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# 1

## **INTRODUCTION, SCOPE & METHODOLOGY**



# 1 INTRODUCTION, SCOPE & METHODOLOGY

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WSP Consulting Ireland Ltd (WSP) and Cunnane Stratton Reynolds Ltd (CSR) have been commissioned to prepare this Environmental Impact Assessment Report (EIAR) to accompany an application for permission for further development of an existing quarry over approximately 64.0 hectares (ha.) located in the townlands of Athgarrett, Philipstown and Redbog, Co. Kildare. This EIAR is submitted on instruction of Hudson Brothers Ltd (HBL), owner and operator of this quarry who will be the applicant.

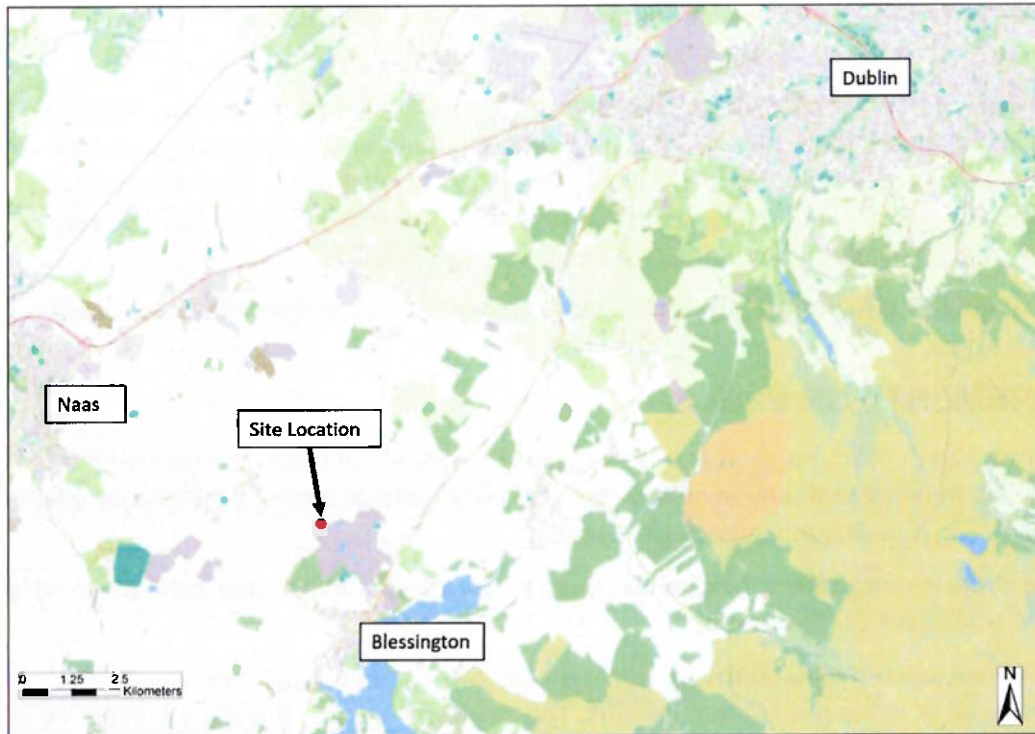
It is noted that this EIAR has been prepared in tandem with an rEIAR to accompany an application for substitute consent for that existing quarry under the Planning and Development Act, 2000 as amended by the same applicant.

The further development of the quarry is proposed over areas directly adjacent to the main operational lands already excavated as well as within the existing quarry for the purpose of recovering the economic reserve that remains in the void. The proposed development site (application site), lies at the centre of an established landholding located within the townlands of Athgarrett, Philipstown and Redbog and within 2 no. Electoral Districts (EDs) namely Rathmore and Newtown EDs.

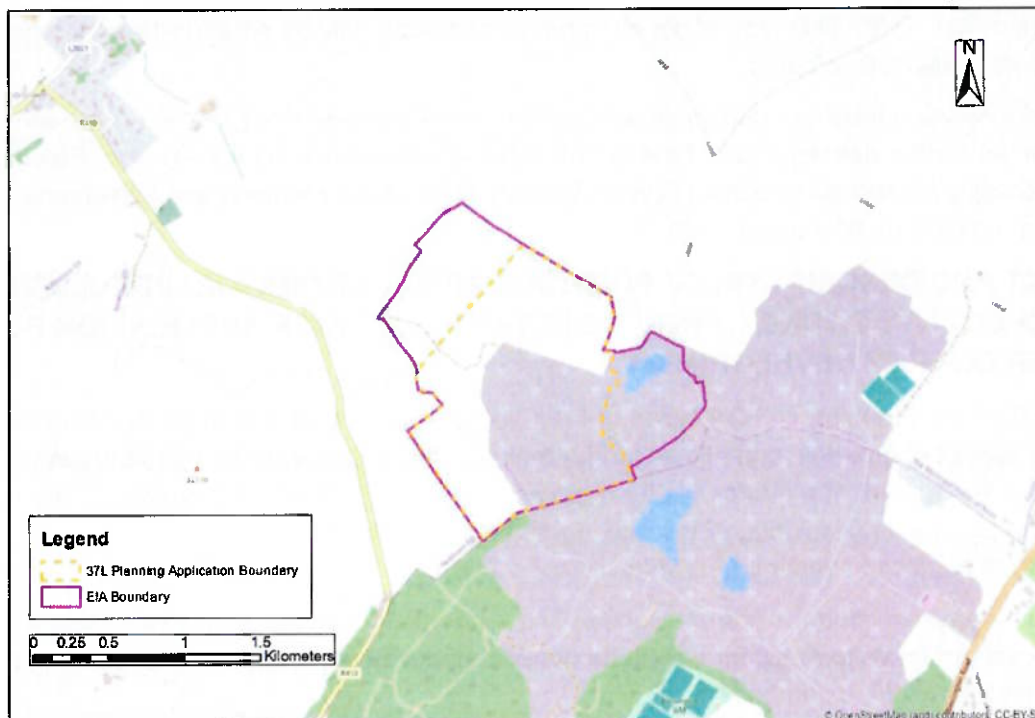
The centre of this landholding has been the subject of historic, current and intended future extraction. The southern boundary is delineated by the Wicklow and Kildare county boundaries and the western and northern boundaries of this area are delineated by the Philipstown townland boundary. The east of the area is within the Redbog townland and delineated by field/property boundaries. This area extends to approximately 95.8 ha. and constitutes the EIA project boundary for this quarry.

The lands the subject of this EIAR (the subject lands) at approximately 95.8 ha. entirely encompasses the application area of approximately 64.0 ha. The reserve at this quarry is greywacke rock, overlain by sand and gravel, currently worked to a maximum depth of 188 mOD. The rock reserve is traditionally excavated by blasting and mechanical means, primarily processed by mobile plant at the working face. In this case, however, blasting has not occurred in the period since 07267 expired on 18 September 2020. Excavated material is transported to a centrally located existing administration and processing plant area over approximately 5 ha. that holds further processing plant (washing, screening, grading). This plant and processing area is an established part of the quarry area.

Figure 1-1 shows the regional location of the Site, whilst Figure 1-2 provides a depiction of the substitute consent application area and the EIA project boundary.



**Figure 1-1 - Regional Site location.**



**Figure 1-2 - Section 37L application area and the lands the subject of the EIAR.**



HBL are the owners and operators of a quarry and aggregate product land use site located across the counties of Kildare and Wicklow, since the 1950s, formally becoming a company in 1971.

The trans-county HBL operational facility summarily consists of: a pit, processing plant and offices at New Paddocks, Blessington, County Wicklow where the main entrance to their operation exists onto a local road that accesses the N81; and a quarry with processing plant and staff welfare facilities to the rear (north west) of their Wicklow lands over Philipstown and Redbog in Co. Kildare. Generally the facility is approximately 2 km north of Blessington, Co. Wicklow.

The HBL operation in Kildare is adjacent to other quarry and associated land uses operated by unrelated parties.

## **1.1 REQUIREMENT FOR EIAR**

Certain proposed developments, due to their typology, or scale automatically attract the requirement for EIA by a competent authority as part of that authority's formal assessment of a development proposal seeking permission, consent or licensing.

As set out in the next section, a hierarchical suite of European and national legislation and guidance govern EIA and direct EIAR content.

The further development of a quarry proposal is over a site area of approximately 64.0 ha. that automatically attracts the requirement for EIA. The applicant seeking this development permission is therefore bound to provide an EIAR for the purposes of EIA.

The permission for development sought in this instance is under Section 37L of the Planning and Development Act, 2000. This type of planning permission may only be sought where an application for substitute consent is in being.

In this instance the concurrent substitute application with rEIAR and this EIAR to accompany the application for further development of the quarry is being made following the An Bord Pleanála grant of leave to apply for substitute consent under Section 177D of the Planning and Development Act 2000, as amended, on 01 August 2023.

### **1.1.1 CONTEXT AND DESCRIPTION OF PREVIOUS APPLICATIONS AND PRECLUSION OF KILDARE COUNTY COUNCIL FROM DETERMINING A PRIOR APPLICATION FOR FURTHER QUARRY DEVELOPMENT**

Section 37L of the Planning and Development Act 2000, as amended is entitled 'Further matters in relation to control of quarries' and allows for the making of an application for planning permission for the further development of a quarry site for quarrying only. Furthermore, this section of the Act restricts the circumstances timing of the making of the application to within 6 weeks of the submission of a subsite consent application on the same site.

As noted in the last section the current Section 37L application is made on foot of a grant from An Bord Pleanála for leave to apply for substitute consent under Section 177D of the Planning and Development Act 2000, as amended.



## Summary of permissions and prior applications

Aggregate extraction and processing in the general area is an historic use, having been utilised for aggregate production and aggregate processing since at least the 1800s. Following the coming into force of Section 261 the Planning and Development Act in 2004, HBL correctly and properly registered their facility with both Wicklow County Council (WCC; ref. QY/43) and Kildare County Council (KCC; ref. QR/42) who were the Section 261 registration authorities in their roles as planning authorities.

Both registrations were found to relate to pre 1963 quarry. Ultimately both Section 261 registrations concluded in directions to seek planning permission. Planning applications for inter alia the continuation of the extraction land use were submitted in each jurisdiction: WCC Reg. Ref. 066932 and KCC Reg. Ref. 07267 (PL09.235502). Permission was granted in Wicklow in October 2009 and in Kildare in April 2010. Each permission held a condition effectively limiting the duration of the permitted development: 25 years in Wicklow and 10 years in Kildare's case.

The Hudson Brothers operations were reviewed by both planning authorities under Section 261A of the Act. Wicklow County Council reviewed the quarry operation under ref. S261A/QY43 where no further action arose. Kildare County Council reviewed the quarry operation under ref. QRA-25-011 (QR42) who issued a notice to apply for permission under section 261A(2)(a)(ii). This notice was put on review by HBL under ref. 09.QV.0208 that resulted in the notice being annulled in March 2014 by An Bord Pleanála. The Order under ref. 09.QV.0208 summarily found development on the site on or after February 1997, either alone or in combination with other plans or projects, would not have a significant effect on European Sites' conservation objectives.

In the years since the grant of the continuation of quarrying permissions for the facility in 2009 and 2010, the economic downturn had struck and aggregate demand slumped as the construction industry all but collapsed. This sharp fall off in demand had a direct impact on the HBL operations and resulted in lower than expected aggregate sales volumes and slower than expected extraction rates.

By 2019, a recovery in the economy had led to a recovery in the construction industry and its supply chains. The option to extend the duration of planning permission for KCC Reg. Ref. 07267 was not open to the applicant at that time. Therefore, Hudson Brothers instructed the preparation of a planning application for their operations in Kildare to in order to (i) continue to produce construction aggregate where the enabling permission was to end in 2020, and (ii) secure permission to extend the extraction area by just over 13 ha.

A planning application was prepared for submission to KCC and was accompanied by an EIAR and Natura Impact Statement (NIS), each of which required the collation of baseline environmental monitoring, supported by detailed design and mitigation proposals. The application was submitted in May 2020 and assigned KCC Reg. Ref. 20532.

Further information was requested in July 2020. Part of the further information required seasonal ecological survey and assessment, monitoring and COVID-19 public health protection travel restrictions, meant that the earliest a formal response could be submitted made 01 October 2020.



The expiration date of KCC Reg. Ref. 07267 had been determined by the planning authority to be 18 September 2020. By letter dated 30 October 2020, and following receipt of the Further Information, KCC notified the Applicant that they were precluded from considering the Reg. Ref. 20532 application under Section 34(12) of the Act.

