ▪ Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable; ▪ Record all inspections of haul routes and any subsequent action in a site log book; ▪ Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned; ▪ Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable); ▪ Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits; and ▪ Access gates to be located at least 10 m from receptors, where possible.
Climate	▪ The following measures to reduce the embodied carbon of the construction works are: • Appointing a suitably competent contractor who will undertake waste audits detailing resource recovery best practice and identify materials can be reused/recycled. • Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods. • Ensure all plant and machinery are well maintained and inspected regularly. • Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site. • Sourcing materials locally where possible to reduce transport related CO_2 emissions. ▪ The project developer, Marina Quarter Ltd. (Glenveagh Properties), has committed to achieving Net Zero by 2050 across its whole business. Therefore, the proposed development will be built with carbon reduction and sustainability in mind and will include reductions of embodied emissions during the construction phase. ▪ A commitment to achieve a 55% reduction in Scope 3 (construction methods) emissions intensity (tCO_2e per 100 m^2 of complete floor area) by 2031 (using 2021 as the baseline year) will involve supplier engagement to make informed procurement decisions, engaging with subcontractors to support their transition to less carbon intensive fuels (diesel and gas oil is currently the norm) and investing in innovation of designing and building homes to reduce their associated embodied carbon. ▪ A reduction target of 46.2% by 2031 is also set in the plan for Scope 1 and 2 emissions (company operations). All targets have been validated by the Science Based Targets initiative (SBTi). ▪ the Contractor will be required to mitigate against the effects of extreme rainfall/flooding through site risk assessments and method statements. The Contractor will also be required to mitigate against the effects of extreme wind/storms, temperature extremes through site risk assessments and method statements. All materials used during

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	construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, and this will require consideration during construction. During construction, the contractor will be required to mitigate against the effects of fog, lighting and hail through site risk assessments and method statements. ▪ Throughout detailed design and construction phase, guidance documents to inform with design detail decisions shall be reviewed, e.g. the EU Commission *Technical Guidance on Adapting Buildings to Climate Change* (European Commission, 2021a), LETI emergency design guide (LETI, 2020), and the latest IPCC report.
Cultural Heritage	<u>Archaeology</u> ▪ A programme of archaeological testing, which will assess the remaining portions of the proposed development area and the route of the access road, will be carried out prior to the commencement of construction. The works will be undertaken by an archaeologist under licence to the National Monuments Service of the DoHLGH. Dependant on the results of the assessment, further mitigation may be required, such as preservation by record or in situ and/or archaeological monitoring. Any further mitigation will require approval from the DoHLGH. <u>Architecture</u> ▪ The section of boundary wall that bounds Blackrock Road will be subject to a photographic record prior to removal and the removal of the feature will be subject to archaeological monitoring. <u>Cultural Heritage</u> None

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Table 17-3 Operational Mitigation

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Aspect	Operational Mitigation
Population & Human Health	None
Landscape & Visual	▪ The proposed development includes for extensive landscape and open space works with the overall objective of providing a layout that ultimately integrates the development into the surrounding area; ▪ The planning application is accompanied by a Landscape Management and Maintenance Plan that sets out the objectives for management of the external hard and soft landscape elements of this site within the publicly accessible areas including the main open space and link road to Blackrock Road for a 20 year period. ▪ Landscape works will be undertaken by an ALCI approved landscape contractor and in accordance with BS 4428:1989 Code of practice for general landscape operations (excluding hard surfaces). Any trees or shrubs dying, damaged or removed will be replaced in the following planting session with plant of similar size and species. Trees supply and planting shall correspond to *BS 8545 Trees: from nursery to independence in the landscape - Recommendations*.
Material Assets: Traffic & Transport	▪ A Mobility Management Plan has also been prepared by SYSTRA and is included in the Transport Assessment (as part of the planning application submission), as a 'best practice' measure, to accompany the planning application. ▪ The aim of the Mobility Management Plan is to minimise the proportion of single occupancy vehicle trips and address the forecast transport impacts of the end-users of the subject site. These mobility measures will also support and enable those residents who may be living 'car-free' providing them with a range of sustainable mobility options and negating the need to own a car. These measures are primarily focussed on encouraging walking, cycling and the use of public transport and can be broadly summarised into the following groups: ○ Appointing a Mobility Manager. ○ Provision of a Welcome Travel Pack for residents. ○ Measures to encourage walking, such as the provision of clear signage and maps throughout the site. ○ Measures to encourage cycling, including the provision of bike hire hubs on the site, and the provision of cycling signage and maps, showing cycle times to key destinations. ○ Measures to encourage Public Transport use, including liaising with local bus operators regarding bus scheduling, routes and school travel. ▪ The development is designed to complement and support future transport initiatives such as the Blackrock to Dundalk Greenway, the NTA's Cycle Connects Scheme and the NTA's Rural Mobility Plan. ▪ A Mobility Manager will be appointed from within the management company to ensure the implementation and monitoring of the Mobility Management Plan. They will act as a point of contact for residents for all mobility and access related issues.
Material Assets: Built Services	▪ Surface Water runoff from the proposed development will be managed in accordance with the requirements of the Greater Dublin Strategic Drainage Study (GDSDS), CIRIA SuDS and the requirements of the Louth County Council Water Services Department (LCC WSD). The Surface Water management proposals shall serve to reduce the overall impact of the proposed development on the existing environment. The features to be maintained include all SuDS features. ▪ Uisce Éireann shall implement an operational inspection and maintenance regime to ensure the system keeps operating within the design specifications.

