

## 6 LAND, SOILS AND GEOLOGY

### 6.1 Introduction

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

The principal objectives of this chapter are to identify:

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

This chapter of the EIAR should be read in conjunction with Chapter 4 Population and Human Health, Chapter 5 Biodiversity, Chapter 7 Hydrology and Hydrogeology, Chapter 8 Air Quality, Chapter 11 Landscape and Visual Effect, Chapter 13 Material Assets: Waste and Utilities and Chapter 14 Material Assets: Traffic and Transport of the EIAR and other information provided by the Applicant pertaining to the design proposals for the Proposed Development.

#### 6.1.1 Quality Assurance and Competency of Experts

The chapter was prepared by Gareth Carroll BA BEng MEnvSc CEnv, a Principal Consultant of DNV. Gareth, a Chartered Environmentalist with the Institute of Environmental Sciences (CEnv) and over 13 years' experience in environmental assessment of brownfield and greenfield sites for a range of project types and geological and hydrogeological site settings and is professionally competent and accredited to undertake environmental effect assessments.

The chapter was reviewed and approved by Patrick Higgins BSc, MSc, MEnvSc CEnv who is a Technical Director with DNV, with over 20 years' experience in environmental consultancy. Patrick brings extensive expertise in the preparation and evaluation of environmental assessments. He is professionally accredited and recognised as competent to undertake Environmental Impact Assessments (EIAs), ensuring that the content of this chapter meets the highest standards of technical accuracy and regulatory compliance.

### 6.2 Study Methodology

#### 6.2.1 Relevant Legislation and 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 Impact 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).
- South Dublin County Council (SDCC, 2022). South Dublin County Development Plan 2022-2028.

### 6.2.2 Consultation

A pre-planning meeting was held between the applicant's design team and South Dublin County Council (SDCC) on the 14<sup>th</sup> of August 2024. It was noted by SDCC that there were areas of marsh habitat on site that required resurvey during the appropriate season, and that a detailed analysis of the site's underlying geology, soils and hydrogeology were needed to understand the hydrological conditions that had allowed for the development of this habitat on site.

A second pre-planning meeting was held between the applicant's design team and SDCC on the 20<sup>th</sup> of May 2025. Clarification was sought on the site's ecological assessment and the viability of the proposed translocation of marsh habitat. It was noted that the marsh translocation proposal must be supported by clear ecological justification and design evidence demonstrating long-term habitat sustainability.

An Opinion Report following the second pre-planning meeting was received on the 17<sup>th</sup> of June 2025. While the report did not identify any specific issues relating directly to land, soils, or geology, consideration has been given to aspects of hydrogeology that may be relevant to this chapter of the EIAR.

### 6.2.3 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 DNV 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. This element of the assessment also included developing the Conceptual Site Model (CSM) for the site and receiving environment. A CSM represents the characteristics of the site and identifies the possible relationship and potential risk between contaminant sources (i.e., characteristics of the proposed development), pathways (i.e., transport route or means by which a receptor can be exposed to) and receptors (receiving environment). The term pollutant linkage is used to describe a particular combination of source-pathway-receptor (SPR). Each of these elements can exist independently, but they create a risk only where they are linked together so that a particular contaminant affects a particular receptor through a particular pathway (i.e., a pollutant linkage).

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.

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, undertaken for the preparation of the soils and geology chapter of this EIAR, 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 relevant to the land, soil and geological environment was undertaken by DNV on the 28<sup>th</sup> of January 2025.

The Element 1 stage of the assessment was completed by DNV 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, 2025 (NPWS, 2025).
- Teagasc webmapping, 2025 (Teagasc, 2025).
- Information provided by the Applicant pertaining to the design proposals for the Proposed Development.

Other documents and reports reviewed as part of this assessment included the following:

- Ground Investigations Ireland (GII), 2014. Ground Investigation Report (appended to the Roger Mullarkey & Associates, 2025 Drainage and Water Infrastructure Engineering Report submitted with the planning application under separate cover).
- DNV, 2025a. Construction Environmental Management Plan (submitted with the planning application under separate cover).
- DNV, 2025b. Resource and Waste Management Plan (submitted with the planning application under separate cover).

**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.

Intrusive site investigations were undertaken by Priority Geotechnical Ltd. (PGL, 2025; refer to the Hydrogeological Risk Assessment (HRA) prepared by DNV (DNV, 2025c) included in Volume 3 Appendix 6.1) between the 23<sup>rd</sup> and 25<sup>th</sup> of June 2025 which included borehole drilling and installation of five (5 No.) groundwater monitoring wells (BH1, BH2, BH3, BH4 and BH5). The soils encountered at each borehole location were logged by PGL's Geotechnical Engineer in accordance with BS 5930:2015+A1:2020 Code of Practice for Ground Investigations and BS10175:2011+A2:2017 – Investigation of Potentially Contaminated Sites. Code of Practice. Visual and olfactory observations were also recorded by DNV.

**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.

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

#### 6.2.4 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 on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2009), are summarised in Table 6-1.

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

Importance	Criteria	Typical Example
Very High	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.

Importance	Criteria	Typical Example
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. 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.	Contaminated soil on-site with previous light industrial usage. Small recent landfill site for mixed wastes. 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.

### 6.2.5 Description and Assessment of Potential Effect

Effects will vary in quality from negative, to neutral or positive. The impact 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 described in Table 6-2 in accordance with EPA, 2022 guidelines on the information to be contained in EIARs.

Table 6-2. Assessment of Potential Terminology and Methodology

Quality of Effects/Effects	Definition
Negative	A change which reduces the quality of the environment
Neutral	No effects or effects that are imperceptible, within the normal bounds of variation or within the margin of forecasting error.
Positive	A change that improves the quality of the environment
Significance of Effects / Effects	Definition
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.

Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effects	An effect which, by its character, magnitude, duration, or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration, or intensity significantly alters a sensitive aspect of the environment.
Profound Effects	An effect which obliterates sensitive characteristics.
<b>Extend and Context of Effects</b>	<b>Definition</b>
Extend	Describe the size of the area, the number of sites and the proportion of a population affected by an effect.
Context	Describe whether the extent, duration or frequency will conform or contrast with established (baseline) conditions
<b>Probability of Effects</b>	<b>Definition</b>
Likely Effects	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Unlikely	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
<b>Duration of Effects / Effects</b>	<b>Definition</b>
Momentary	Effects lasting from seconds to minutes
Brief	Effects lasting less than a day
Temporary	Effects lasting one year or less
Short-term	Effects lasting one to seven years
Medium-term	Effects lasting seven to fifteen years
Long-term	Effects lasting fifteen to sixty years
Permanent	Effects lasting over sixty years
Reversible	Effects that can be undone, for example through remediation or restoration

Types of Effects	Definition
Indirect Effects	Effects on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway
Cumulative Effects	The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects.
"Do-nothing" Effects	The environment as it would be in the future should the subject project not be carried out
"Worst-case" Effects	The effects arising from a project in the case where mitigation measures substantially fail.
Indeterminable Effects	When the full consequences of a change in the environment cannot be described.
Irreversible Effects	When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost
Residual Effects	The degree of environmental change that will occur after the proposed mitigation measures have taken effect.

Figure 6-1 identifies how comparing the character of the predicted effect to the sensitivity of the receiving environment can determine the significance of the effect.

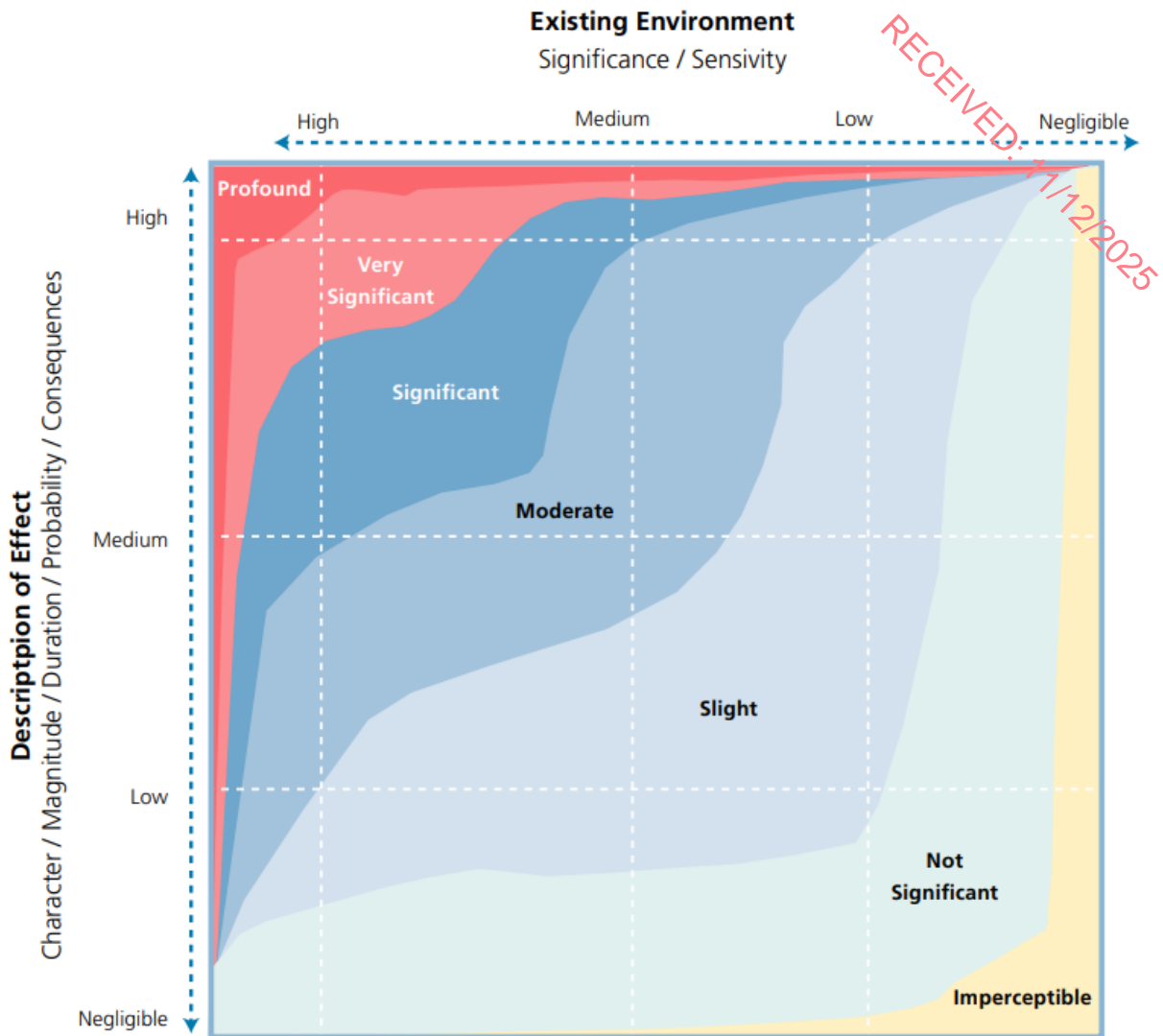


Figure 6-1. Determining Significance

### 6.3 The Existing and Receiving Environment (Baseline Situation)

#### 6.3.1 Site Location and Description

The site is located to the north of Boherboy Road, approximately 2 km south-west of Tallaght Town Centre, 1 km east of Saggart, 700 m south-west of Citywest Shopping Centre, and 1.6 km south of the N7.