No notice to seek substitute consent was served and an application for leave for substitute consent was sought. An application for leave to apply for substitute consent was submitted to An Bord Pleanála with the aim to regularise development which was previously permitted under 07267 but undertaken after the expiry of that same previous permission. On 01 August 2023 An Bord Pleanála granted the leave to apply for substitute consent under Section 177D of the Planning and Development Act 2000, as amended. This EIAR is submitted as part of an concurrent application under Section 37L of the Planning and Development Act, 2000 as amended, for further development of the existing quarry.

### **1.1.2 S.37L APPLICATION AND EIA PROJECT BOUNDARY**

The Section 37L planning application unit extends to approximately 64.0 ha. and reflects the main pit extraction area of the quarry and a proposed northern extension (approximately 21.2 ha in total with an internal extraction area of approximately 17.7 ha) and a proposed western extension (approximately 10.2 ha in total with an internal extraction area of approximately 9.4 ha). This additional extraction area is the only new development currently proposed for the quarry.

A restoration proposal for the site is included as mitigation in this EIAR and presented at Section 11.0 (Landscape and Visual) and in submitted application drawing. The restoration proposed principally consists of the regrading of the current void and use of stored top and subsoils on site for restoration purposes. The restoration proposal includes the restoration of the extant plant processing area at the east of the site within the Applicant's ownership area and the subject of concurrent substitute consent application.

As noted at the outset, the application under Section 37L that this EIAR accompanies is to be made concurrent with an application for substitute consent for the over an area of approximately 71.9 ha. That application is accompanied by an rEIAR.

In view of this rEIAR and the EIAR being concurrently prepared for much of the same operational lands it is submitted that a single EIA project boundary for the purposes of assessment by experts of works past and proposed is consistent and will facilitate EIA of each development within the same EIA project envelope.

The EIA project boundary envelopes an area of approximately 95.8 ha. that encloses previous recent quarry application areas, current workings and intended future workings.

The EIA project boundary is therefore larger than the associated planning application units in order to capture the currently proposed substitute consent and Section 37L application boundaries and associated infrastructure.

## 1.2 STRUCTURE AND CONTENT OF THE EIAR

EIA is a process undertaken for certain types of development. It provides a means of drawing together the findings from a systematic analysis of the likely significant environmental effects of a scheme to assist local planning authorities, statutory consultees and other key stakeholders in their understanding of the impacts arising from the development.

The following subsections outline the evolution of EIA Directives and their interpretation in the Irish jurisdiction, statutory provisions and guidance that provide the purpose and content of the EIAR which is summarised at the end of this section.

### 1.2.1 EIA DIRECTIVES AND TRANSPOSITION

The requirement for an Environmental Impact Assessment (EIA) process arises from European Union (EU) Directives required to be adhered to by member States and transposed into national laws.

The original EIA Directive 85/337/EEC has been amended and superseded by Directives 97/11/EC, 2003/35/EC, 2009/31/EC to Directive 2011/92/EU.

Having regard to the transposition of the original environmental assessment Directive into Irish Law it is determined by reference to the Planning and Development Act, 2000 as amended, that the appointed day at which the requirement for same arose is 1 February 1990.

On 16 April 2014 Directive 2011/92/EU was amended by Directive 2014/52/EU of the European Parliament and of the Council (2014 EIA Directive).

The amending 2014 EIA Directive consists of 16 no. Articles and 5 no. Annexes that define EIA and the supporting information and processes available and required for EIA determination in the form of reasoned conclusion by the competent authority.

This is the EIAR by the developer defined at Article 1 and required under Article 3. This report relates to lands of 95.8 ha. that enclose lands that have been the subject of extraction and are intended for further quarry development area over a total application area of approximately 64.0 ha. Extraction area of that magnitude attracts automatic requirement for EIA as an Annex 1 project and is therefore subject to an assessment in accordance with articles 5 through 10.

Article 5 of the 2014 EIA Directive sets down the minimum information to be supplied in an EIAR including those matters at Annex IV as follows;

- (a) a description of the project comprising information on the site, design, size and other relevant features of the project;*
- (b) a description of the likely significant effects of the project on the environment;*
- (c) a description of the features of the project and/or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;*
- (d) a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment;*

- (e) a non-technical summary of the information referred to in points (a) to (d); and
- (f) any additional information specified in Annex IV relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected.”

The 2014 EIA Directive required that “Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive by 16 May 2017.”

The requirement for the current EIAR arises as a result of the associated development proposal being made for a development typology that exceeds the EIA threshold. The development proposal seeks planning permission under Section 37L of the Planning and Development Act 2000, as amended, therefore the competent authority undertaking EIA is An Bord Pleanála.

## 1.2.2 STATUTORY PROVISIONS

The Planning and Development Act, 2000 as amended, defines an EIAR as follows;

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

Regulations have been made to administer EIA. For the purposes of this EIAR and the statutes under which the requirement for its preparation has arisen, the following Statutory Instruments are relevant and have informed this report:

- European Communities (Environmental Impact Assessment) Regulations
- European Union (Environmental Impact Assessment and Habitats) Regulations
- European Communities (Environmental Impact Assessment) Regulations
- Planning and Development Regulations

## 1.2.3 GUIDANCE

The structure and content of this EIAR is in accordance with the following guidance:

### **Guidelines issued by the Housing, Local Government and Heritage Department:**

- 2020 Environmental Assessments and Planning in Ireland – Planning Leaflet 11, Office of the Planning Regulator
- 2018 August Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, Department of Housing, Planning and Local Government
- 2012 July Section 261A of Planning and Development Act, 2000 and related provisions Supplementary Guidelines for Planning Authorities, Department of the Environment, Community and Local Government
- 2012 January Section 261A of Planning and Development Act, 2000 and related provisions Guidelines for Planning Authorities, Department of the Environment, Community and Local Government



- 2009 December (revision February 2010) Appropriate Assessment of Plans and Projects in Ireland, Department of Environment, Heritage and Local Government
- 2009 November The Planning System and Flood Risk Management Guidelines for Planning Authorities, Department of Environment, Heritage and Local Government
- 2004 April Quarries and Ancillary Activities Guidelines for Planning Authorities, Department of the Environment, Heritage and Local Government

**Guidance issued by the Environmental Protection Agency [EPA]:**

- 2022 May Guidelines on the Information to be Contained in Environmental Impact Assessment Reports
- 2006 Environmental Management Guidelines, Environmental Management in the Extractive Industry (Non-Scheduled Minerals)

**1.2.4 PURPOSE & CONTENT OF EIAR**

The EIAR has been prepared in a 'Grouped Format' structure having regard to the prescribed environmental factors of the EIA Directive and the 2022 EPA Guidance; "Population and Human Health; Biodiversity, Land & Soils, Water, Air, Climate, Material Assets, Cultural Heritage, Landscape, Interactions."

In this way each aspect of the environment is presented as a separate section referring to the environment as it existed before development commenced, the existing development, experienced and / or likely impacts, and employed / proposed remedial mitigation measures.

The EIAR has therefore been systematically organised to provide the information and environmental aspect chapters identified in Table 1-1.

**Table 1-1 - Overall structure of the EIAR**

Content	Section
Context and Requirement for EIAR	1.0 Introduction, Scope and Methodology
A description of the existing environment.	2.0 Project Description; and As appropriate in the respective discipline chapters.
A description of the project.	2.0 Project Description
Identification of experienced / likely significant impacts during construction and operation of the development and a description of the measures employed / envisaged in order to avoid, reduce and, if possible, remedy significant adverse impacts.	3.0 Population and Human Health 4.0 Ecology and Biodiversity 5.0 Land, Soils and Geology 6.0 Water 7.0 Air Quality 8.0 Climate 9.0 Noise and Vibration



	10.0 Cultural Heritage 11.0 Landscape and Visual Impact 12.0 Traffic and Transport 13.0 Material Assets 14.0 Major Accidents and Disasters
Sets down the cumulative and in combination significant effects of the project and considers expected / experienced effects deriving from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned	Cumulative: As appropriate in the respective discipline chapters. In combination: 15.0 Interactions Major accidents and/or disasters: Section 14.0

Alternatives are examined by reference to locations, design and processes, as appropriate.

Likely and significant impacts arising from the existence of the development, its use of natural resources, the emission of pollutants and the creation of nuisances are identified, described as direct, indirect, secondary, cumulative; by duration as short, medium and long-term, permanent and temporary; and by type as positive and negative, as appropriate.

A Non-Technical Summary (NTS) accompanies this EIAR and provides a summary of the key findings of the EIA in non-technical language.

Table 1-2 identifies the data and information to be included by the developer in the EIAR as describes in Annex IV of the amended EIA Directive, and the location of this information within the document.

**Table 1-2 - Requirements of 2014/52/EU Annex IV and where these have been addressed in this EIAR.**

Item	Requirement of Annex IV item	Reference in EIAR
1	Description of the project, including in particular: (a) a description of the location of the project; (b) a description of the physical characteristics of the whole project, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases; (c) a description of the main characteristics of the operational phase of the project (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used; (d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation) and quantities and types of waste produced during the construction and operation phases.	(a) and (b) Section 2 – 'Project Description'  (c) and (d) Section 2 – 'Project Description', and identified in the relevant technical chapters
2	A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.	Section 1.7 – 'Alternatives'



3	<p>A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.</p>	<p>A 'Baseline Conditions' section has been provided in each technical chapter along with a section which summarises a 'Do-Nothing' scenario without development.</p>
4	<p>A description of the factors specified in Article 3(1) likely to be significantly affected by the project: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.</p>	<p>Each relevant study area which has been scoped into the EIAR is provided within a dedicated technical chapter.</p> <p>Sections 3.0 – 13.0.</p>
5	<p>A description of the likely significant effects of the project on the environment resulting from, inter alia:</p> <p>(a) the construction and existence of the project, including, where relevant, demolition works;</p> <p>(b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;</p> <p>(c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;</p> <p>(d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);</p> <p>(e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;</p> <p>(f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;</p> <p>(g) the technologies and the substances used.</p> <p>The description of the likely significant effects on the factors specified in Article 3(1) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project.</p>	<p>(a), (b) and (c) Each technical chapter, as appropriate</p> <p>(d) Section 3.0 (Pop. and Human Health), Section 10.0 (Archaeology and Cultural Heritage), and Section 14 (in relation to accidents and disasters)</p> <p>(e) Each technical chapter, as appropriate</p> <p>(f) Section 8.0 (Climate)</p> <p>(g) Each technical chapter, as appropriate</p> <p>Descriptions of effects are identified in each technical chapter, as appropriate</p>
6	<p>A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.</p>	<p>Assessment methodology is identified in each technical chapter, as appropriate, or a common framework and terminology has been identified in Section 0.</p> <p>Difficulties encountered in compiling the EIAR have been identified in each technical chapter, as appropriate</p>

7	A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.	The identification of mitigation measures is provided in each technical chapter, as appropriate, and has been consolidated in Section 16 Mitigation and Monitoring.
8	A description of the expected significant adverse effects of the project on the environment deriving from the vulnerability of the project to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to Union legislation such as Directive 2012/18/EU of the European Parliament and of the Council or Council Directive 2009/71/Euratom or relevant assessments carried out pursuant to national legislation may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.	Section 13.0 - Major Accidents and Disasters
9	A non-technical summary of the information provided under points 1 to 8.	Submitted as a separate document with this application
10	A reference list detailing the sources used for the descriptions and assessments included in the report.	Final Section of each technical chapter.

### 1.3 SUMMARY DESCRIPTION OF DEVELOPMENT THE SUBJECT OF EIAR

This EIAR has been prepared to accompany an application for further development of a quarry as a quarry at an existing quarry at Athgarrett, Philipstown and Redbog, Co. Kildare, that is the subject of a concurrent application for substitute consent, itself accompanied by a EIAR.

The lands the subject of this EIAR extend to 95.8 ha. and are in part those of the extractable area permitted under KCC Reg. Ref. 07267. The quarry area that makes up the application further development of a quarry as a quarry planning unit extends to approximately 64.0 ha. within the EIA project area. At the east of the current quarry area is the existing administration and processing plant area over approximately 5 ha. The current quarry area, including the plant and processing area is the subject of the concurrent substitute consent application

The Site is located approximately 2 km north of Blessington and ca. 7.5 km southeast of Naas. The undulating land surrounding the Site slopes in a north-westerly direction to the north of the Application Site, and a south-easterly direction to the south of the Application Site. The southern boundary of the Application Site lies adjacent to the Kildare-Wicklow county border.