Aspect	Operational Mitigation
	▪ The proposed Water Supply system shall be commissioned and subject to a, as a minimum, monthly operational inspection and maintenance regime to ensure the system keeps operating within the design specifications. ▪ The proposed electricity supply system shall be commissioned and subject to a regular operational inspection and maintenance regime, in accordance with the Utility providers procedures, to ensure the system keeps operating within the design specifications. ▪ The proposed telecommunications system shall be commissioned and subject to a regular operational inspection and maintenance regime, in accordance with the Utility providers procedures, to ensure the system keeps operating within the design specifications.
Material Assets: Waste	▪ An Operational Waste Management Plan has been prepared by DOBA (2025) for the proposed development. 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 a high level of recycling, reuse, and recovery 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. ▪ Residents will be required to separate waste into the main following streams and place the same in bins provided: - MNR (mixed non-recyclables); - DMR (dry-mixed recyclables); and - OW (organic waste). ▪ Each bin will be labelled clearly and will be colour coded to avoid cross-contamination. The types of wastes permitted in each bin will be clearly posted within the bin store above the bins. Restricted access will be given to the bin store with only residents of the proposed development permitted access via a code/electronic fob. Infrequently generated waste such as textiles/furniture/WEEE will be stored on a temporary basis within the resident's unit and disposed of appropriately. ▪ As outlined in the OWMP, it is intended to ensure that the highest possible levels of waste reduction, waste reuse and waste recycling are achieved for the proposed development. Specifically, the OWMP will aim to achieve waste prevention, maximum recycling and recovery of waste with a focus on diversion of waste from landfill wherever possible. The management company will be responsible for the provision of a leaflet to all new tenants encouraging good waste segregation and pictorial information detailing the waste streams that can be placed in each bin. In addition to this, clauses that support waste segregation targets will be included in relevant legal documentation e.g., tenancy agreements where possible. The OWMP also states that the facilities management company must employ suitably permitted or licenced contractors to undertake off-site management of their waste in accordance with all legal requirements. This includes the requirement that a waste contractor handle, transport and reuse / recover / recycle / dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities.

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Aspect	Operational Mitigation
	▪ The OWMP has reviewed policy alongside best practice guidance and recommendations for sustainable waste and recycling management arrangements for the proposed development and ensures a high level of recycling, reuse and recovery at the development and also ensures that waste management is carried out in accordance with the requirements of the Louth County Council Development Plan 2021-2027 and Ireland's National Waste Policy.
Land & Soils	None
Water & Hydrology	None
Biodiversity	None
Noise & Vibration	Noise None Vibration None
Air Quality	None
Climate	None
Cultural Heritage	None

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17.4 Monitoring Measures

Tables 17-4 and 17-5 below summarise the recommended monitoring measures for the demolition, construction, and operational stages.