The site comprises approximately 18.7 hectares (Ha) of primarily undeveloped agricultural lands. The lands comprise of two agricultural grassland fields which are separated by a hedgerow and stream. There are three (3 No.) overhead power lines crossing the site (10kV-38kV). The Corbally stream runs along much of the eastern and southern boundary of the site. The Coldwater stream flows along the western boundary, and the Cooldown stream is noted along the central field boundary on the site. The site also comprises a small area of disused grassland, located to the east of the Corbally Stream. Hedgerows and treelines surround the lands. Cattle graze on the agricultural fields, with open cow sheds in the south of the site, adjacent to the entrance.

The land is bound by the Boherboy Road (L2008) to the south, agricultural fields and a single dwelling to the west, Carrigmore residential estate to the north and Corbally residential estate and Carrigmore Park to the east.

The Site location is presented in Figure 2-1 and the current layout of the site is presented in Figure 2-2.

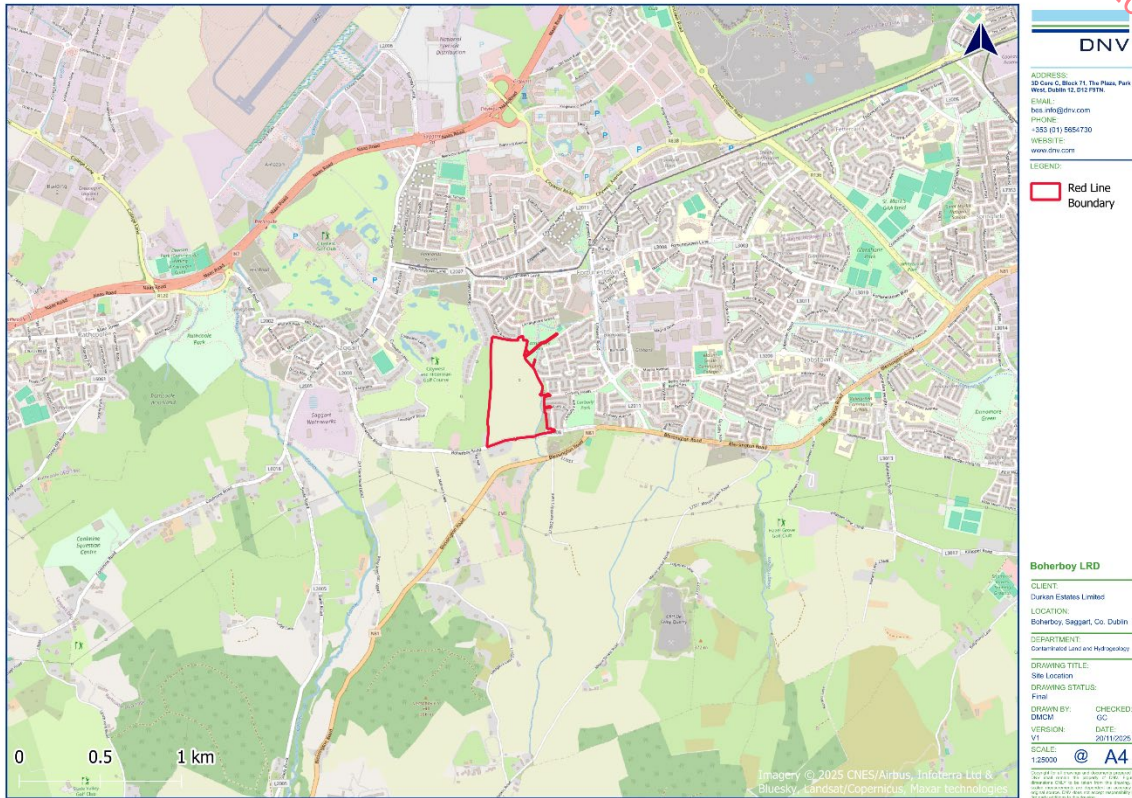


Figure 6-2. Site Location



Figure 6-3. Existing Site Layout

### 6.3.2 Topography

As documented in the Drainage and Water Infrastructure Engineering Report (Roger Mullarkey & Associates, 2025; submitted with the planning application under separate cover), a topographical survey was carried out on the site and indicates that the lands slopes sharply downwards from the south end of the site towards the north. The existing ground level gradients range from 1/7 to 1/30 generally. There is an approximate drop in level of 38m from the highest portion (SW) of the site to the lowest point (NW).

The existing ground topography forms a natural catchment with approximately 75% of the site draining towards the north-west and the remainder draining towards the north-east of the lands. All catchments drain to existing natural watercourses either side of the site.

The existing topography is presented in Figure 6-4.

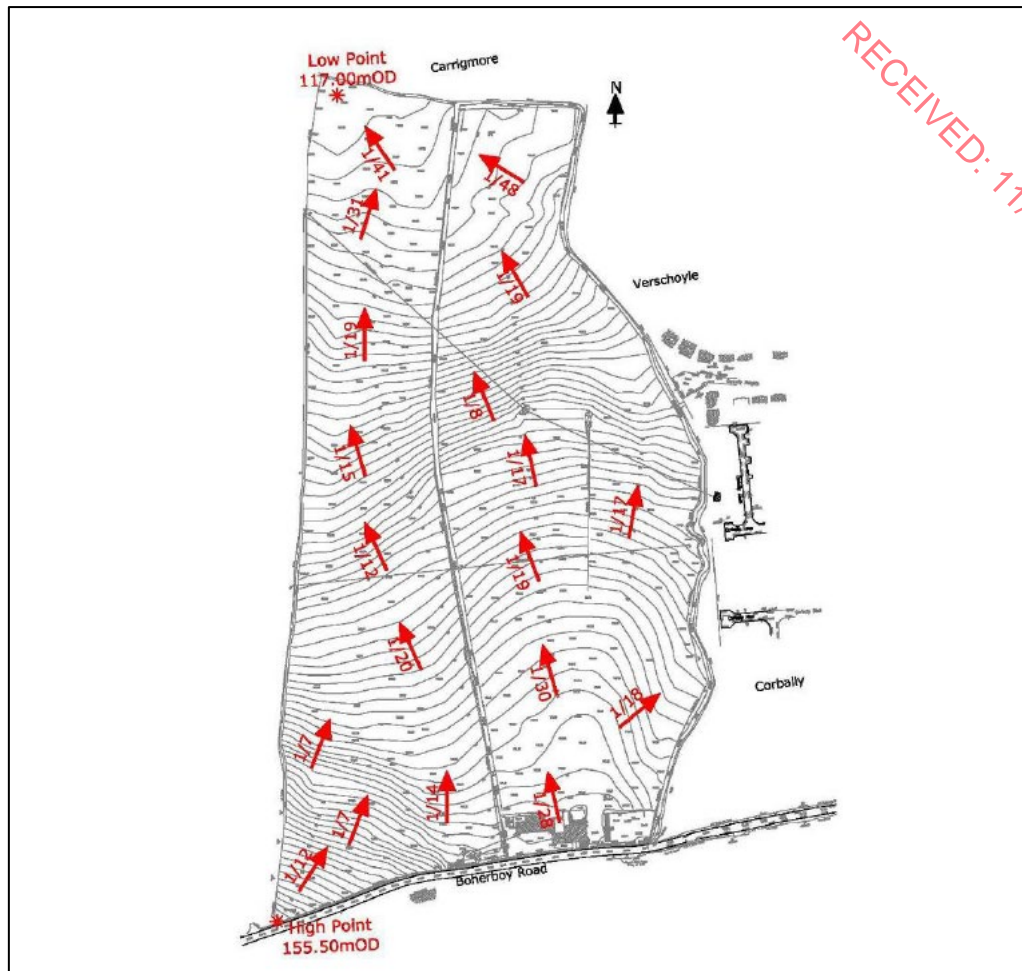


Figure 6-4. Existing Topography (Extract from Roger Mullarkey & Associates, 2025. Drainage and Water Infrastructure Engineering Report)

### 6.3.3 Soil

The soils beneath the site are mapped by Teagasc (Teagasc, 2025) as deep well drained mineral (mainly acidic), Acid Brown Earths, Brown Podzolics (IFS Soil Code: AminDW) derived from mainly non-calcareous parent materials described as till derived chiefly from Lower Palaeozoic rocks (sandstone and shale till – TLPSsS).

The underlying soils are presented in Figure 6-5.