The quarry is accessed via Danker Lane through lands owned by the client in Co. Wicklow. The Co. Wicklow land is accessed via the N81 National Secondary Road. A number of other unrelated aggregate companies operate from sites adjacent to the Application Site. The sand and gravel pits in the Blessington area are a major source of sand and gravel used in the production of construction

material in the Greater Dublin region. Other land uses surrounding the Application Site are for residential and agricultural purposes, mainly pastoral grazing of sheep and cattle, and forestry.

Section 37L confines development proposal to be for further development of a quarry as a quarry. The proposed development for which this EIAR has been prepared is for:

- The lateral extension of the permitted extraction activities in westerly and northerly directions, over a combined area of approximately 31.4 ha and depth that is 1 m above the watertable:
  - The proposed western extension is for the extraction of sand and gravel, and rock over an area of approximately 10.2 ha (internal extraction area of 9.4 ha);
  - The proposed northern extension is primarily for the extraction of sand and gravel over an area of approximately 21.2 ha (internal extraction area of 17.7 ha);
  - The extension areas are proposed to be extracted on a phased basis that incorporate into the existing extraction and restoration plans;
  - The proposed lateral extension areas of sand and gravel, and rock will be processed using existing site processing facilities and are intended to maintain the extraction and aggregate production capabilities of the existing construction aggregate production operation; and
  - The proposed extension areas will include ancillary site works and ancillary development in the form of landscaped screening bunds.

The proposed development will therefore consist of extraction in areas over a total application site area of approximately 64.0 ha. The plant and processing area is included in the application for substitute consent area that includes restoration concept for the purposes of retrospective assessment in the accompanying rEIAR. This EIAR contains a restoration proposal for the proposed further quarry area and the extant plant and processing area for the purposes of mitigation.

### 1.3.1 DESCRIPTION OF SITE BASELINE

Section 3.6.1 of the 2022 EPA EIAR Guidance states that after the description of the project "...the description of the baseline scenario is the second of the two factual foundations of the EIAR."

In this instance the EIAR relates to proposed development at a site already in operation as a quarry with related ancillary processing activities and supporting welfare facilities. Please refer to submitted site layout for identification of the below summarised current quarry operation description:

The quarry operation is accessed from a single entry/exit point on the east of the EIA boundary (to Danker Lane). This entry/exit point leads to Danker Lane and to lands owned by the client in Co. Wicklow. The Co. Wicklow land is accessed via the N81 National Secondary Road.

The access point in the Kildare site connects to the main plant and processing area over approximately 5 ha. holding: an office and canteen building, storage containers, a maintenance shed, water recycling unit, an asphalt plant, an aggregate washing, crushing, screening plant, a



generator / powerhouse building, control room, a bunded fuel tank. Also, within this plant and administration area are fuel storage and refuelling area, potable water well and sewage holding tank.

The plant and processing area also contains 2 no. dormant crushing and aggregate screening plants and a dormant former concrete plant. These structures are not in use and would be the subject of a separate planning application and assessment process if ever required for use in the future. These items of plant will be decommissioned in conjunction with the restoration plan for the Site.

Sand and gravel are extracted by mechanical means and transported from the active face by haul truck on internal haul roads to the aggregate processing and plant area. This is a wet process where the aggregate is (crushed if required) washed and screened before being segregated into stockpiles of different sized product. The aggregate processing plant operates a closed-circuit washing system where water is recirculated. The wet system results in significantly lower fugitive dust emissions compared with dry screening processes. Processed sand and gravel are transported in road going trucks for sale and distribution to market onto the N81, via a shared laneway which leads through the client's Wicklow owned site

The rock reserve consists of greywacke (sandstone) and sand and gravel. The greywacke is currently extracted above the watertable by mechanical means as blasting on the site ceased prior to September 2020, (upon a successful grant of this application for future development blasting is proposed to recommence). The excavated greywacke material is crushed at the working face by mobile plant and transported to road going trucks for sale and distribution to market along existing internal quarry haul roads, through the Applicant's Wicklow site as identified above. The current associated quarry void south west of the plant and processing area at a current working depth of 188 mOD.

## **1.4 LIMITATIONS & DIFFICULTIES IN COMPILING THE SPECIFIED INFORMATION (SCHEDULE 6 OF SI 600 OF 2001, AS AMENDED)**

Limitations and difficulties encountered in preparing this EIAR having regard to the Planning and Development Regulations and Section 3.7.2 of the 2022 EPA Guidelines.

Throughout this EIAR, monitoring and survey data and analysis, previously submitted in earlier planning applications, or monitoring records held by the applicant are relied upon to model the subject site throughout its lifetime and discern impacts on the environment of the subject site.

Further relevant difficulties or survey limitations specific to each study area / section have been identified therein, as appropriate.

Conservative assessments have been applied where information concerning methodology or program could not be fully determined.

As appropriate, information from publicly available sources has been used in the course of this assessment. This includes mapping sources such as the EPA, Geological Survey of Ireland, Department of Environment, Climate and Communications, etc., and other information including



Census returns. Due care has been taken in the review of these data sets however no responsibility can be taken for inaccuracies which may be present within this public data.

## 1.5 EIAR CONTRIBUTORS AND GUARANTEE OF COMPETENCY AND INDEPENDENCE

S172(1B) requires that the EIAR be prepared by experts with the competence to ensure its completeness and quality.

In the interests of consistency and the leveraging of existing specialist knowledge of the subject site, alongside the applicant, competent experts have been retained to compile this EIAR.

The EIAR was completed by a project team led by WSP, who also prepared a number of the chapters.

The members of the team and their respective inputs are presented in Table 1-3.

In accordance with EIA Directive 2014/52/EU, we confirm that experts involved in the preparation of the EIAR are fully qualified and competent in their respective field. Each has extensive proven expertise in the relevant field concerned, thus ensuring that the information provided herein is complete and of high quality.

**Table 1-3 - EIAR Contributors**

Discipline	Lead Specialist	Qualifications	Accreditations	Years of prof. exp.
Introduction, Scope and Methodology; Project Description	Kevin McGillicuddy	BA (Mod) Botany; MSc Environmental Science	PIEMA	11+
Planning Population & Human Health;	Eamonn Prenter	BA (Joint Hons) Geography and History; Dip Town and Country Planning; MSc Town and Country Planning	MIPI MRTPI	33
Land, Soils & Geology; Water	Richard Lansley	MSc. Hydrogeology, BSc. Physical Geography	Chartered Geologist (Geological Society of London)	22+
	Kit Pannell	MSc Hydrogeology		11+
Biodiversity	Steven Tooher	BSc (Hons) Zoology MSc (Agr) Environmental Resource Management	ACIEEM (Associate Member – Chartered Institute of Ecology and Environmental Management)	8+
Air Quality;	Rachel Lansley	MSc Environmental Monitoring and Analysis, BSc Physical Geography	Chartered Scientist (CSci), Member of the Institution of Environmental Sciences (IES) and the Institute of Air Quality Management (IAQM)	15+



Noise & Vibration	Simon Faircloth	PgDip Acoustics and Noise Control	Corporate Member of the Institute of Acoustics (MIOA)	18+
Cultural Heritage	Dr Charles Mount	M.A., Ph.D., M.B.A., Dip. EIA & SEA Mgmt.	M.I.A.I.	25+
Landscape & Visual	Ronan Finnegan	BSc (Hons) Geography and Geology; PGDip Landscape Architecture	Chartered member of the Landscape Institute (UK)	15+
	Jamie Ball	BA (Hons) Landscape Architecture	Member of the Irish Landscape Institute (MILI)	14+
Traffic & Transport	Colin Bell	BEng (Hons) (Civil Engineering) CEng	Member of Chartered Institute of Highways and Transportation	25+
	Damian O'Reilly	MSc GIS; BEng (Hons) Civil Engineering; GMICE	Graduate Member of the Institution of Civil Engineers	9+
Climate; Material Assets; Major Accidents and Disasters	Kevin McGillicuddy	BA (Mod) Botany; MSc Environmental Science	PIEMA	11+
	Lisa Cleary	B.A. (Mod) Environmental Science	Student Member of Chartered Institute of Ecology and Env. Mgmt.	1+

## 1.6 EIAR SCOPE & METHODOLOGY - PREDICTION OF IMPACTS AND EFFECTS AND ASSESSMENT OF MITIGATION MEASURES

### 1.6.1 DETERMINING THE EXTENT OF THE ASSESSMENT

It is necessary to define the extent of the EIA in both spatial and temporal terms, and this has been done as described below.

#### 1.6.1.1 Geographical Extent

The EIA directly covers the physical extent of the Site as shown in the EIA boundary plan (Figure 1-2). Also, as many predicted impacts can extend beyond the immediate EIA boundary, for example the use of the Site for foraging by a species that is primarily located off-site.

For certain topic areas a wider 'zone of influence' has been considered, as described in the individual topic chapters.

The geographical extent of the EIA boundary also includes the cumulative impacts from related and unrelated development activities in both the construction and operational phases.



### 1.6.1.2 Temporal Extent

Under this programme, it is expected that the duration of the proposed extraction operations will be 13 to 15 years depending on market conditions. The restoration of the Proposed Development will last between 2 to 3 years.

## 1.6.2 PREDICTION OF IMPACTS AND EFFECTS PRIOR TO MITIGATION

Prediction methods are required to identify and assess the significant effects of the development on the environment. The predictive methods used for each technical discipline are detailed in the respective chapter. For several topic areas, predictive methods have been developed by professional bodies. Where these are available they have been identified in the individual chapters as appropriate.

For topics where there is no topic specific guidance available, a common framework of assessment criteria and terminology has been used based on the EPA's draft Guidelines on the Information to be Contained in EIARs (EPA, 2022).

This common framework follows a 'matrix approach' to environmental assessment which is based on the characteristics of the impact (magnitude and nature) and the value (sensitivity) of the receptor. The terms used in the common framework are described below. Details of how these specifically relate to the individual topic areas are provided, where appropriate, within the respective topic chapters. The descriptions for value (sensitivity) of receptors are provided in Table 1-4.

**Table 1-4 - Environmental value (sensitivity) and descriptions.**

Value (sensitivity) of receptor / resource	Typical description
High	High importance and rarity, national scale, and limited potential for substitution.
Medium	Medium or high importance and rarity, regional scale, limited potential for substitution.
Low	Low or medium importance and rarity, local scale.
Negligible	Very low importance and rarity, local scale.

The descriptions for magnitude of impact are provided in Table 1-5.

The approach followed to derive effects significance from receptor value and magnitude of impacts is shown in Table 1-6. Where Table 1-6 includes two significance categories, evidence is provided in the topic chapters to support the reporting of a single significance category.

A description of the significance categories used is provided in **Table 1-7**.



**Table 1-5 - Magnitude of impact and typical descriptions.**

Magnitude of impact (change)		Typical description
High	Adverse	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements.
	Beneficial	Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality.
Medium	Adverse	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements.
	Beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.
Low	Adverse	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements.
	Beneficial	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring.
Negligible	Adverse	Very minor loss or alteration to one or more characteristics, features or elements.
	Beneficial	Very minor benefit to or positive addition of one or more characteristics, features or elements.

**Table 1-6 - Significance Matrix.**

Environmental value (Sensitivity)	Magnitude of Impact (Degree of Change)			
	Negligible	Low	Medium	High
High	Slight	Slight or moderate	Moderate or large	Profound
Medium	Imperceptible or slight	Slight or moderate	Moderate	Large or profound
Low	Imperceptible	Slight	Slight	Slight or moderate
Negligible	Imperceptible	Imperceptible or slight	Imperceptible or slight	Slight

**Table 1-7 - Significance categories and typical descriptions.**

Significance Category	Typical Description
Profound	An effect which obliterates sensitive characteristics.
Large	An effect which, by its character, magnitude, duration or intensity alters a significant proportion of a sensitive aspect of the environment.

Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Imperceptible	An effect capable of measurement but without significant consequences.

The approach to assigning significance of effect included reasoned argument, the professional judgement of competent experts and using effective consultation to ensure the advice and views of relevant stakeholders were taken into account.