Table 17-4 Construction & Demolition Monitoring

Aspect	Construction & Demolition Monitoring
Population & Human Health	None
Landscape & Visual	None
Material Assets: Traffic & Transport	▪ No specific monitoring measures over and above expected normal construction and operational practices for such a development are proposed for the construction phase.
Material Assets: Built Services	▪ During the construction of the Surface Water drainage, the system shall be inspected and monitored for compliance with the design and relevant Louth Co. Co. and GDSDS standards in accordance with the Preliminary Inspection Plan. The requisite air and pressure testing shall be carried out on all sewer installations during construction while exfiltration testing shall be carried out on all manholes. Records of these tests shall be maintained by the Contractor. The connection to the existing open water course will not be made until all the works are complete within each Phase, and temporary surface water management will remain in place until this time to ensure only clean, uncontaminated surface water is discharged to the existing open water course. ▪ During the construction of the Wastewater drainage, the system shall be inspected, tested and monitored in accordance with the requirements of the relevant Uisce Éireann Wastewater Code of Practice (IW-CDS-5030-03). Records of these tests shall be maintained by the Contractor as required and shall be witnessed by Uisce Éireann in accordance with the relevant Quality Procedures. The connection to the existing Wastewater network will not be made until all the works are complete within each Phase, and temporary Wastewater management associated with the Contractor's compound will remain in place until this time. ▪ During the construction of the water supply network, the system shall be inspected, tested and monitored in accordance with the requirements of the relevant Uisce Éireann Code of Practice. Records of these tests shall be maintained by the Contractor as required and shall be witnessed by Uisce Éireann in accordance with the relevant Quality Procedures. The connection to the existing water supply network will not be made until all the works are complete within each Phase and temporary water connection associated with the Contractor's compound will remain in place until this time. ▪ The ESB shall monitor the existing and proposed networks during the diversion and undergrounding of the existing over-head 20kV and 38kV powerlines. The ESB shall carry out ongoing testing and commissioning of the installed infrastructure during construction. ▪ The incoming telecommunications provider shall monitor the existing and proposed networks during the installation of the proposed telecommunications network throughout the site during construction. The incoming telecommunications provider shall carry out ongoing testing and commissioning of the installed infrastructure during construction.

Aspect	Construction & Demolition Monitoring
Material Assets: Waste	▪ Regular waste audits will be carried out in accordance with the Contractor's Project Specific Waste Audit Plan to monitor the quantity and type of waste produced by different Sub-Contractors and identify opportunities for Waste reduction throughout each stage of the project. ▪ The Audit should identify details of raw material inputs and the quantity, type and composition of all Waste from the site. The Contractor will record the quantity in tonnes and types of Waste and materials leaving the site during the works. The name, address and authorisation details of all facilities and locations to which waste and materials are delivered will be recorded along with the quantity of Waste in tonnes delivered to each facility. Records will show material which is recovered and disposed of. ▪ The Audit shall highlight corrective actions that may be taken in relation to management policies or site practice in order to bring about further waste reductions which shall be supplemented with a tracking system to determine the success or failure of the corrective actions. ▪ Summary audit reports outlining types, quantities of Waste arising's and their final treatment method should be sent to the relevant Authority for their information.
Land & Soils	▪ 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. ▪ The appointed contractor will employ a suitably qualified person to monitor excavations in made ground to ensure that any contaminated material is identified, segregated and disposed of appropriately. The appointed contractor will monitor excavations to ensure consistency with the descriptions and classifications according to waste acceptance criteria testing carried out as part of the site investigations. ▪ A dust deposition monitoring programme will be implemented during the construction phase in order to verify the continued compliance with relevant standards and limits. The appointed contractor will undertake dust monitoring at a range of nearest sensitive receptors during the construction phase of the Proposed Development with the Technical Instructions on Air Quality Control (TA Luft) dust deposition limit set at 350 mg/m2/day, averaged over one year and applied as a 30-day average. ▪ Materials management and waste audits will be carried out at regular intervals to monitor the following: o Management of soils onsite and for removal offsite. o Record keeping. o Traceability of all materials, surplus soil and other waste removed from the site; and o Ensure records are maintained of material acceptance at the end destination
Water & Hydrology	▪ Inspections will be undertaken during excavations and other groundworks to ensure that measures that are protective of water quality are fully implemented and effective. ▪ Discharges to surface water / foul sewers will be monitored where required in accordance with statutory consents (i.e., discharge licence).