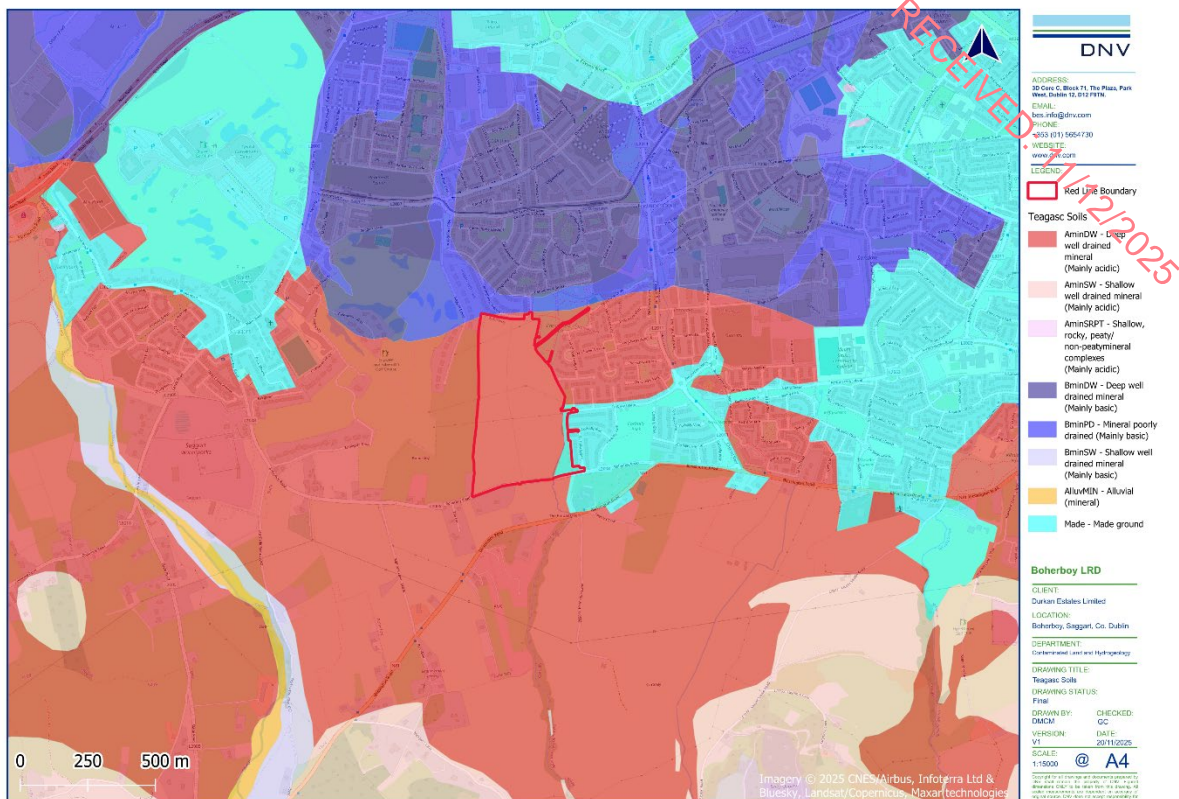


Figure 6-5. Teagasc Soils

### 6.3.4 Quaternary Sediments

The subsoil or quaternary sediments beneath the majority of the site are mapped by the GSI (GSI, 2025) as till derived from limestones (TLs). While the subsoil beneath a small portion within the southern boundary of the site is mapped by the GSI (GSI, 2025) as till derived from Lower Palaeozoic sandstones and shales (TLPSSs).

The GSI (GSI, 2025) has assigned a 'Moderate' permeability rating to the subsoils beneath the site.

The underlying subsoil or quaternary sediments are presented in Figure 6-6.

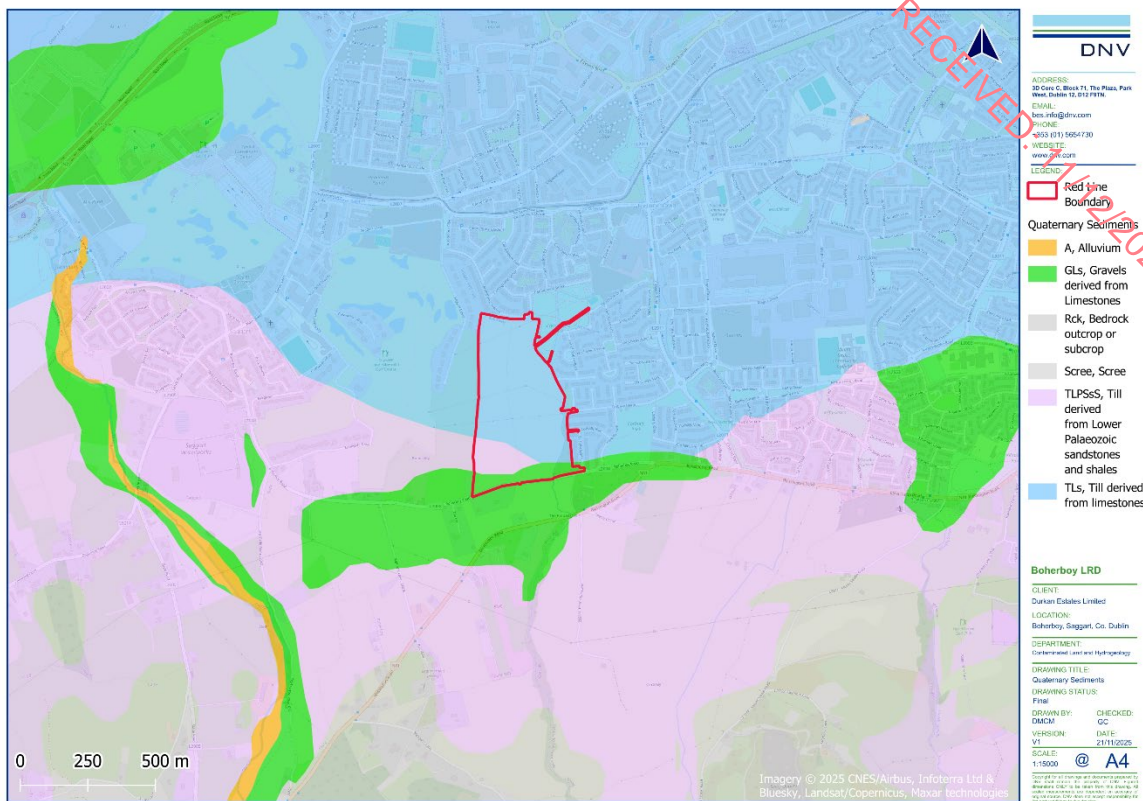


Figure 6-6. Subsoil or Quaternary Sediments

### 6.3.5 Quaternary Geomorphology

The GSI (GSI, 2025) has identified one (1 No.) Glaciofluvial Terraces (ice-marginal landform), namely the Cammock River System (IE\_GSI\_GL\_deglacial\_50K\_2645), approximately 0.81km west / southwest of the site.

One (1No.) Striae (IE\_GSI\_GL\_SGstriae\_50K\_1387), oriented in a northwest to southeast direction is identified by the GSI (GSI, 2025) approximately 1.65km southeast of the site.

### 6.3.6 Bedrock Geology

The bedrock beneath the majority of the site is mapped by the GSI (GSI, 2024) as the Pollaphuca Formation (code SLPLPH) described as coarse greywacke & shale. The bedrock beneath the most northern portion of the site is classified as the Lucan Formation (code CDLUCN) which is made up of dark limestone and shale ('calp).

The underlying bedrock geology is presented in Figure 6-7.

While no bedrock outcrops are mapped within the site boundary, a cluster of bedrock outcrops is located approximately 1.08km south of the site (GSI, 2025).

There are no karst features mapped by the GSI (GSI, 2024) at the Site or within a 2km radius of the site.

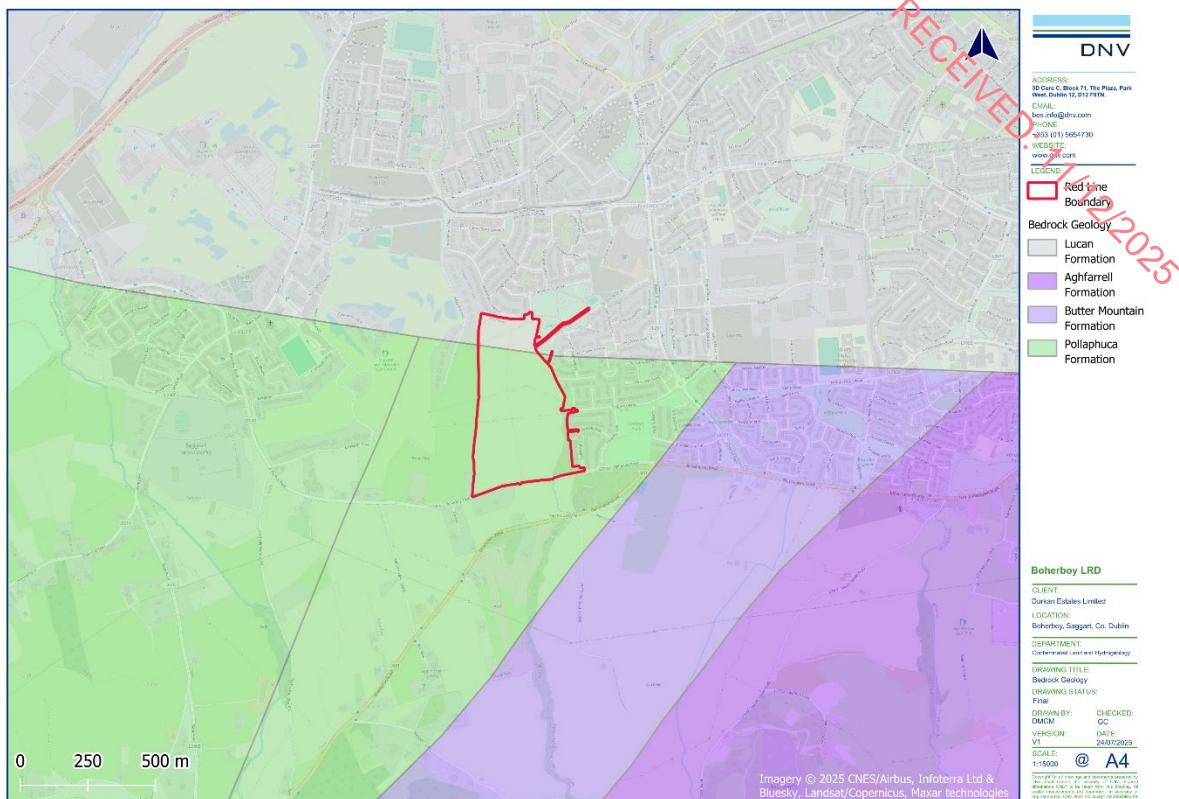


Figure 6-7. Bedrock Geology

### 6.3.7 Site Investigation Results

#### 6.3.7.1 GII, 2014 Ground Investigation Report

A site investigation was carried out at the site by GII between the 9th and 12th of December 2013 (GII, 2014; appended to the Roger Mullarkey & Associates, 2025 Drainage and Water Infrastructure Engineering Report submitted with the planning application under separate cover).