The assessment of the significance of environmental effects covered the following factors:

1. The receptors/resources (natural and human) which would have been affected and the pathways for such effects;
2. The geographic importance, sensitivity or value of receptors/resources;
3. The duration (long or short term); permanence (permanent or temporary) and changes in significance (increase or decrease);
4. Reversibility - e.g. is the change reversible or irreversible, permanent or temporary;
5. Environmental and health standards (e.g. local air quality standards) being threatened; and
6. Feasibility and mechanisms for delivering mitigating measures, e.g. Is there evidence of the ability to legally deliver the environmental assumptions which are the basis for the assessment?

### 1.6.3 DESIGN AND MITIGATION

The environmental assessment and design of the Proposed Development incorporated mitigation measures using a hierarchical system as follows:

1. Avoidance and prevention: design and mitigation measures to prevent the effect (e.g. alternative design options or avoidance of environmentally sensitive sites);
2. Reduction: where avoidance is not possible, then mitigation is used to lessen the magnitude or significance of effects; and
3. Remediation: where it is not possible to avoid or reduce a significant adverse effect, these are measures to offset the effect.

Any enhancement measures have also been described (measures that are over and above what is required to mitigate the adverse effects of a project), as well as any requirements for monitoring of mitigation measures associated with any significant environmental effects.

### 1.6.4 PREDICTION OF RESIDUAL IMPACTS AND EFFECTS

Following the assessment of the level of effect significance, mitigation measures will be presented that will be used to further avoid, prevent or reduce the magnitude of the potential impact. If necessary, the significance of the effect taking into account the mitigation measures is then



assessed to give the residual effect significance. Any monitoring that will be required to measure the success of the remedial measures will also be presented.

Residual effects of 'large' or 'profound' significance are considered to be 'significant' for the purposes of this assessment.

### **1.6.5 CUMULATIVE ASSESSMENT**

The EIAR assesses cumulative effects including those from:

1. The development itself (e.g., numerous different effects impacting a single receptor); and
2. Other appropriate developments in the surrounds of the Site (together with the development itself) where effects could have foreseeably resulted from the Proposed Development and from other known developments in the assessment study area.

The cumulative effects were assessed when the conclusions of individual environmental topic assessments had been reached and reported.

The assessment of cumulative effects from different developments included:

1. Establishment of the zone of influence of the development together with other projects;
2. Establishment of a list of developments which had the potential to result in cumulative impacts, including.
3. Obtaining further information and detail on the list of identified projects to support further the assessment.

## **1.7 THE NEED FOR THE DEVELOPMENT AND CONSIDERATION OF ALTERNATIVES**

Identification and consideration of alternatives of design and scale for a quarry development, particularly for a continuation of extraction, are limited in scope. The extraction of aggregates is controlled by the availability and quality of the materials (both sand and gravel, and rock) which in turn controls the overall design plan for the quarry.

The greywacke rock and sand and gravel reserve at the subject location is of a proven good quality capable of being used for a range of materials in the construction industry. Therefore, the reserve material assumed to be present at the subject site provides suitable aggregates for construction purposes.

In considering alternative sites, it is a basic principle that aggregates can only be worked where they naturally occur, (a factor recognised in the Kildare County Development Plan 2023-2029). The products are generally of low unit value and the most significant cost is transportation. As with all aggregate extraction development the nearer the supply of aggregate to the market, the more economically viable it is and given the nature of aggregate deposits. In this case the Site has the benefit of being strategically located adjacent to the National Road Network (N81). Aligned to this economic situation is the environmental and social preferability of locally sourced aggregates. Aggregates sourced close to their market are preferable to those sourced at more remote locations



as this lessens road traffic and associated environmental impacts and economic costs. Socially, the local sourcing of construction aggregate strengthens the local economy through job provision and associated spending and exploits advantages and opportunities inherent in local supply chains.

Aggregates are an essential material for the construction industry and are used in all major development plans (housing, road surfacing, infrastructure etc.). As such, they are of major significance to the overall growth of their local areas and the country and an important economic resource despite fluctuations in levels of construction due to wider economic forces, or events such as the COVID-19 pandemic suspension of construction.

The purpose of this EIAR is to assess the site with regard to potential impacts on the environment, and to propose measures to avoid, reduce or remedy undesirable potential impacts, as appropriate.

In this case, the quarry site represents the predominant land asset upon which the developer's companies and employees rely. The developer has a personal intergenerational association with the lands and is a quarry operator and employer who wishes to maintain this asset as a sustainable extraction and processing development. In order for this operation to continue, planning permission for further extraction is sought to continue to feed market demand for aggregate and its products. The concurrent substitute consent application and rEIAR may only seek permission for development that has already occurred and as such the further extraction of reserve is the subject of the Section 37L application that this EIAR accompanies.

Maintaining the quarry site and adjacent suitable lands as a viable quarry with associated processing plants will ultimately realise the sustainable extraction potential of this extant, established quarry and will maintain those direct and indirect jobs.

### **1.7.1 SITE SELECTION**

In this instance the EIAR has arisen as a direct requirement of the proposed extraction area exceeding EIAR preparation thresholds. However, this extraction area occurs over an existing extraction site with lateral extensions and is intended to utilise the plant and processing area (the subject of concurrent substitute consent). In other words, the site for which proposed development permission is sought is not a new site but rather an existing extraction site with contiguous lateral extension that will utilise a contiguous plant and processing area.

The necessity for the application this EIAR accompanies arises as the concurrent substitute consent application may only permit development already undertaken. As such, without a Section 37L application and permission for further extraction of reserve, the continuation of the existing quarry will not be possible. Therefore, site selection methodology employed is primarily driven by the existence of the existing quarry and remaining reserve at the quarry. In this way, the site selected was required to be functionally conjoined or capable of being conjoined to the extant plant and processing area and quarry entrance.

The proposed development represents the immediate reserve available for extraction at the site: a lateral western and northern extensions of the void to ensure aggregate product to meet existing market demand from the quarry site.



The existence and continued use of the established quarry and processing complex will have less net environmental and economic impact than developing a new greenfield quarry.

## **1.7.2 ALTERNATIVE DESIGNS CONSIDERED AT THE SUBJECT SITE**

The western lateral extension of the site is provided in the same arrangement as that which was proposed in the KCC Reg. Ref. 20523 application. This same arrangement has been proposed due to the optimised layout which utilises the existing void and accesses good quality sand, gravel and underlying greywacke. The base of the main existing pit has been profiled to extract existing side slopes and maintain an existing depth (above the groundwater table).

The proposed design of the northern extension area varies with the lateral northern extension proposed in the 2020 application. This comparison is shown in Figure 1-3 and Figure 1-4. The 2020 design proposed to extract sand and gravel from reserves (above the groundwater water table) in the north of the landholding and adjacent to the Gas Networks Ireland (GNI) gas transmission line. This design accessed reserves within the landholding but situated the quarry at a slightly greater distance from the processing area. The arrangement also proposed extraction at a slightly closer proximity to residential receptors and a gas transmission line.

In submissions received by KCC it was noted that design, raised concerns about increased noise, dust, and potential safety risks to nearby residents. In contrast, the current proposed design positions the extraction closer to the existing quarry and processing area, thereby minimising the transportation distance. Similar to the 2020 proposal the current proposed sand and gravel extraction in this area will occur above the water table. The revised proposals locate extraction closer to residential receptors to the north east, however setbacks and screening are incorporated in the design in order to mitigate potential adverse environmental impacts and nuisance to these receptors.



Figure 1-3 - KCC Reg. Ref. 20532, Proposed Site Conditions - Northern Area.

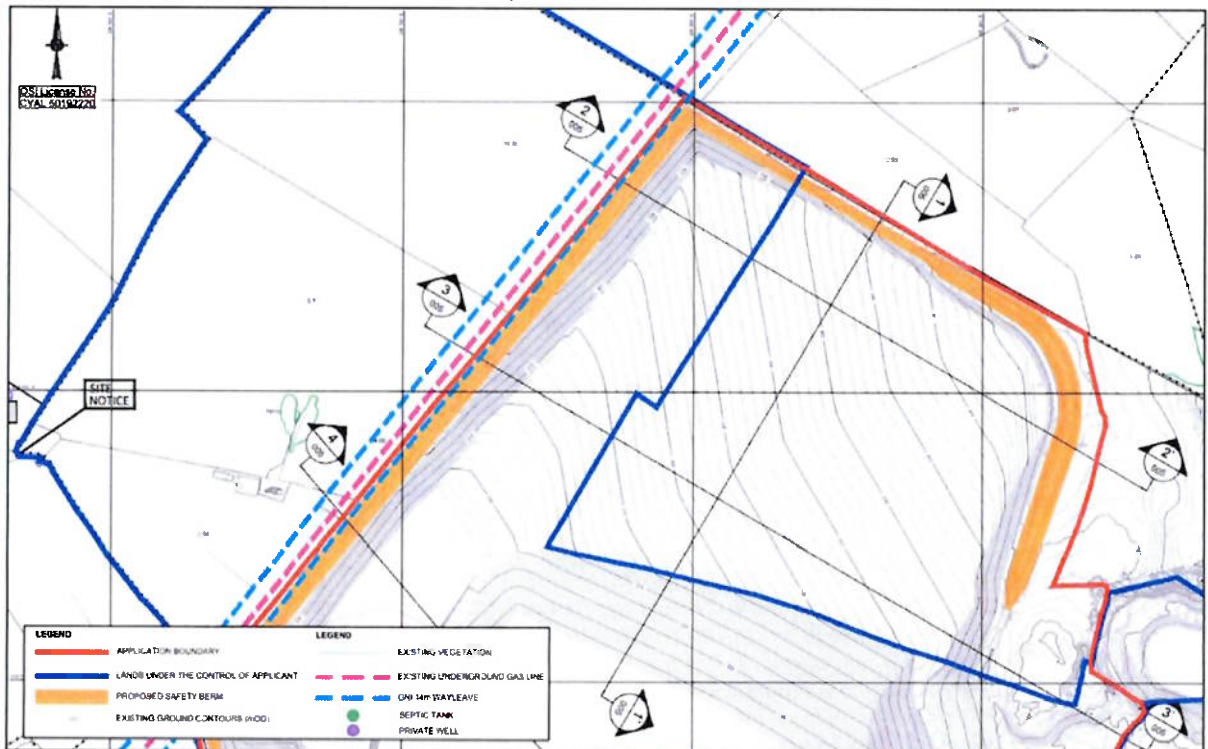


Figure 1-4 – Current S37L Proposed Site Conditions - Northern Area.



# 2

## PROJECT DESCRIPTION



## 2 PROJECT DESCRIPTION

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This Environmental Impact Assessment Report (EIAR) has been prepared to accompany an application for permission for further development of a quarry as a quarry at at Athgarrett, Philipstown and Redbog, Co. Kildare.

This EIAR has been prepared in tandem with an rEIAR to accompany an application for substitute consent for that existing quarry by the same applicant, Hudson Brothers Ltd, (HBL).

The further development of the quarry is proposed over areas directly adjacent to the main operational lands already excavated as well as within the existing quarry for the purpose of recovering the economic reserve that remains in the void. The proposed development site (application site), lies at the centre of an established landholding of located within the townlands of Athgarrett, Philipstown and Redbog.

The centre of this landholding has been the subject of historic, current and intended future extraction. The southern boundary is delineated by the Wicklow and Kildare county boundaries and the western and northern boundaries of this area are delineated by the Philipstown townland boundary. The east of the area is within the Redbog townland and delineated by field/property boundaries. This area extends to approximately 95.8 ha. and constitutes the EIA project boundary for this quarry.

The lands the subject of this EIAR (the subject lands) at approximately 95.8 ha. entirely encompasses the application area of approximately 64.0 ha. The application area holds the main pit extraction area of the quarry and a proposed northern extension (approximately 21.2 ha in total with an internal extraction area of approximately 17.7 ha) and a proposed western extension (approximately 10.2 ha in total with an internal extraction area of approximately 9.4 ha).

The reserve at this quarry is greywacke rock, overlain by sand and gravel, currently worked to an maximum depth of 188 mOD. The rock reserve is traditionally excavated by blasting and mechanical means, primarily processed by mobile plant at the working face. In this case, however, blasting has not occurred in the period since 07267 expired on 18 September 2020. Excavated sand and gravel material is mechanically extracted and transported internally to a centrally located existing administration and processing area over approximately 5 ha. that holds further processing plant (washing, screening, grading). This plant and processing area is an established part of the quarry area.

Figure 2-1 shows the regional location of the Site, whilst Figure 2-2 provides a depiction of the substitute consent application area and the EIA project boundary.