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Aspect	Construction & Demolition Monitoring
	▪ Routine monitoring and inspections will be undertaken by the main contractor or appointed delegate during refuelling, concrete works to ensure no impacts and compliance with avoidance, remedial and mitigation measures. ▪ Surface water samples will be collected at the commencement of works to establish the baseline scenario. The monitoring locations will be agreed with LCC in advance of works commencing. ▪ Visual inspection and water samples of the watercourse will be undertaken daily to ensure no sediment/pollutant deposits are evident. ▪ Water samples will be taken once a month during the construction phase to demonstrate compliance with surface water regulation EQS standards. The monitoring locations will be agreed with LCC in advance of works commencing. ▪ The proposed surface water monitoring suite will include the following parameters: pH, electrical conductivity, total suspended solids, Total Petroleum Hydrocarbons, nitrate, ammonia, and COD. However, the final suite of analysis will be agreed with LCC in advance of works commencing
Biodiversity	▪ A suitably qualified ecologist will act as Ecological Clerk of Works (ECoW) and carry out the pre-construction surveys for KER species at the Site and work closely with the Site manager to ensure these species are protected for the duration of the works. ▪ A watching brief will be kept by the ECoW for the duration of the works for the presence of KER species that might be present at the Site ▪ Dust control measures will be checked on a weekly basis, and more often during dry weather, to ensure they remain effective. The R172 and its grassy verge located east of the main Site area will be checked for any potential dust impacts, and the dust control measures reviewed if impacts are noted. ▪ Surface water and groundwater protection measures (as described in Section 11.9.3.1) will be checked weekly to ensure they remain effective, and more often during moderate to heavy rainfall events as appropriate. ▪ The results of the above monitoring be made available to Louth CoCo on request and any remedial measures that are required based on the results of same will be agreed with the same if required.
Noise & Vibration	▪ Construction noise monitoring should be undertaken at periodic sample periods on the boundary with the nearest noise sensitive receptors. ▪ Noise monitoring should be conducted in accordance with the *International Standard ISO 1996: 2017: Acoustics – Description, measurement and assessment of environmental noise*. ▪ Vibration monitors should be considered during the substructure phase of the development between the site and NSL 1/NSL2 as these are closest vibration sensitive locations on the boundary of the site. ▪ The Vibration monitoring stations should continually log vibration levels using the Peak Particle Velocity parameter (PPV, mm/s) in the X, Y and Z directions, in accordance with *BS ISO 4866: 2010: Mechanical vibration and shock – Vibration of fixed structures – Guidelines for the measurement of vibrations and evaluation of their effects on structures.* ▪ The recommended vibration limits to avoid cosmetic damage to buildings, as set out in: ○ British Standard BS7385: 1993: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration, and; ○ British Standard BS5228-2: 2009 + A1: 2014: Code of practice for noise and vibration control on construction and open sites – Vibration.

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Aspect	Construction & Demolition Monitoring
Air Quality	▪ Monitoring of dust can be carried out by using the Bergerhoff Method. This involves placing Bergerhoff Dust Deposit Gauges at a strategic locations along the site boundaries for a period of 30 +/- 2 days. The selection of sampling point locations should be carried out in consideration of the requirements of VDI 2119 with respect to the location of the samplers relative to buildings and other obstructions, height above ground, and sample collection and analysis procedures. After the exposure period is complete, the Gauges should be removed from the site; the dust deposits in each Gauge will then be determined gravimetrically and expressed as a dust deposition rate in mg/m2/day in accordance with the relevant standard
Climate	None
Cultural Heritage	▪ The mitigation measures detailed above would also function as a monitoring system to allow the further assessment of the scale of the predicted effects and the effectiveness of the mitigation measures.

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Table 17-5 Operational Monitoring

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Aspect	Operational Monitoring
Population & Human Health	None
Landscape & Visual	▪ Regular monitoring will be undertaken to determine success of landscape operations and ensure they are behaving in the manner anticipated at design stage. If required, elements of the design can be adapted to accommodate changes required by actual field experience. This would equate to a Negligible and Neutral effect.
Material Assets: Traffic & Transport	None
Material Assets: Built Services	None
Material Assets: Waste	▪ The building management company and future residents will be required to maintain the bins and storage areas in good condition. The waste strategy presented in the OWMP will provide sufficient storage capacity for the estimated quantity of segregated waste. The designated areas for waste storage will provide sufficient room for the required receptacles in accordance with the details of this strategy.
Land & Soils	None
Water & Hydrology	▪ 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. ▪ In addition, surface water quality monitoring will be undertaken at the outlet to the existing public surface water sewer biannually (twice a year) for a period of 2 years following completion of the construction phase of the Proposed Development in order to ensure that the discharge is meeting all the relevant EQS limits. The suite of analysis will be agreed with LCC in advance
Biodiversity	▪ A post construction check of the proposed public lighting will be carried out by a suitably qualified bat ecologist once the development is complete; to ensure that it is operating effectively and that impacts to bats through operational lighting at the Proposed Development are minimised and embedded mitigation has been successful. Where necessary the bat ecologist will make recommendations to address any problem areas for bats and lighting. The bat ecologist will furnish the Biodiversity officer/Parks Department of Louth CoCo with a report detailing the survey results and mitigation installed once complete. ▪ The standard necessary maintenance checks will be carried out to ensure all SUDS measures and the wastewater pumping station are operating correctly. ▪ A Biodiversity Monitoring Plan will be prepared by a suitably qualified Ecologist that will cover the post-construction monitoring of the efficacy of the proposed enhancement measures e.g., bird and bat boxes, hibernacula log-piles, naturally seeded wildflower meadows, low-intervention hedgerow management. ▪ Bird and bat boxes will be inspected annually for a period of 3 years as part of the BMP to assess whether these measures have been adopted by their respective species groups and for damage.
Noise & Vibration	None
Air Quality	None

Aspect	Operational Monitoring
Climate	None
Cultural Heritage	None

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