The scope of the site investigation works consisted of the following:

- Eight (8No.) trial pits excavated to a maximum depth of 3.5mbGL).
- Six (6No.) slit trenches excavated to a maximum depth of 2.5mbGL.
- Nine (9No.) dynamic probes to a maximum depth of 3.3mbGL.
- Four (4No.) soakaway tests to BRE Digest 365.
- Geotechnical and Environmental Laboratory testing.

The site investigation locations are presented in Figure 6-8.



Figure 6-8. Site Investigation Locations (Extract from GI1, 2014)

#### 6.3.7.1.1 Ground Conditions

The ground conditions encountered at the site are summarised as follows:

- **Topsoil** – encountered to a maximum depth of 0.3mbGL mainly in all site investigation locations.
- **Cohesive Deposits** – encountered beneath the topsoil and described mainly as brown, grey-brown or occasionally as black, slightly sandy, slightly gravelly, CLAY, slightly gravelly, sandy, CLAY/SILT, laminated sandy, SILT and sandy, gravelly, slightly organic CLAY. These deposits generally ranged from soft or soft to firm at willow depths increasing to stiff or stiff to very stiff at the base of the majority of the trial pits. Occasional cobbles and rare boulder content were also noted during the excavation of the trial pits.
- **Granular Deposits** – generally described as brown or dark grey, gravelly, fine to coarse, SAND and clayey, sandy, subangular to subrounded fine to coarse GRAVEL. These deposits were encountered in the south of the site either in lenses within the cohesive deposits or as a layer beneath the cohesive deposits at the base of the trial pits. Occasional cobbles and rare boulder content were also noted.
- Bedrock was not encountered during site investigation works.

The geotechnical classification of the soil samples demonstrated that the primary constituent is CLAY for the cohesive deposits of low and intermediate plasticity with variable content of silt, sand and gravel. The granular deposits (glacial till) were well-graded with a high content of fine material.

Groundwater strikes were recorded at depths ranging between 2.0mbGL and 3.0mbGL as slow seepages (GII, 2014).

#### **6.3.7.1.2 Laboratory Analytical Results**

As documented in the site investigation report (GII, 2014), a total of four (4No.) soil samples collected were analysed for a suite of parameters suitable to determine the suitability of soils for disposal to a landfill. Soil analytical data for soil samples collected across the site are provided in the in the site investigation report (GII, 2014) appended the Roger Mullarkey & Associates, 2025 Drainage and Water Infrastructure Engineering Report submitted with the planning application under separate cover.

Based on the soil and soil leachate analysis results, all four (4No.) samples were reported to meet the waste acceptance criteria (WAC) for inert landfills as stipulated in the European Landfill Directive (Council Directive 1999/31/EC of 26 April 1999). It is noted that the samples were not classified as hazardous or non-hazardous in accordance with EPA guidance 'Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous' (EPA, 2018).

Based on a review of the results, there is no evidence of anthropogenic contamination in sampled soils:

The reported concentration of benzene, toluene, ethylbenzene, m/p-xylene and o-xylene (BTEX), Polycyclic Aromatic Hydrocarbons (PAHs), mineral oil, Polychlorinated Biphenyl (PCBs) were less than the Limit of Detection (LOD).

#### **6.3.7.2 DNV, 2025 Hydrogeological Assessment**

Intrusive site investigations were undertaken by Priority Geotechnical Ltd. (refer to the HRA prepared by DNV (DNV, 2025c) included in Volume 3 Appendix 6.1) between the 23<sup>rd</sup> and 25<sup>th</sup> of June 2025 which included borehole drilling and installation of five (5 No.) groundwater monitoring wells (BH1, BH2, BH3, BH4 and BH5).

The site investigation locations are presented in Figure 6-9.

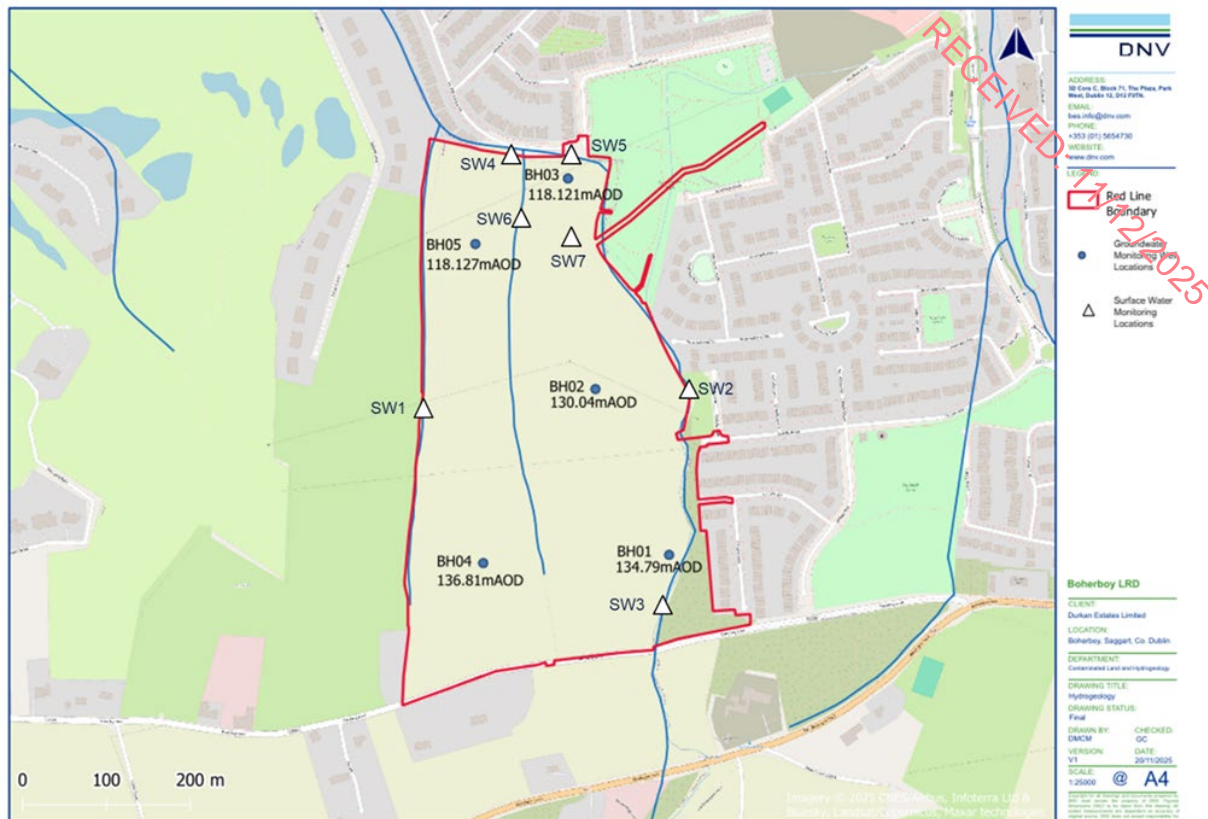


Figure 6-9. Site Investigation Locations

### 6.3.7.2.1 Ground Conditions

The soil and geology encountered during the site investigation are detailed in the borehole logs (refer to Appendix A of the HRA (DNV, 2025) included in Volume 3 Appendix 6.1) and summarised as follows:

- CLAY with varying boulder content was encountered from ground level to depths ranging from 3.0mbGL at site investigation location BH04 and BH05 to 4.5mbGL at site investigation locations BH01 and BH03.
- PEAT was encountered from ground level to a maximum depth of 3.2mbGL at site investigation location BH02 in the central portion of the site.
- Clayey sandy GRAVEL / sandy GRAVEL was encountered below the CLAY / PEAT units to the final extent of investigation and maximum depth of 7.5mbGL at site investigation locations BH1, BH03 and BH05.
- CLAY / sandy CLAY was encountered at site investigation locations BH02 and BH04 from 6.0mbGL to the final extent of investigation and maximum depth of 9.0mbGL.

There was no visual or olfactory evidence of anthropogenic contamination observed.

Groundwater strikes were recorded between 2.0mbGL at BH05 in the north of the site, to 4.0mbGL at BH01 in the south of the site.

### 6.3.8 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 6-3.

*Table 6-3 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

### 6.3.9 Radon

The Radon Risk Map of Ireland (EPA, 2025) shows a prediction of the number of the houses in any one area that are likely to have high radon levels. The map is based on an analysis of indoor radon measurements plus geological information including, bedrock type, quaternary geology, soil permeability and aquifer type.

The southern portion of the site is mapped by the EPA (EPA, 2025) as being in an area where 'about 1 in 10 homes in this area is likely to have high radon levels' whereas the northern portion of the site is classified as an area where 'about 1 in 20 homes in this area is likely to have high radon levels'.

The EPA cite the reference level for radon as 200 Bq/m<sup>3</sup> and a High Radon Area where more than 10% of homes may have more than the reference level of radioactivity. The southern portion of the site is classified as having 'high' radon levels as 10% of the houses in the area are mapped by the EPA as being over this reference level. It is noted that a high radon level can be found in any home, in any part of the country, but these homes are more likely to be located in medium to high radon areas.

### 6.3.10 Geohazards

There are no karst features mapped by the GSI (GSI, 2025) at the Site or within a 2km radius of the site

The majority of the site is located within an area with a 'low' landslide susceptibility (GSI, 2025). However, two (2No.) small areas in the southeastern and southwestern corners of the site are classified as 'moderately low' (GSI, 2025). There are no recorded landslides at the site or within a 2km radius of the site (GSI, 2025).