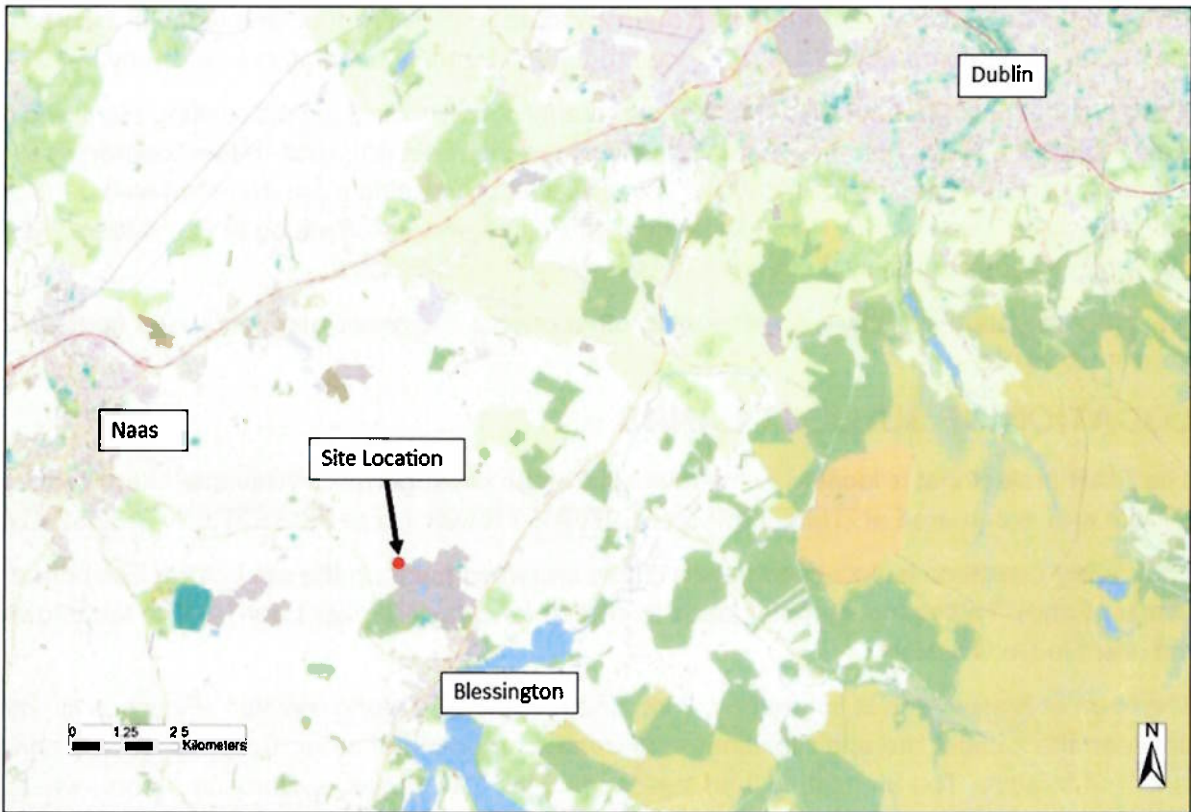


Figure 2-1 - Regional Site Location.

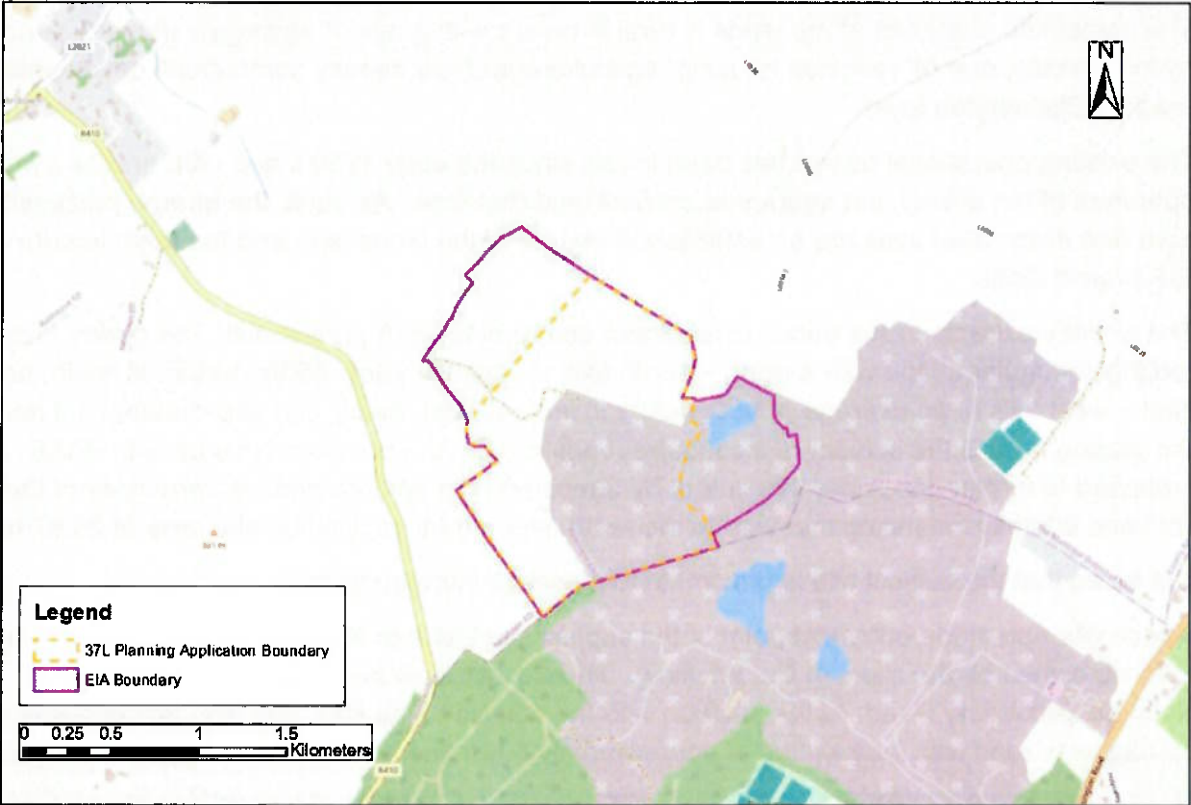


Figure 2-2 - Section 37L application area and the lands the subject of the EIAR.



HBL are the owners and operators of a quarry and aggregate product land use site located across the counties of Kildare and Wicklow, since the 1950s, formally becoming a company in 1971.

The trans-county HBL operational facility summarily consists of: a pit, processing plant and offices at New Paddocks, Blessington, County Wicklow where the main entrance to their operation exists onto a local road that accesses the N81; and a quarry with processing plant and staff welfare facilities to the rear (north west) of their Wicklow lands over Philipstown and Redbog in Co. Kildare. Generally the facility is approximately 2 km north of Blessington, Co. Wicklow.

The HBL operation in Kildare is adjacent to other quarry and associated land uses operated by unrelated parties.

## 2.1 LOCATION OF SUBJECT LANDS

The EIAR project unit is located in the townland areas of Athgarrett, Philipstown and Redbog, Co. Kildare and is centered at ITM coordinates 697024, 716608, (or at 53°11'27.5"N 6°32'52.4"W).

The quarry operation is accessed from a single entry/exit point on the east of the EIA boundary (to Danker Lane). This entry/exit point leads to shared laneway (Danker Lane) and to lands owned by the client in Co. Wicklow.

The town of Blessington is located ca. 2 km south of the Site along the N81 (Figure 2-1). The lands between the subject site and Blessington town are composed of other quarry lands and agricultural land and forestry. The undulating land surrounding the Site slopes upwards in a north-westerly direction to the north of the subject site, and away in a south-easterly direction to the south of the subject site. The southern boundary of the Application Site lies adjacent to the Kildare/Wicklow county border.

The immediate character of the lands is rural in nature with a mix of aggregate industry surrounded by low density, one off roadside housing, agriculture and low density commercial development towards Blessington town.

The existing operational quarry has been in use since the early 1950's and HBL are the owners and operators of the quarry and aggregate product land that time. As such, the quarry, processing plant area and associated uses are an established feature of the landscape and the main feature of the EIA project lands.

The already extracted area occupies southern centre of the EIA project unit. The quarry has a roughly triangular shape with a north – south axis of approximately 650m meters in width, and an east – west axis of an average of 900 meters in length. That quarry and associated plant and processing area is the subject of a concurrent application for substitute consent with rEIAR. It is proposed to further develop this quarry by deepening the eastern and western sides of the current void and laterally extending that void to the north over a total application site area of 26.87 ha.

It is noted that the subject site is proximate to pieces of infrastructure:

**Roads:** As noted, the entry/exit point of the subject site leads to shared laneway (Danker Lane) and to lands owned by the client in Co. Wicklow. The Co. Wicklow land is accessed via the N81 National Secondary Road. At the junction with the access to the HBL, the N81 is a two-way single carriageway road with lane widths of approximately 5.5m and a hard strip of approximately 0.5m on

both sides of the carriageway. The N81 also provides a right turn lane for southbound vehicles entering the quarry.

**Electricity:** The subject site is connected to the grid by an underground medium/low voltage cable. No other underground or overhead lines traverse the subject site. Other properties around the site are serviced by medium and low voltage overhead lines which traverse the area to the west, east and north.

**Water:** A public mains connection services the office/canteen, control rooms and welfare facilities onsite. Water is abstracted from a pond onsite to service the water recycling tanks, maintenance shed (including welfare facility) and aggregate plant. The water from the pond that services the maintenance shed undergoes UV treatment in a dedicated unit at the shed.

Foul water is treated at the proprietary wastewater treatment system at the maintenance shed. Foulwater is collected in holding tanks at the control room and the office/canteen and is removed off-Site regularly by an appropriately qualified and permitted contractor. It is proposed to upgrade the holding tanks at the office/canteen to a proprietary wastewater treatment system, however this will be subject to a separate application process upon the successful grant of the concurrent Substitute Consent application.

A potable water network, operated by Uisce Eireann, services houses in the locality. Service mapping indicates that a 300m ductile iron main runs along the R410 west of the site and services the residential dwellings in that area. To the north east of the Site, residential dwellings are served by HDPE and uPVC mains supplies. Uisce Eireann pipelines do not traverse the subject site or lands proposed for extraction.

**Gas:** There is a high-pressure transmission pipe located within northern section of the subject site (located outside the area of proposed extraction). Appropriate set backs have been included in the design of proposed future extraction.

## 2.2 PROPOSED DEVELOPMENT SITE ALREADY PART OF AN OPERATIONAL QUARRY

As noted the proposed development is the further development of a quarry as a quarry. The existing quarry and associated plant and processing area is the subject of a concurrent application for substitute consent and rEIAR.

Extraction on the EIA lands evidenced in previously submitted registration and application material to have begun in the 1950s with planning permission originally secured for quarrying in 2010 (KCC Reg. Ref. KCC 07/267 and granted by An Board Pleanála under Reg. Ref. PL09.235502 with regards to appeal of contributions).

Table 2-1 has been prepared to provide a rendition of the development of the quarry to the current time using publicly available resources; historical mapping and photography; and historic monitoring records. Environmental monitoring records made available by the developer have been utilised alongside site visits and monitoring undertaken specifically for the preparation of this EIAR and concurrent rEIAR. In addition, the applicant provided historical excavation rates and direction information.

**Table 2-1 - Summary of key events on application site**

Year	Event
Early 1950's	Peter, Sean & Patrick Hudson all worked as employees in quarrying business in the Brittas, Ballymore Eustace and Blessington areas.
1955	Owen McDermott's, owner and operator interest of quarry at Philipstown Townland, Co. Kildare comes to Hudson Brothers.
1960's	William Headon owned quarry at Philipstown Co. Kildare that was taken over by Hudson Brothers.
1971	The Hudson Bros. Ltd. Company was formed (Peter, Sean & Patrick Hudson all Directors)
ca. 1982	Hudson Bros. Ltd. purchased existing quarries at Philipstown and Redbog, both located in Co. Kildare, and continued extracting at these townlands.
1986/87	Hudson Bros. Ltd. purchased existing quarries at New Paddocks, Old Paddocks and Santryhill, located in Co. Wicklow, and continued extracting at these townlands.

The planning history of the application site is summarised below and is set out in detail, in chronological order, in the accompanying planning statement.