In Ireland, seismic activity is recorded by the Irish National Seismic Network operated by Dublin Institute for Advanced Studies (DIAS) which has been recording seismic events in Ireland since 1978. There are six permanent broadband seismic recording stations in Ireland operated by DIAS. Records since 2010 show that the majority of recorded seismic events

were associated with quarry blasts and no recent events have been recorded within 2km of the site or the Greater Dublin Area.

### 6.3.11 Geological Heritage Sites

There are no geological heritage sites mapped by the GSI (GSI, 2025) within the site. The closest geological heritage site is Belgard Quarry (Site Code: SD002), a very large, working quarry and the biggest exposure of the usually poorly exposed Calp Limestone which underlies Dublin, which is located approximately 1.91km northeast of the site.

The geological heritage sites in the vicinity of the site are presented in Figure 6-10.

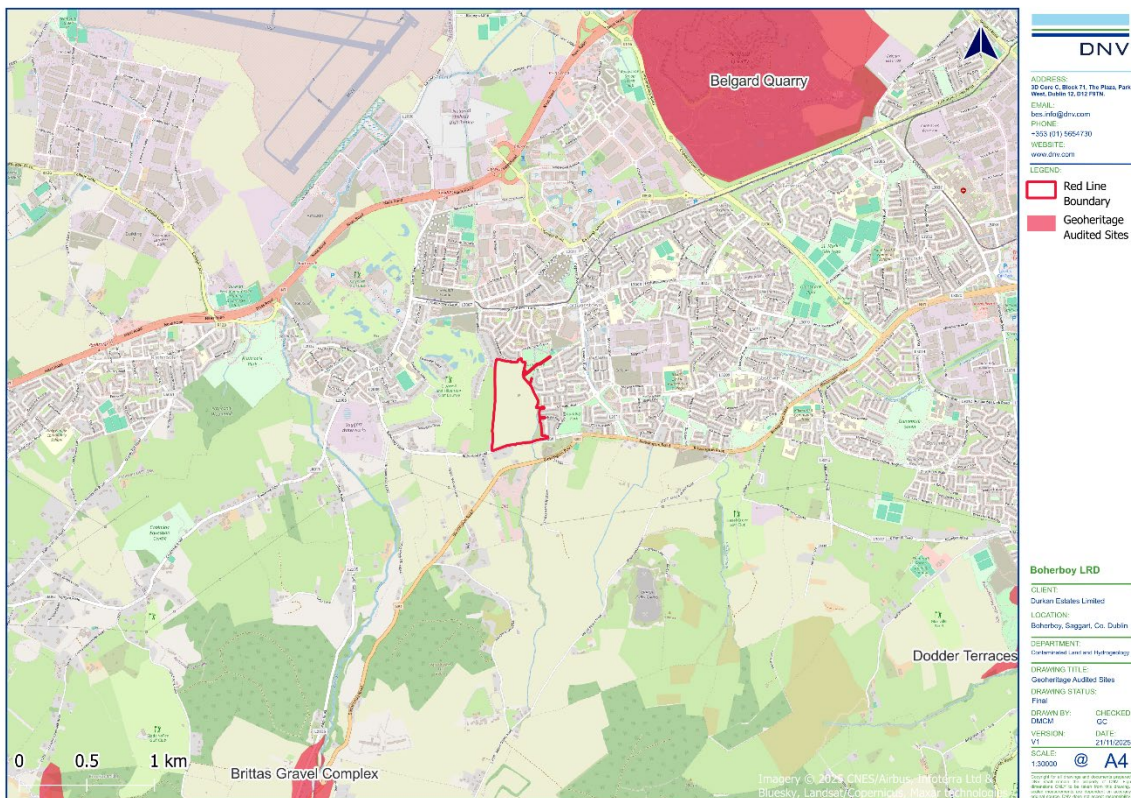


Figure 6-10. Geological Heritage Sites

### 6.3.12 Economic Geology

The lands beneath the majority of the site are mapped by the GSI (GSI, 2025) as having no mapped granular aggregate potential. However, the granular aggregate potential along the southern boundary of the site is classified as ‘very high’ potential (refer to Figure 6-11).

The bedrock beneath the majority of the site has been identified by the GSI (GSI, 2025) as having a ‘moderate’ potential for crushed rock aggregate. While the bedrock beneath the northern portion of the site has been identified by the GSI (GSI, 2025) as having a ‘low’ potential for crushed rock aggregate.

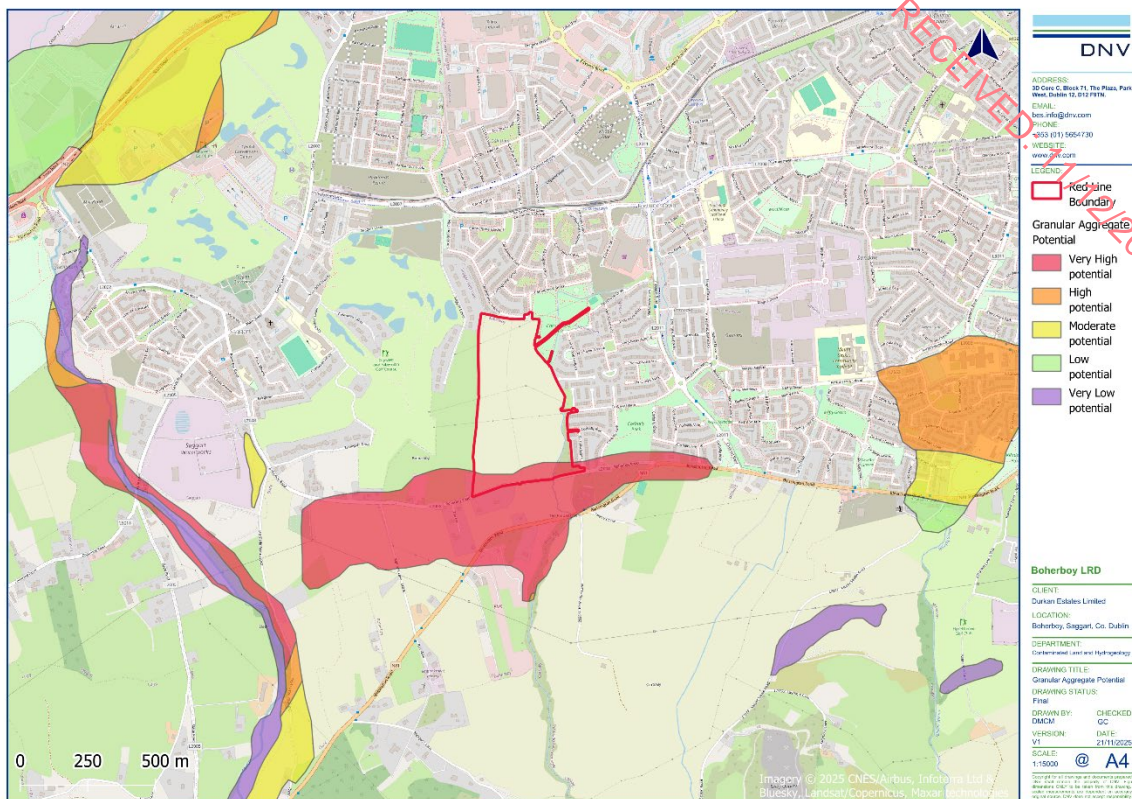


Figure 6-11. Granular Aggregate Potential

### 6.3.13 Importance of Baseline Environment

The site comprises approximately 18.5 hectares (Ha) of primarily undeveloped agricultural lands separated by a hedgerow and stream.

The GSI (GSI, 2025) has assigned a 'Moderate' permeability rating to the subsoils beneath the site. Site investigation results indicate that there were cohesive sediments of low permeability (i.e., clay) to depths ranging from 3.0mbGL to 4.5mbGL across the majority of the site.

According to the GSI (GSI, 2025), the subsoils across much of the site are mapped as having no granular aggregate potential, indicating that the economic extraction of granular aggregate from this site is not feasible. However, the bedrock across most of the site is classified as having a high potential for the extraction aggregate.

Taking into account the attributes of the soil and geology underlying the site, and in accordance with the TII Guidance as documented by the NRA (NRA, 2009) and as outlined in Table 6-1, the soil and bedrock underlying the site of the Proposed Development would be rated as having an overall 'medium' geological importance.

## 6.4 Characteristics of the Proposed Development

A full description of the Proposed Development is outlined in Chapter 2 of this EIAR.

The following components are of particular relevance with respect to land, soil and geology during the construction phase and operational phase of the Proposed Development.

### 6.4.1 Construction Phase

The construction phase of the Proposed Development will include:

- Foundation design will be finalised at detailed design stage. However, it is anticipated that foundation design will consist of traditional strip footings on the underlying firm to stiff cohesive deposits, or the medium dense granular deposits at depths ranging from 1.0 meters below ground level (mbGL) to 2.0mbGL. There may also be a requirement for piling.
- The stripping of existing topsoil at the site.
- The excavation of approximately 184,422m<sup>3</sup> of soil and subsoil for the construction of building foundations, surface water and foul water drainage infrastructure.
- Based on the findings of site investigations carried out across the site (GII, 2014 and DNV 2025c), it is anticipated that there will be no requirement for the excavation of bedrock during the construction phase of the Proposed Development.
- Where possible, it is intended to reuse suitable excavated soil and subsoil for landscaping and engineering use (total fill requirement of approximately 249,228m<sup>3</sup>). However, it is anticipated that approximately 103,689m<sup>3</sup> of surplus materials will require removal offsite in accordance with all statutory legislation.
- Temporary stockpiling of excavated material pending re-use onsite.
- The importation of approximately 164,654m<sup>3</sup> of aggregate fill materials will also be required for the construction of the Proposed Development (e.g., granular material beneath road pavement, under floor slabs and for drainage and utility bedding / surrounds etc.).

### 6.4.2 Operational Phase

The operational stage of the Proposed Development consists of the typical activities in a residential development and with the exception of localised landscaped areas (i.e., gardens, recreational areas, etc.), there will be no bulk excavation of soils or bedrock or infilling of waste.

The land use at the site will change from undeveloped lands to residential development with associated vehicular and pedestrian access, car parking and landscaping.

With the exception of rainfall on landscaped areas of the site and small quantities of rainfall to SuDS, there will be no discharges to ground during the operational phase of the Proposed Development.

There will be no requirement for bulk storage of petroleum hydrocarbon-based fuels or supply of natural gas during the operational phase of the Proposed Development. Further details are provided in Chapter 13 of this EIAR.

## 6.5 Potential Effect of the Proposed Development

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

The assessment will identify the likely effects 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. Effects are described in terms of quality, significance, duration and type as detailed in Table 6-2.

### **6.5.1 Construction Phase**

#### **6.5.1.1 Land Take and Land Use**

The Proposed Development will require approximately 18.7ha. of land and will change from undeveloped grasslands to residential use. In line with the Fortunestown Local Area Plan (2012), approximately 1.4 hectares within the site are reserved for a future school site. Similarly, the South Dublin County Development Plan (2022–2028) designates approximately 1 hectare within the site for the same purpose.

The proposed change in land use aligns with the zoning objectives set out in the South Dublin County Development Plan (2022–2028). Further details on the legislative framework and consistency with strategic national, regional, and local planning policies are provided in Chapter 3 of this EIAR.

As a result, the development will involve an unavoidable land take, leading to a ‘negative’, ‘significant’, and ‘permanent’ effect on land and soil, particularly when assessed in the context of surrounding land uses and zoning objectives. This is considered significant in the context of the EIA Directive.

#### **6.5.1.2 Excavation and Removal of Soil and Subsoil**

It is anticipated that there will be no requirement for the excavation of bedrock during the construction phase of the Proposed Development. However, there will be an unavoidable loss of in situ soils and subsoils from the site to achieve the required formation levels for the Proposed Development including building foundations, roads, drainage and other infrastructure.

The construction of the Proposed Development will require the excavation of 184,422m<sup>3</sup> of soil and subsoil. It is intended to reuse approximately 80,733m<sup>3</sup> of excavated soil and subsoil for landscaping and engineering use. However, it is anticipated that approximately 103,689m<sup>3</sup> of surplus and unsuitable material will require removal offsite. The soils and subsoils underlying the site of the Proposed Development are considered to be of ‘medium’ importance. Accordingly, there will be a ‘negative’ ‘moderate’ and ‘permanent’ effect 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 effect with removal offsite of surplus soil and other material as waste is assessed in Chapter 13 of this EIAR.

#### **6.5.1.3 Soil Quality and Contamination**

##### **Reuse of Soil and Subsoil**

The excavation and reuse of soil onsite will be subject to control procedures which will include soil quality testing to ensure suitability for onsite use in accordance with engineering and

environmental specification for the Proposed Development that will be determined during the detailed design phase. Therefore, the reuse of soils onsite will result in a 'neutral', 'imperceptible' and 'permanent' effect on the quality of willow 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 building 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' effect on existing quality of soil within a localised area underlying the site and is considered non-significant in the context of the EIA Directive.

### **Piling**

It is noted that piling (where required) during the construction phase of the Proposed Development, may potentially create pathways for contaminants such as grout or other materials to enter the underlying hydrogeological environment. The potential effect with piling is assessed in Chapter 7 of this EIAR.

### **Handling of Fuels and Hazardous Materials**

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' effect on the receiving soil and geology depending on the nature of the incident. It is noted that this effect is considered significant in the context of the EIA Directive due to the potential for long-term degradation of the effected soils in the absence of mitigation. This worst-case scenario is deemed to be unlikely to occur.

#### **6.5.1.4 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' effect on the natural strength of the materials and is considered non-significant in the context of the EIA Directive.

#### **6.5.1.5 Importation of Fill Materials**

The importation of 164,654m<sup>3</sup> aggregate fill materials (i.e., granular material beneath road pavement, drainage and utility bedding / surrounds, etc.) will be required for the construction of the Proposed Development. The potential effects may include loss of attribute and changes in the geological regime at the source site(s). It is anticipated that the required soil and stone materials and aggregates identified for importation onsite will be 'indirect' and have a 'neutral,' 'imperceptible' and 'permanent' effect on the source site(s). This effect 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 effects to be assessed and mitigated as appropriate at the source site(s).

#### **6.5.1.6 Dust Generation**

There is a potential for creation of windblown dust generation from the temporary stockpiling of materials onsite. In addition, construction vehicle movements, particularly along unpaved or dry haul routes, may contribute to fugitive dust emissions. Exhaust emissions will also arise from the operation of excavators, heavy goods vehicles (HGVs), and vibrating rollers during the construction phase of the Proposed Development. An assessment of the potential effect of the Proposed Development with regard to the generation of dust is addressed in Chapter 8 of this EIAR.

#### **6.5.1.7 Geological Heritage Sites**

Given the separation distance between the site and the closest geological heritage site is Belgard Quarry (Site Code: SD002), located approximately 1.91 km northeast of the site, and the nature of the Proposed Development, no likely risks to geological heritage features are anticipated. The predicted effects are considered to be imperceptible and not significant in the context of the EIA Directive.

#### **6.5.1.8 Geological Hazards**

The site is not located within an area associated with karst geology and therefore there are 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.

As detailed in Section 6.6.1.1, all soil, stone materials, and aggregates imported to the site for use in the Proposed Development will be subject to strict quality control procedures in accordance with the design specifications and relevant Building Regulations. These measures are intended to prevent the introduction of pyrite or other deleterious materials into the construction process. Given these controls, and the nature of the materials management approach, no likely risks are anticipated. Accordingly, the predicted effects are considered imperceptible and not significant in the context of the EIA Directive.

Overall, it is considered that the potential effects on geohazards during the construction phase of the Proposed Development will have a 'neutral,' 'imperceptible' and 'permanent effect and are not significant in the context of the EIA Directive.

### **6.5.2 Operational Phase**

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

The design and construction of the Proposed Development will be undertaken in accordance with current Building Regulations which 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.

Given the low to moderately low landslide susceptibility, the absence of recorded landslides, and the lack of recent seismic activity in the vicinity, the likelihood of significant adverse effects on the environment due to geohazards is considered very low. As such, the predicted effects

related to landslide and seismic risk are assessed as imperceptible and not significant in the context of the EIA Directive.

The southern portion of 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 predicted effects on the receiving land, soil and geological environment during the operational phase of the Proposed Development are considered to be 'neutral,' imperceptible' and 'permanent' and are not significant in the context of the EIA Directive.

### **6.5.3 Potential Cumulative Impacts**

Cumulative effects can be defined as "effects 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. The cumulative impacts also take into account the combined effects of the Proposed Development and other projects in the surrounding area, particularly where actions occur within the same timeframe.

The consideration of potential cumulative effects is an important stage in the EIA process. Although the Proposed Development may not result in significant residual effects in isolation, when the Proposed Development is considered cumulatively with other projects, significant residual effects may occur. Therefore, as part of this assessment, other offsite developments and proposed offsite developments as detailed in Chapter 2 of this EIAR were reviewed and considered for possible cumulative effects with the Proposed Development

#### **6.5.3.1 Construction Phase**

##### **Excavation and Removal of Soil and Subsoil**

Excavated soil and subsoil during the construction phase of the Proposed Development could potentially be directed to the same receiving waste facilities for recovery / disposal as excavated materials from other developments detailed in Chapter 2 of this EIAR and within the Greater Dublin Area. All surplus soils and subsoils from the site will be removed offsite in accordance with the requirements of the RWMP (DNV, 2025b) and all statutory legislation. Accordingly, it is considered that any cumulative effect 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**

The importation of soil and stone materials and aggregates to the Proposed Development may be sourced from the same borrow site or authorised site as other permitted developments detailed in Chapter 2 of this EIAR and within the Greater Dublin Area. This includes the potential importation of surplus soil and stone materials from other developments, where such materials are transferred in accordance with Article 27 of the European Communities (Waste

Directive) Regulations 2011, and are not considered waste due to their intended beneficial use. However, contract and procurement procedures will ensure that all imported materials, whether originating from quarry sources or surplus materials from other developments, are sourced from reputable, authorised suppliers operating in a sustainable manner and in compliance with all relevant statutory consents and environmental regulations. 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' effect on the geological environment at the source site and it is considered non-significant in the context of the EIA Directive.

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

### **6.5.3.2 Operational Phase**

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

### **6.5.4 “Do Nothing” Impact**

The 'Do Nothing' scenario assesses the potential effect on the receiving land, soils, and geological environment if the Proposed Development did not proceed.

In the 'Do Nothing' scenario, there would be no change or resulting effect on the nature of the site with respect to land, soil and geology as the site of the Proposed Development would remain as undeveloped grasslands in the immediate term. However, the proposed change in land use is in accordance with the zoning objectives as set out in the current South Dublin County Development Plan (2022–2028). 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 effects 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 effects on land, soil and geology associated with residential development on the site.

## **6.6 Avoidance, Remedial & Mitigation Measures**

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

### **6.6.1 Construction Phase**

During the construction phase, all works will be undertaken in accordance with the Construction Environmental Management Plan (CEMP) (DNV, 2025a; submitted with the planning application under separate cover) and the Resource and Waste Management Plan (RWMP) (DNV, 2025b; submitted with the planning application under separate cover). Following appointment, the contractor will be required to further develop the CEMP and RWMP to provide detailed construction phasing and methods to manage and prevent any potential emissions to ground and surface water with regard to the relevant industry standards (e.g., Guidance for Consultants and Contractors, CIRIA-C532', CIRIA, 2001). The CEMP and

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

#### **6.6.1.1 Import of Soil, Subsoil and Aggregate Materials**

Contract and procurement procedures will ensure that all imported soil, subsoil, and aggregate materials required for the construction phase of the Proposed Development are sourced from reputable suppliers operating in a sustainable manner and in accordance with industry conformity standards, statutory obligations, and the relevant provisions of the RWMP (DNV, 2025b). Where applicable, the importation of soil and stone from other developments will be carried out in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011, ensuring that such materials are not considered waste and are suitable for beneficial use.