## 2.3 DESCRIPTION OF SUBJECT LANDS

### 2.3.1 SUMMARY OF PROGRESSION OF EXTRACTION OPERATIONS TO CURRENT TIME

The Site is operated under the planning authorisation KCC Reg. Ref.: 07/267. This Application applied for:

*'...permission for the continuation of aggregate extraction and processing at Philipstown and Redbog, Co. Kildare by mechanical means, blasting, aggregate processing, washing, screening, crushing, power house, control rooms, office building, portacabins/canteen, water recycling plant, lagoons, landscaping berms and all associated works. The Application Site area is ca. 57.9 ha. In size, and is the subject of Section 261 Registration Reference No. QR42'.*

Permission was granted in April 2010, and in the years since the grant of the continuation of quarrying the economic downturn had struck and aggregate demand slumped due to significantly decreased demands in the construction industry. This sharp fall in demand had a direct impact on the HBL operations and resulted in lower than expected aggregate sales volumes and slower than expected extraction rates. A recovery in the economy then led to a recovery in the construction industry and its supply chains. Aggregate extraction rates then increased on the subject site.

The progression of rock extraction occurred in the centre and south-west areas of the main pit where the bedrock above the underlying groundwater table was extracted by blasting and mechanical means. The blasted/extracted rock materials were then processed on the pit floor prior to exportation from site.

Sand and gravel extraction was undertaken on materials overlying the bedrock, and predominantly located in the west and northern sections of the main pit. The extracted sand and gravel was



processed in the plant area to the east of the subject site. Processing included the washing and screening of materials, with an initial crushing stage for any oversized aggregate materials.

### **2.3.2 FUTURE EXTRACTION AND RESTORATION**

The proposed development of further extraction is to be in the existing void area west of the existing processing plant area with lateral extension of the void proposed in westerly and northerly directions, (Figure 2.1). The rates of extraction predicted as part of that application has regard to the historical rates at the site.

The combined total of sand and gravel, and rock to be extracted in the proposed development is 8,708,900 m<sup>3</sup> or ca. 13,218,200 t. Details of quantities of each resource are identified below.

#### **Sand & Gravel**

A volume of ca. 5,544,900 m<sup>3</sup> or ca. 8,317,350 t (using a conversion factor of 1.5) of extractable sand and gravel material has been estimated for the Application Site using 3D modelling software, AutoCAD Civil 3D®.

#### **Rock**

A volume of ca. 1,960,345 m<sup>3</sup> or ca. 4,900,860 t (using a conversion factor of 2.5) of extractable rock above the watertable has been estimated for the Application Site using 3D modelling software, AutoCAD Civil 3D®.

#### **Annual Extraction**

A 5.5 day working week operating for 50 weeks a year and a production rate of ca. 12,796 tonnes per week for sand and gravel, and ca. 7,540 tonnes per week for rock, provides an estimated extraction tonnage of ca. 639,794 tonnes per year for sand and gravel, and ca. 376,989 tonnes per year for rock, giving an approximate annual extraction of ca. 1,016,483 tonnes and a life of operations of ca. 13 years (depending on market conditions). This 13 year life-of-quarry requirement is proposed over a period of 13 to 15 years to reflect the potential external market effects and volatility in the construction industry. This volatility and sharp falls in demand was realised in the recent past with direct impacts on the HBL operations.

#### **Restoration**

A restoration proposal is included in this EIAR that is entirely within the EIA unit and is intended to be implemented once extraction proposed is complete. This restoration summarily consists of the regrading of void faces to safe inclines with a pond to be maintained in the base of the void, in keeping with similar pond features found in the surrounding landscape. Native species planting is proposed in accordance with advice from the ecology team for this EIAR. The restoration proposal is detailed in Chapter 11 of this EIAR. It is anticipated that restoration will require 24 months for plant and building removal, regrading and planting works and first planting season inspection. This two year requirement is proposed to be over a period of 2 to 3 years to reflect the potential for slippage in that programme by reason of seasonality and weather/working conditions, and demolition and removal issues or plant failure.

#### **Operational Timeline Requested**

For the avoidance of doubt, the period for which planning is sought by the Applicant is for 15 years of extraction operations, followed by 3 years to conduct the final restoration.



## 2.4 DESCRIPTION OF THE PROJECT

### 2.4.1 OPERATIONAL PLAN AND RESTORATION

The activity at the existing quarry currently involves the extraction of sand and gravel, and rock (predominantly greywacke) by digging and blasting respectively, and subsequent crushing (rock), washing and screening (sand and gravel), and processing to produce aggregates. It is proposed to extend the existing quarry in both a westerly direction for the extraction of sand and gravel, and rock; and a northerly direction for the extraction of sand and gravel only, with the extraction of additional sand and gravel from the northern most part of the Site only.

The extraction of sand and gravel at the Application Site will involve the following:

- Continuation of excavation of sand and gravel using excavators;
- Continuation of washing and screening of the sand and gravel at the existing 'wet' aggregate processing plant (which has a 'water recirculation' system) into stockpiles of specific fragment sizes;
- Loading of material onto road going trucks for sale and distribution to market; and
- Trucks passing through an existing wheelwash before travelling onto the N81.

The extraction of rock at the Application Site will involve the following:

- Continuation of excavation of rock using a variety of methods, including drilling and blasting, digging and rock-breaking;
- Continuation of mobile crushing, and screening of the rock into stockpiles of specific fragment sizes on the quarry floor;
- Loading of material onto road going trucks for sale and distribution to market; and
- Trucks passing through an existing wheelwash before travelling onto the N81.

It is considered that the recovery of the valuable aggregate resources from within the Application Site will be a more environmentally sustainable option than recovering aggregates from a greenfield site elsewhere.

It is proposed to extend the existing quarry void in a phased manner. This will allow time for stripping and storage of topsoil and overburden; and the blending of material types depending on the extent of variation in the quality of the materials within the deposit at any given time. Phasing may be dependent on the quality of materials encountered and market demands. In addition, having a number of different operating faces will also facilitate this blending of materials and help to ensure efficient use of this valuable resource, however, it should be noted that not all faces identified in the plans below will be operational at any one time.

There will be no direct discharge to surface or groundwater from the quarry operations. Water laden with silt from the processing of sand and gravel will be managed in a silt lagoon, which will be subsequently used in the restoration of the Site. Where practicable, overburden, and materials not suitable for sale (i.e., generated from the processing of the aggregate) will be used in the restoration of worked-out areas.

Mobile plant maintenance activities will use a dedicated concrete hardstanding apron (with associated interceptor) – at the Maintenance Shed. Static plant or tracked excavators will be refuelled with care by appropriately trained members of staff. In addition, spill kits will be maintained on site to deal with all spills and leaks, and spill training will be provided to relevant staff members.

The proposed finished floor level for each phase will not take place below a level of at least 1 m above the highest seasonal water table level on site, as permitted in KCC Reg. Ref.: 07/267. The finished floor levels are dependent on groundwater levels and how the groundwater may fluctuate both seasonally and due to changes over the lifetime of the quarry. The proposed operational phases to be undertaken at the Application Site are presented below. Aspects of the proposed Phases may be required to be altered in line with market demands for aggregate products, and site circumstances including the quality of resources identified upon extraction of particular areas.

#### **2.4.1.1 Operational Plan - Phase 1**

It is proposed to maintain the existing fence along the length of the Application Site boundary and to maintain native hedging inside the fence. In addition, new areas for extraction will be securely fenced around their perimeter and planted with native species where appropriate to provide screening.

A buffer area will be developed around the existing pond/surface water body located to the north of the main extraction area and east of the northern lateral extension, (Figure 2-3). The area surrounding this waterbody will be planted and will extend 3-5 m surrounding the feature. The buffer will be composed of a wet woodland mix of willow and alder and the remainder of the buffer areas will be allowed to naturally colonise with aquatic and marginal plants. It is anticipated that this buffer would help significantly improve the health and biodiversity of the waterbody in comparison to the immediate adjacent agriculture/livestock operations currently surrounding the feature, and utilising the feature as a water source. The corridor of lands to the east of the northern lateral extension will be planted with native species and with species of local provenance displayed in hedgerows in the area. The approximate area of this waterbody and buffer feature is approximately 1.6 ha.

Topsoil and overburden stripped from the proposed extraction areas (Areas A, B, C, D and E) will be removed and used to construct safety/screening berms in appropriate locations to screen active working areas. A new 6 m safety/screening berm in the northeast of the lateral northern extension will be constructed to establish visual, safety and acoustic screening. Topsoil and overburden will also be used as appropriate to construct and strengthen other proposed and existing safety/screening berms running along the perimeter of the Site for similar screening (Figure 2-3). Topsoil will be stripped and stored in such a way to protect quality, integrity and also existing seed bank. Lands that are currently in agricultural use and not required for immediate extraction and site preparation shall be kept in agricultural use for as long as possible.

Quarry operations will extract sand and gravel in the north of the main pit and an access ramp will be extended from an existing haul route in the existing work area to access Area A. The ramp and haul route will progress westerly along the border of the existing main pit and Area A down to grade.

Rock will continue to be extracted in the quarry void, with overburden stripping in advance to expose these areas and provide access. The stripping of Area B in a phased manner to the west will provide access to additional sand and gravel resources initially. As each phase of sand and gravel becomes worked out in Area B, bedrock will become exposed for extraction. In this way Area B will be



quarried in a series of sub-phases until the perimeter of the Site is reached. It is proposed that excavations will be to a depth that is 1 m above the seasonal highest watertable.

Rock will be extracted in series of benches (7.5 m wide to allow for safety edge protection), which will be no more than 20 m high depending on ground conditions. Rock extraction will be continued using the existing site practices of drilling, blasting, digging and rock-breaking.

The stripping of topsoil and overburden in a phased manner will allow for faces to be 'opened-up' to provide for the blending of rock, and sand and gravel of variable quality. No rock is expected to be recovered from Areas C and D, as the bedrock deepens in these areas. Existing hedgerows will be remediated by the planting of additional native species. Excess topsoil and overburden will be used for phased restoration of the Site. Once constructed, the majority of screening berms will be 2 m in height. The width of the berm crest will be 2 m and the base of the berm will be 8 m wide. The berms will be planted with a mixture of native grass species and shrubs. Trees are not proposed to be planted on berms as the stored topsoil and overburden therein may be used as required for quarry restoration. As well as visual mitigation into the Site, the berms will provide acoustic screening of the site operations. If required, areas of the proposed screening berms may be left intact for the lifetime of the quarry and will be incorporated into the final restoration plan for the Site.

The security fence around the perimeter of the Site will be maintained (with warning signage) in the interest of safety to both humans and livestock. A perimeter access track will be maintained around the inside of the security fence and the screening berm.

As currently permitted, the water supply for the aggregate processing plant will continue to be sourced from the pond on the base of the pit floor. Silt settlement lagoons will be established in the southern area of the main pit, (Figure 2-3).



Figure 2-3 - Operational Plan - Phase 1.

### 2.4.1.2 Operational Plan - Phase 2

During this phase of the development, it is proposed to continue to develop the quarry in Areas B, C and D to allow for blending of this valuable resource, with topsoil and overburden being striped ahead of the advancing faces (Figure 2-4). As identified in Phase 1, the proposed finished floor level for each phase will not take place below a level of at least 1 m above the highest seasonal water table level on site. The following quarry design criteria (based on the HSA's 'Guidelines to the Safety, Health and Welfare at Work (Quarries) Regulations 2008') were used in the design of the proposed quarry excavation:

- 3D topographical survey of the site;
- Planning boundary for the site;
- 3 m wide access track between planning boundary and outside edge of screening berm;
- 2 m high screening berm with 1 in 1.5 slopes on either side;
- Screening berm 2 m wide along crest;
- 3 m wide access track along inside edge of screening berm;
- 1 in 2 excavation slope from edge of inside access track surface to base of overburden;
- 1 in 1.5 excavation slope from base of overburden to base of sand and gravel;
- 3 m stand-off on rock-head (i.e. between base of sand and gravel slope and top of rock 'cut');
- 7.5 m wide benches with edge protection,
- 70° slope from top of rock-head to bottom of quarry face (depending on ground conditions);
- Maximum 20 m high benches where design and ground conditions allow; and
- Safety berms/edge protection should be >1.5 m or higher than the radius of the largest wheel/tyre

The stripping of Areas A and D will continue during this Phase of the project, in preparation for the extraction of sand and gravel. Stripping of topsoil and overburden will take place to the east of the Gas Main. The exact location of the Gas Main will be confirmed with Gas Networks Ireland (GNI) prior to stripping.