All imported materials will be subject to robust management and control procedures, including testing for contaminants, invasive species, and other anthropogenic inclusions, and assessment of their suitability for use in accordance with the engineering and environmental specifications for the Proposed Development. As a result, any unsuitable material will be identified prior to unloading or placement on site, thereby ensuring environmental protection and compliance with regulatory requirements.

#### **6.6.1.2 Airborne Dust Generation**

Dust and fine particle generation from construction and demolition activities on the site can be substantially reduced through the selection of adequate mitigation techniques and effective management. The most effective technique is to control dust at source and prevent it from becoming air borne by implementing the following mitigation measures:

- Excavated soils will be carefully managed and maintained to minimise potential effect on soil quality and soil structure.
- Handling of soils and materials will be undertaken in accordance with documented procedures outlined in the CEMP and RWMP that will be set out 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.
- Vehicles travelling on any unsurfaced site roads will have their speed restricted to 20 kph.
- Footpaths immediately around the site will be cleaned by hand regularly, with damping as necessary.
- High level walkways and surfaces such as scaffolding will be cleaned regularly using safe 'wet' methods, as opposed to dry methods.
- Vehicle waiting areas or hard standings will be regularly inspected and kept clean by brushing or vacuum sweeping and will be regularly sprayed to keep moist, if necessary.
- Dust dispersal over the site boundary will be minimised using static sprinklers or other watering methods as necessary.

- Equipment and techniques for cutting / grinding / drilling / sawing / sanding etc, which minimise dust emissions and which have the best available dust suppression measures, will be employed
- Prior to commencement, the main contractor will identify the construction operations which are likely to generate dust and to draw up action plans to minimise emissions, utilising the methods highlighted above. Furthermore, the main contractor will prepare environmental risk assessments for all dust generating processes which are envisaged.
- The main contractor will allocate suitably qualified personnel to be responsible for ensuring the generation of dust is minimised and effectively controlled.
- The name and contact details of a person to contact regarding air quality and dust issues will be displayed on the site boundary, this notice board will also include head/regional office contact details.

Potential effects and avoidance and mitigation measures associated with generation of dust are addressed in Chapter 8 of this EIAR.

#### **6.6.1.3 Reuse of Soil**

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

- Defining 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 offsite as waste, and where it is intended for reuse onsite.
- 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.

#### **6.6.1.4 Management and Control of Soils and Stockpiles**

Segregation and storage of soils for re-use onsite or removal offsite and waste for disposal offsite will be segregated and temporarily stored onsite pending removal or for reuse onsite in accordance with the CEMP (DNV, 2025a) which will be updated by the main contractor in advance of construction works commencing.

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

When a stockpile has been sampled for re-use or waste classification purposes, it will be considered to be complete, and no more soil will be added to that stockpile prior to removal. An excavation/stockpile register will be maintained on-site.

The reuse of suitable excavated soil and subsoil 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. Surplus or unsuitable soils will be removed offsite.

Surplus material, not suitable for reuse or awaiting reuse onsite, will be segregated, and stockpiled appropriately in accordance with the measures outlined in the CEMP (DNV, 2025a). To minimise the overall effect on soils arising during the construction works, the following mitigation measures will be adhered to.

- A designated temporary storage area will be identified and clearly marked on site.
- All stockpiles will be assigned a unique stockpile identification number for traceability.
- Materials will be segregated by type and destination, including those identified for reuse on site, reuse off site, and waste. All segregation, storage, and stockpiling locations will be clearly delineated on site drawings.
- Soil stockpiles will be covered to prevent surface water run-off and the generation of windblown dust.
- Topsoil will not be stored in piles exceeding 2 metres in height to prevent degradation of the soil structure. It will be kept as dry as practicable and reused as soon as possible to minimise deterioration from prolonged storage or excessive handling.
- Any waste materials temporarily stored or stockpiled will be placed on impermeable surfaces, such as high-grade polythene sheeting, hardstand areas, or in skips, to prevent cross-contamination with underlying soils or other materials.
- Regular watering will be undertaken to maintain adequate moisture content in exposed soils, enhancing stability and suppressing dust emissions.
- Stockpile volumes will be kept to a minimum and, where feasible, located away from sensitive receptors such as residential areas.
- Where necessary, stockpiles will be sheeted or dampened to further control dust and erosion.
- Earthworks and excavations will be kept damp where necessary and reasonably practicable, particularly during dry or windy conditions.
- All stockpiles will be located a minimum of 20 metres from any watercourse to reduce the risk of sediment run-off and protect surface water quality.

All surplus materials and any waste generated from construction activities 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 reuse, recycling and recovery.
- Prevent hazards to site workers and the general public during the construction phase (largely noise, vibration and dust).

#### **6.6.1.5 Soil Structure**

To mitigate potential impacts on soil structure during construction, the following measures will be implemented:

- The extent of the required work area and the bulk excavation footprint will be minimised where practicable to avoid unnecessary disturbance of soil. This includes reducing tracking over undisturbed soil and subsoil outside designated excavation zones, thereby limiting compaction and rutting from construction traffic.

- Topsoil and subsoil will be segregated and stored separately in accordance with best practice to preserve their structure and quality, ensuring suitability for reuse on site.
- Disturbed subsoil layers will be stabilised as soon as practicable, through activities such as backfilling of service trenches, construction of road capping layers, building foundations, and landscaping. The duration of exposure of subsoil will be minimised to reduce the risk of degradation from weathering (e.g. drying, erosion, or waterlogging).
- Stockpiles of excavated soil and subsoil will be protected for the duration of the works and strategically located to minimise double handling. Topsoil and subsoil stockpiles will be clearly separated and identified.

These measures are designed to maintain the physical integrity, fertility, and drainage characteristics of the soil, supporting its reuse and minimising environmental impact in line with good construction and environmental management practices.

#### **6.6.1.6 Export of Resource (Soil and Subsoil) and Waste**

All surplus materials and any waste will be removed offsite in accordance with the requirements outlined in the CEMP (DNV, 2025a) and the RWMP (DNV, 2025b) 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 subsoil offsite will be undertaken in accordance with all statutory requirements and obligations including where appropriate re-use as by-product in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011 (SI No. 126 of 2011) as amended.

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

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

Waste bins, containers, skip containers and storage areas will be clearly labelled with waste types which they should contain including photographs as appropriate.

Materials and waste will be documented prior to leaving the site. All information will be entered into a waste management register kept onsite. Waste collection permits for registered hauliers and certs of registration/ licenses/permits for authorised waste facilities will be kept on file at the head office.

All site personnel and sub-contractors will be instructed about the objectives of the CDWMP and informed of their responsibilities as a consequence of its provisions.

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

Public roads outside the site will be regularly inspected for cleanliness and cleaned as necessary. The main contractor will carry out road sweeping operations, employing a suction sweeper or similar appropriate method, to remove any project related dirt and/or material deposited on the road by construction/ delivery vehicles. Vehicles exiting the site shall make use of a wheel wash facility where appropriate, prior to entering onto public roads.

#### **6.6.1.7 Concrete Works**

The use of cementitious grout during the construction phase of the Proposed Development will be managed to avoid any risk of ground contamination, through the implementation of appropriate design measures and construction methods by the appointed contractor, in accordance with the CEMP (DNV, 2025a) and relevant industry standards.

The following mitigation measures will be adhered to when using concrete and cement-based materials:

- All ready-mixed concrete will be delivered to the site by truck.
- Concrete batching will take place off-site only.
- Wash-down and wash-out of concrete trucks will occur in a controlled, bunded area, with wash water collected in a container and disposed of via a licensed waste contractor, in accordance with relevant waste management legislation.
- Excess concrete will not be disposed of on-site under any circumstances.
- Pouring of cement-based materials will only be carried out in dry conditions, and pumped concrete will be actively monitored to prevent accidental discharge.
- A site-specific risk assessment for wet concreting will be completed prior to works commencing.
- Concrete pouring will not be permitted within 50 metres of any watercourse during adverse weather conditions, to prevent potential contamination of surface waters.

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.

### **6.6.1.8 Handling of Fuels, Chemicals and Materials**

Fuelling and lubrication of equipment will be carried out in accordance with the procedures outlined in the CEMP (DNV, 2025a), in a designated area of the site away from any watercourses and drains (where not possible to carry out such activities offsite) and contained within constructed impermeable and bunded areas.

Any diesel, fuel or hydraulic oils stored onsite will be stored in designated areas. These areas will be located within a designated area placed furthest away from adjacent watercourses, drains and contained within constructed bunded areas

Bunds will have regard to current best practice for oil storage (Enterprise Ireland, BPGCS005) and 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.

Environmentally friendly materials will be used during the construction process including the use of biodegradable lubricants and hydraulic fluids for machinery and equipment.

Strict supervision of contractors will be adhered to in order to ensure that all plant and equipment utilised onsite is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the site. Only emergency breakdown maintenance will be carried out onsite. Drip trays and spill kits will be available onsite to ensure that any spills from vehicles are contained and removed offsite.

There may also be the requirement for use of portable generators or similar fuel containing equipment during the construction phase of the Proposed Development, which will be placed on suitable drip trays. Regular monitoring of drip tray content will be undertaken to ensure sufficient capacity is maintained at all times

The appointed contractor will maintain an emergency response action plan and emergency procedures will be developed by the appointed contractor in advance of any works commencing. Construction staff will be familiar with the emergency response plan.

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

### **6.6.1.9 Emergency Procedures**

Emergency procedures will be developed by the appointed contractor in advance of works commencing and spillage kits will be available onsite including in vehicles operating onsite. Construction staff will be familiar with emergency procedures 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. The following mitigation measures will be adhered to as follows:

- 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 of offsite. 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 in the event of accidental fuel spillages.
- All construction works staff onsite 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 geology associated with the construction stage of the Proposed Development.

#### **6.6.1.10 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 Uisce Eireann (UE).

#### **6.6.2 Operational Phase**

Taking account of the design of the Proposed Development, it is concluded that there will be no likely significant effects 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.

#### **6.6.3 “Worst Case” Scenario**

The potential accidental release of hazardous material including fuels, or other hazardous materials being used onsite during the construction phase could potentially effect on the receiving land, soil and geology environment. This scenario would only occur through the failure of secondary containment or a major incident on the site. The potential for or inadvertent import of contaminated materials during the construction phase could also result in an effect in the absence of the quality control measures. However, taking account of the proposed mitigation measures any environmental harm would be avoided. There would therefore be a

'neutral', 'imperceptible' and 'short-term' effect on the receiving environment. These worst-case scenarios are deemed to be highly unlikely to occur.

## 6.7 Residual Impacts

Residual effects 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 effects.

The predicted effects of the construction phase and operational phase of the Proposed Development are described in Section 6.5 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 6.6. 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 soil, subsoil and aggregate 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 effects. The residual effects, which take these measures into account, are summarised in Table 6-4.

Overall, considering the avoidance, remedial and mitigation measures detailed in Section 6.6, the residual effects regarding the construction phase and operational phase of the Proposed Development are considered 'imperceptible' to the receiving environment (land, soil and geology) and considered non-significant in the context of the EIA Directive.

Table 6-4. Residual Effects

Activity	Attribute	Predicted Effect	Quality	Significance	Duration	Type	Mitigation	Residual Effect
<b>Construction Phase</b>								
Construction of the Proposed Development	Land Take and Land Use	The Proposed Development will require a land take of 18.5Ha and will change from undeveloped grasslands to residential land use.	Negative	Significant (Significant in the Context of the EIA Directive)	Permanent	Direct	Unavoidable and no mitigation. The Proposed Development is in line with the zoning objectives as set out in the South Dublin County Development Plan (2022–2028).	Significant (Significant in the Context of the EIA Directive)
Removal of Soil and Subsoil Not Suitable for Re-use Onsite	Soils and Subsoils	The construction of the Proposed Development will require the excavation of soil and subsoil. It is intended to reuse excavated soil and subsoil for landscaping and engineering use. However, it is anticipated that surplus and unsuitable material will require removal offsite.	Negative	Moderate (Non-significant in the Context of the EIA Directive)	Permanent	Direct	None required. Where possible, it is intended to retain and re-use suitable excavated soil and subsoil for engineering fill and 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.	Moderate (Non-significant in the Context of the EIA Directive)
Excavation and Removal of in-	Lands, Soils and Geology at	Surplus excavated soil and subsoil during the construction phase of the	Negative	Slight (Non-significant in the	Permanent	Indirect / Cumulative	All surplus soils and subsoils from the site will be removed offsite in	Imperceptible (Non-significant in

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Activity	Attribute	Predicted Effect	Quality	Significance	Duration	Type	Mitigation	Residual Effect
situ Soil and Subsoil	Destination Site	Proposed Development could potentially be directed to the same receiving waste facilities for recovery / disposal as excavated materials from other developments.		Context of the EIA Directive)			accordance with the requirements of the RWMP (DNV, 2025b) and all statutory legislation.	the Context of the EIA Directive)
Reuse of Excavated Soil	Land and Soil	It is intended to reuse excavated soil and subsoil for landscaping and engineering use.	Neutral	Imperceptible (Non-significant in the Context of the EIA Directive)	Permanent	Direct	The 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.	Imperceptible (Non-significant in the Context of the EIA Directive)
Use of Cementitious Materials	Soils and Subsoils	Potential release of cementitious material during construction of subsurface structures (such as foundations) to the land, soil, and geological environment.	Negative	Moderate (Non-significant in the Context of the EIA Directive)	Long-Term	Direct	The cementitious grout and other concrete works during the construction phase, will avoid any contamination of ground through the use of appropriate design and methods implemented by the appointed contractor in accordance with the CEMP (DNV, 2025a) and relevant industry standards.	Imperceptible (Non-significant in the Context of the EIA Directive)
Accidental Release of Deleterious Materials (e.g.,	Soils, Subsoils and Bedrock	Potential (albeit low) for uncontrolled release of deleterious materials including fuels and other	Negative	Moderate to Significant (Significant in the Context of	Long Term	Direct / Worst Case	Refueling of plant and storage of any deleterious materials including fuels will be undertaken in	Imperceptible (Non-significant in the Context

Activity	Attribute	Predicted Effect	Quality	Significance	Duration	Type	Mitigation	Residual Effect
Fuels or Other Hazardous Materials Being Used Onsite)		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.		the EIA Directive)			accordance with the requirements and procedures outlined in the CEMP (DNV, 2025a)	of the EIA Directive)
Stockpiling of Excavated Soil and Subsoils	Soil Structure	The temporary stockpiling of excavated soils will result in exposure of the materials to various elements including weather.	Negative	Slight (Non-significant in the Context of the EIA Directive)	Long-term	Direct	The segregation and stockpiling of soil and stone at the site pending reuse or removal offsite will be carefully managed and maintained in order to minimise potential effect on soil quality.	Imperceptible (Non-significant in the Context of the EIA Directive)
Import of Materials Onsite	Land, Soil and Geology	The Proposed Development will require the importation of soil and stone materials to achieve formation levels and aggregate fill materials for the construction of roads and utility infrastructure. The potential effects may include loss of attribute and changes in geological setting at the source site(s).	Neutral	Imperceptible (Non-significant in the Context of the EIA Directive)	Permanent	Indirect / Cumulative	Only certified materials from authorised sources will be used.	Imperceptible (Non-significant in the Context of the EIA Directive)
<b>Operational Phase</b>								
There are no likely significant residual effects on the receiving land, soil, or geological environment during the operational phase. The predicted effects are considered to be 'neutral,' imperceptible' and 'permanent' and are not significant in the context of the EIA Directive.								

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## 6.8 Monitoring

### 6.8.1 Construction Phase

During the Construction Phase of the Proposed Development, the following monitoring measures will be implemented where appropriate:

- Routine inspections of construction activities will be carried out daily by the contractor staff to ensure all controls to prevent environmental effect, relevant to the construction activities taking place at the time, are in place. Environmental inspections will ensure that the works are undertaken in compliance with the CEMP (DNV, 2025a) and that the requirements of the Grant of Planning and associated documentation are being adhered to during construction.
- Routine monitoring and inspections during refuelling and concrete works to ensure no adverse effects and compliance with avoidance, remedial and mitigation measures.
- The excavation and reuse of soil onsite will be subject to control procedures which will include soil quality testing to ensure suitability for onsite use in accordance with engineering and environmental specification for the Proposed Development that will be determined during the detailed design phase.
- Where the material is not suitable for re-use and considered a waste, additional sampling and assessment of soil and materials may be required to ensure that the materials are managed and removed offsite in accordance with waste management legislation. The waste classification of sample results will be based on the following method:
  - Soil sample collection and analysis in accordance with relevant industry standards including but not limited to:
    - EPA guidance document 'List of Waste & Determining if Waste is Hazardous or Non-hazardous and Waste Classification' (EPA, 2018); and
    - BS 10175:2011 Investigation of potentially contaminated sites - Code of practice (BSI, 2011).
  - Assessment of results to determine if the sample is a hazardous or non-hazardous waste and assigning a List of Waste (LoW) Code to the sampled material in accordance with EPA guidance 'Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous' (EPA, 2018).
  - The material will also be assessed to determine if the material meets the waste acceptance criteria for authorised landfills and soil recovery facilities as follows:
    - Screening the sample analytical results against the waste acceptance criteria (Landfill WAC) set out in the adopted 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); and
    - Screening the sample analytical results against the Maximum Concentrations and/or Soil Trigger Levels set out in the Environmental Protection Agency (2020) "Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities" (SRF WAC).
- 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 which will be undertaken in advance of construction works commencing.

- A dust deposition monitoring programme will be implemented during the construction phase in order to verify the continued compliance with relevant standards and limits. Where required, 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/m<sup>2</sup>/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.
  - Ensure records are maintained of material acceptance at the end destination

## 6.8.2 Operational Phase

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

## 6.9 Interactions

### 6.9.1 Population and Human Health

An assessment of the potential effect 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.

The design and construction of the Proposed Development will be undertaken in accordance with current Building Regulations which 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.

### 6.9.2 Biodiversity

An assessment of the potential effects of the Proposed Development on the Biodiversity of the site, with emphasis on habitats, flora and fauna which may be effected as a result of the excavation and importation of materials to the site are included in Chapter 5 of this EIAR. It also provides an assessment of the effects 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 effects.

### 6.9.3 Hydrology and Hydrogeology

An assessment of the potential effect of the Proposed Development on the hydrological and hydrogeological environment is included in Chapter 7 of this EIAR.

In the absence of avoidance, remedial, and mitigation measures, construction activities may potentially create pathways for potential sources of contamination to enter underlying groundwater. During the construction phase of the Proposed Development, groundwater vulnerability is expected to temporarily increase. Construction activities will involve the use of potentially hazardous materials such as cementitious materials, fuels, oils, and other substances. An uncontrolled release of these materials, whether through containment failure or handling accidents, could affect the surrounding environment. In addition, in the absence of avoidance, remedial and mitigation measures, there is a potential for sediment from excavated soils to enter water runoff and discharge into the receiving Corbally stream, Coldwater stream and Cooldown stream. Procedures for the protection of the receiving water environment are set out in Chapter 7 of this EIAR.

#### **6.9.4 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 effects (i.e., dust) during the construction phase of the Proposed Development. An assessment of the potential effect of the Proposed Development on air quality is included in Chapter 8 of this EIAR.

#### **6.9.5 Landscape and Visual**

During the construction phase and into the operational phase of the Proposed Development, the site landscape will undergo a change from undeveloped lands to residential use. An assessment of the potential effect of the Proposed Development on the receiving landscape is included in Chapter 11 of this EIAR.

#### **6.9.6 Material Assets: Traffic, Transport, Utilities, Infrastructure and Waste**

An assessment of the potential effect of the Proposed Development on the material assets (waste and utilities) and material assets (traffic and transport) are included in Chapter 13 and Chapter 14 of this EIAR, respectively.

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.

### **6.10 Difficulties Encountered When Compiling**

No difficulties were encountered in the preparation of this chapter of the EIAR.

### **6.11 Conclusion**

Overall, considering the avoidance, remedial and mitigation measures, the residual effects regarding the construction phase and operational phase of the Proposed Development are considered 'imperceptible' to the receiving environment (land, soil and geology) and considered non-significant in the context of the EIA Directive.

## 6.12 References

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