Further rock, and sand and gravel extraction will take place in Areas B and C.

The existing pit access ramp and proposed access ramp will be utilised depending on the extraction face in operation.

Safety/screening berms will be constructed outside the appropriate GNI exclusion zones and boundary hedgerows will be developed and left intact for the life of the quarry (and in perpetuity to continue to provide biodiversity to the Site and the local environment). Berms and planting in this area will serve to mitigate against noise and potential dust emissions from the Site, as well as offer reduced visibility of the Site from surrounding lands.

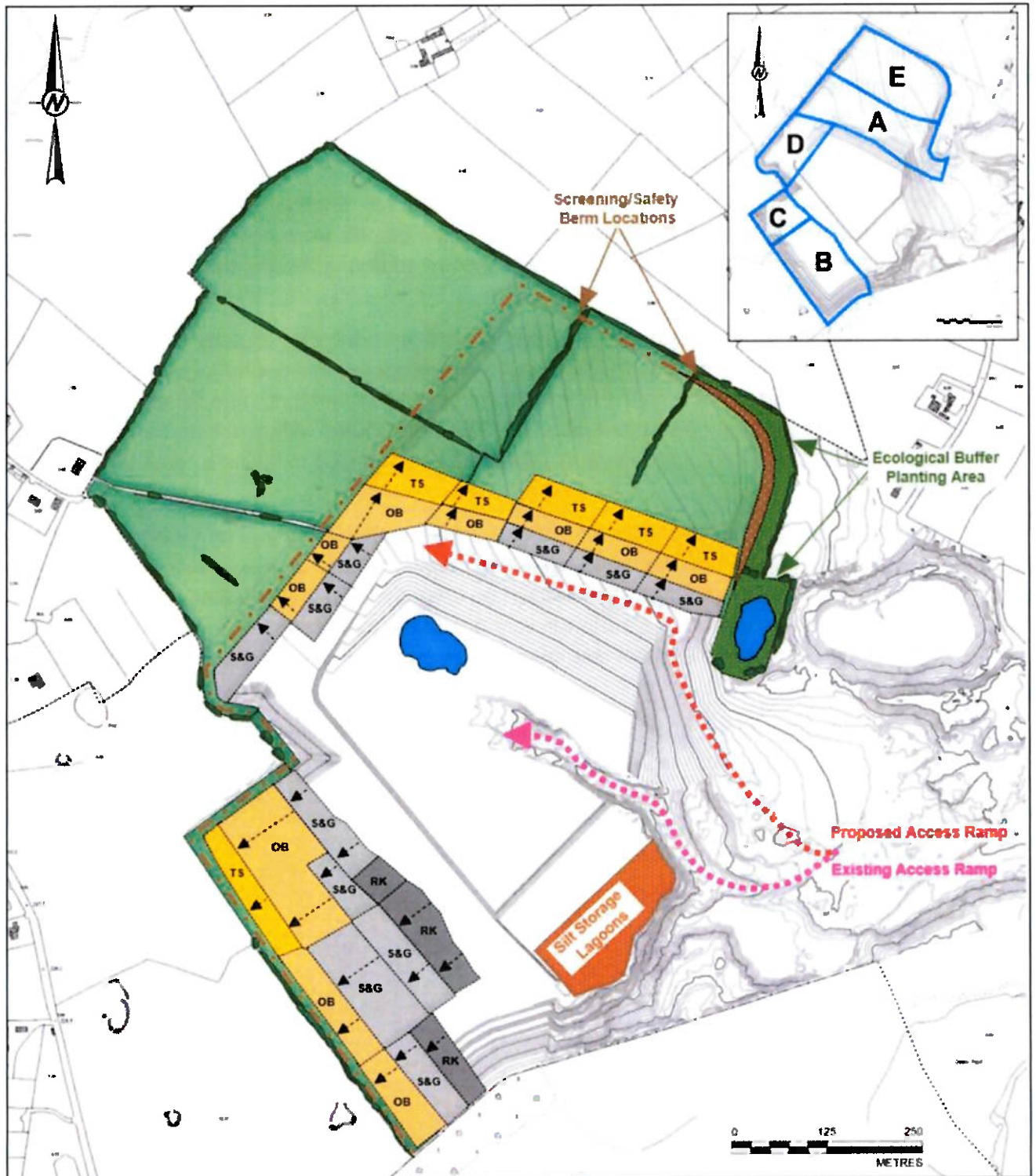


Figure 2-4 - Operational Plan - Phase 2.

### 2.4.1.3 Operational Plan - Phase 3

It is proposed that during this Phase of the development, ongoing production from Area B will take place for rock, and from Areas C, and Area E for sand and gravel (Figure 2-5).

Extraction of rock will continue in Area B in a westerly direction to the Site boundary, with extraction of sand and gravel continuing in Areas C, but ceasing in Area D.

Stripping of topsoil and overburden to continue in Area E, with stripped materials used in the construction of screening berms. Surplus stripped materials from Area E will be stored in temporary stockpiles for use in the restoration on cessation of quarrying. During this Phase of the operation, Area D will undergo restoration.

Conducting these stripping and excavation works in an north and easterly direction within Area E will provide acoustic screening by the topography of the operational quarry face and will provide a reduction in noise impacts on the closest noise sensitive receptors, (see Chapter 9 Noise and Vibration). For further noise attenuation the haul truck routes will be diverted around the edges of the pit to ensure maximum topographic screening as opposed to taking a route through the centre of the voids.

Having a number of different operating faces will allow for blending of materials of variable quality from different parts of the Site and help to ensure efficient use of this valuable resource, however, as noted previously, not all faces identified will be operational at any one time. The proposed finished floor levels in this section of the site will vary due to the topography and incline of hill, however extraction in each phase will not take place below a level of at least 1 m above the highest seasonal water table level.

During this phase of the operation, the quarry faces will be pushed back to their extraction limits.

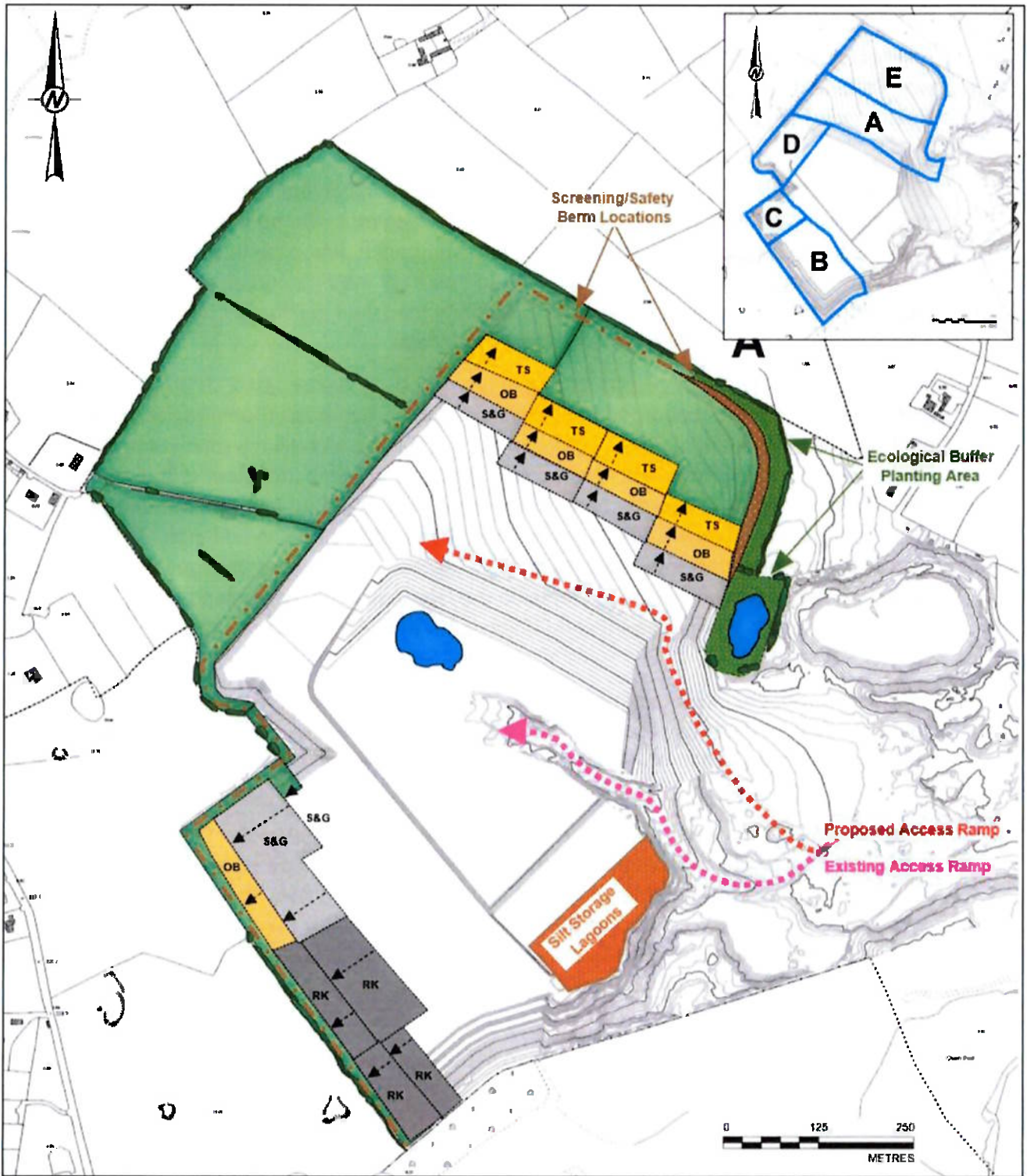


Figure 2-5 - Operational Plan - Phase 3.

#### 2.4.1.4 Restoration - Phase 4

Following cessation of extraction, the Site will be restored to a mixture of grassland, hedgerows, woodland and a waterbody (Figure 2-6). The Site restoration will be carried out in line with the Site Restoration Plan (submitted with this Application).

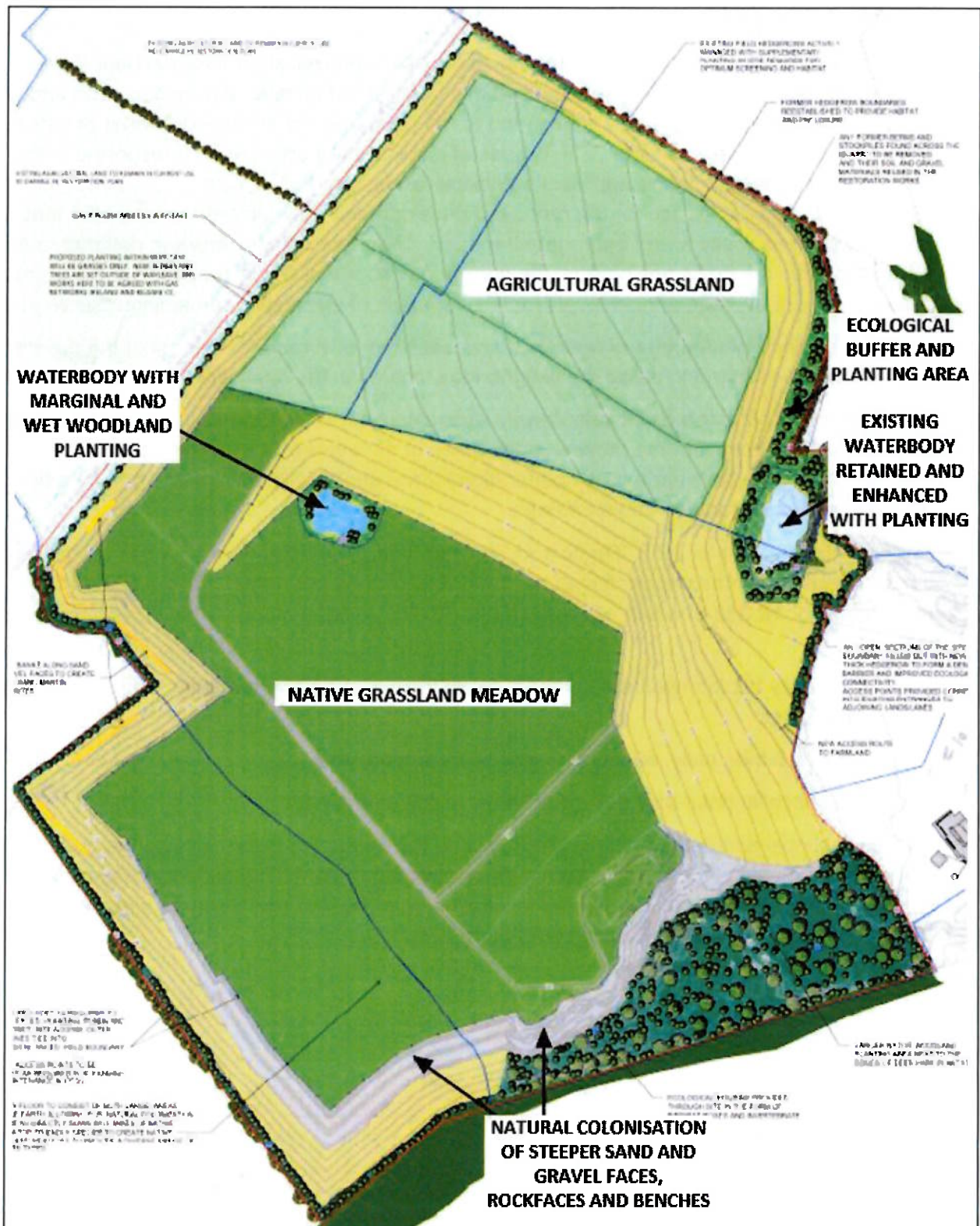
It is expected that the final restoration will be completed in 2 to 3 years following the cessation of extraction activities. The waterbody will also add to the biodiversity of the area following cessation of quarrying. The surface water waterbody will be located in the northern section of the main pit. Water is trapped by clay/silt layers in the sand and gravel deposit in this region. Similar features exist throughout the landscape to the west and north of the Site and also the Red Bog SAC. It is anticipated that this waterbody and the waterbody identified in Phase 1 will be of similar composition and complement each other in the restored landscape.

In addition, the Site will undergo planting of grassland, native tree and shrub species. Indigenous plant species will be encouraged to re-colonize worked out areas (benches) to develop unique habitats and provide for increased biodiversity in the area. A native wildflower and grassland mix will be planted on pit floors and finished sand and gravel faces (not steeper than 1(V) : 2.5(H)). Steeper faces will be allowed to recolonise and will be promoted for sand martin habitats where appropriate. All seed mixes will be agreed with the local authority in advance. Agricultural grassland with hedgerow boundaries will be reinstated in the north of the Site. Hedgerow mixes will be sown on the western perimeter of the site outside the GNI wayleave. Grassland mixes will be sown within the GNI wayleave. Planting within and adjacent to the GNI wayleave will be agreed with GNI and KCC in advance.

Inter-mixed with the planting of native trees and scrubs, restoration surfaces will be seeded with native grasses and wildflowers to provide increased biodiversity. Areas for grassland restoration will be dressed with ca. 0.3 m of topsoil and re-seeded with a grass seed mixture, similar to that used on adjoining lands.

Vertical faces which remain along the southern and western part of the Site will be maintained and enhanced to promote biodiversity in terms of nesting birds such as raven (*Corvus corax*), jackdaw (*Coloeus monedula*), peregrine falcon (*Falco peregrinus*) and bats species. Bench heights will be in accordance with any current or future Health and Safety Quarry Regulations. Furthermore, attention will be given to the Environmental Protection Agency's (EPA) 2006 Guidance Document on Environmental Management in the Extractive Industries (or subsequent issues guidance) when implementing the final restoration measures.

The final depth of the pit floor will vary across the Site due to natural variations in aggregate depths and groundwater. The restoration plan has been provided below in Figure 2-6, with a more detail plan provided in Chapter 11 (Landscape and Visual). All plant, equipment and temporary structures shall be decommissioned and removed from the Site.



**Figure 2-6 - Operational Plan - Phase 4 - Restoration. Overview of main features. Please refer to Chapter 11 (Landscape and Visual) for detailed Restoration Plan.**

## 2.4.2 TRAFFIC CONTROL

All traffic occurring within the Site is internal traffic using internal short informal haul routes. Excavated rock leaves the quarried faces and is transported off-site. Excavated sand and gravel leaves the extraction face and is transported to the plant area for storage or further processing before being transported off site. The proposed extracted material will be transported in the same way. The Site entrance to the applicant's Wicklow lands from the N81 and route through the shared laneway is the sole entrance for the proposed development. This entrance at the N81 thus caters for all employees, visitors and aggregate transport. Therefore it is this interurban national route that accommodates the traffic arising from the current development that is proposed to be maintained in line with current average annual levels for the purposes of excavating remaining reserve at the Site.

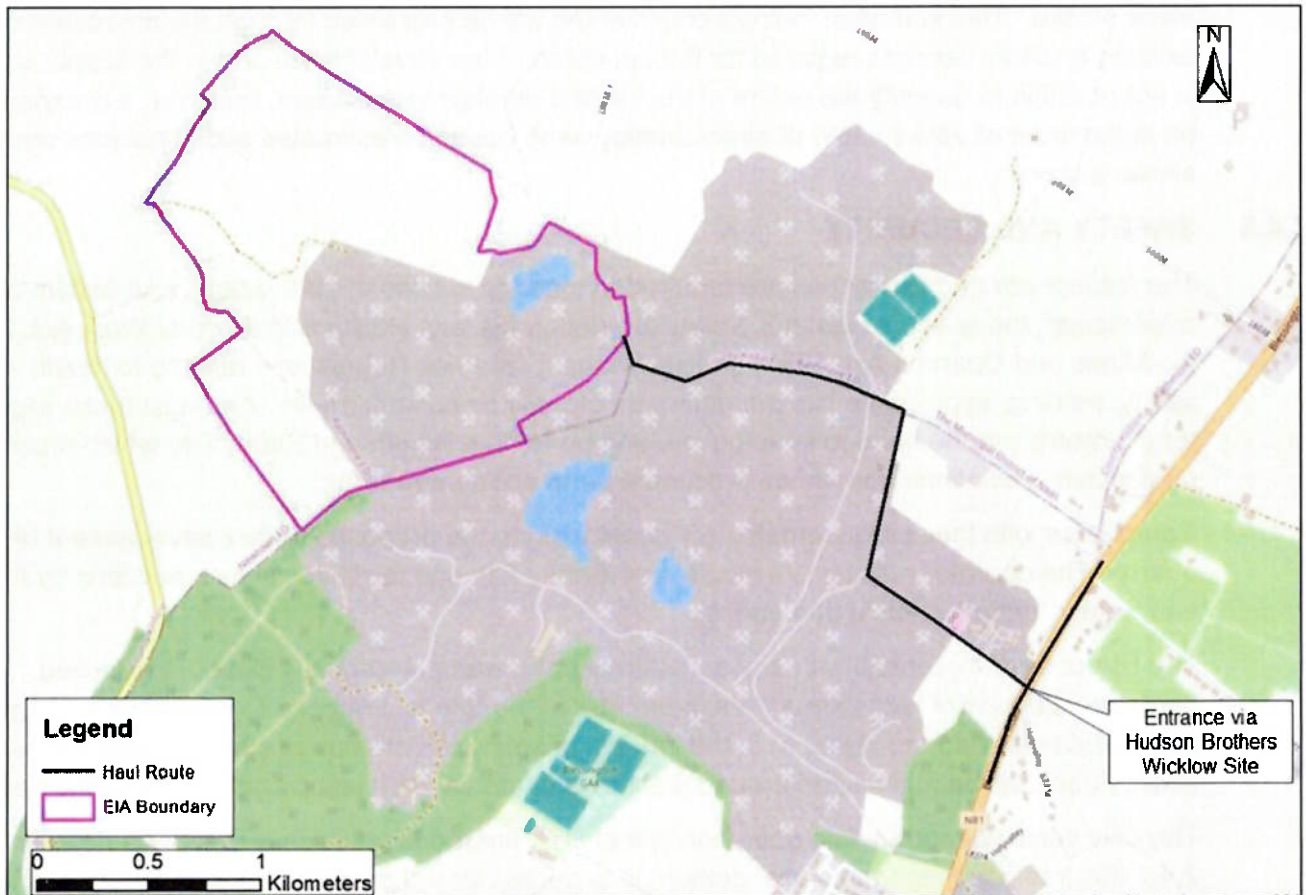
No traffic arising from the quarry operation accesses the local road to the east of the development. HBL HGVs are required to utilise the weighbridge located in the applicant's Wicklow site.

The Traffic section of this EIAR sets down a description of the existing traffic environment of the site and the predicted impact of the proposed continuation of the average annual traffic from the Site for the operational years where upon traffic generation for the quarry will cease with ad hoc traffic generation from restoration implementation.

As presented in Chapter 12.0 (Traffic and Transportation), the total daily trips associated with the quarry operation for the exportation of ca. 1,016,000 tonnes per annum accounts for 418 movements daily, 296 of which relate to HGV's (70.8%). These numbers have been broken down as follows:

- 296 daily truck movements enter and exit the site importing material, 148 inbound and 148 outbound;
- 112 staff trips daily, 56 inbound and 56 outbound; and
- 10 miscellaneous trips daily, 5 inbound and 5 outbound.

Based on supply and demand in the marketplace, the amount of trucks leaving the quarry will vary throughout the year. All materials leaving the Application Site will continue to be transported along existing internal quarry haul roads prior to existing onto the N81, via a shared laneway which leads through the client's Wicklow owned site (Figure 2-7).



**Figure 2-7 - Existing haul route from the Site to N81.**

Operations at the Application Site will remain relatively consistent with previous production rates. The small increase in extraction tonnage and small decrease in HGV movements is owed to a small increase in the average HGV size used now to export the extracted aggregate from the Site.

### 2.4.3 HOURS OF OPERATION

For the current Application, the Applicant proposes to conduct the excavation and processing of material between 0800 hours and 1800 hours, Monday to Friday and between 0800 hours and 1300 hours on Saturdays.

The Applicant also proposes to carry out, loading and transporting of processed material between 0700 hours and 1800 hours: Monday to Friday and between 0700 hours and 1300 hours on Saturdays. The Applicant will not conduct activities on Sundays or public holidays.

### 2.4.4 EMPLOYMENT

Existing direct and indirect employment is attributable to the quarry. Employment levels vary in accordance with market demand and associated extraction and processing requirements. Direct employment is in the categories of plant operators, fitters, laboratory technicians, administrative staff. The Applicant seeks to maintain the current level on employment between ca. 30 to 50 employees, depending on market conditions.

The quarry operator has a fleet of haulage vehicles and drivers but some of the haulage requirements of the site are met by independent contractors who do not have their permanent work

place on site. This and other indirect employment will be preserved through the maintenance of existing ancillary services required for the operation of the development and in the supply chain. It is not possible to quantify the extent of the indirect employment created, however, it is expected to be in the order of 25% to 33% of direct employment, based on estimated additional jobs created in similar projects.

#### **2.4.5 SAFETY AND SECURITY**

The subject site and operations are required to meet conditions of permissions and certain statutes. In particular, the relevant Health & Safety legislation (Safety, Health & Welfare at Work Act, 2005, the Mines and Quarries Act, 1965) and subsequent Quarries Regulations relating to health and safety, training, appropriate site management etc. will be complied with. Amongst these regulatory requirements are the need to keep on site and up to date Health and Safety File which records safe procedures, deviations from those procedures and accident reports.

Compliance with these requirements will persist during the proposed further development of the quarry. The operator maintains a Health and Safety File and facilitates site inspections by the Health and Safety Authority (HSA) and audits.

The EIA unit is fully fenced with any agricultural entrances permanently closed and locked. The perimeter stockproof fence around the perimeter of the Site is proposed to be maintained and monitored (with warning signage) in the interest of safety to both humans and livestock. A perimeter access track will be maintained around the inside of the security fence and the screening berm.

The only vehicular entrance in operation is that from shared land which is gated. As noted in Section 2.4.2 this traffic management arrangement is to persist for the proposed further development of the quarry

There is no requirement for lighting outside of the subject lands but within the lands, certain working hours (before sunrise and after dark in winter periods) necessitate lighting that is extinguished during daylight and when the site is closed thus no external light spill occurs. This situation is to remain in the proposed development which does not require additional lighting.

#### **2.4.6 FUEL AND CHEMICAL STORAGE**

Fuel storage is in bunded fuel tanks in the plant area and in the maintenance shed, (part of the concurrent substitute consent application and within the EIA boundary). Refueling and maintenance of equipment occurs at the maintenance shed over a concrete apron with associated interceptor. Oils, chemicals and admixtures are ordered and used as needed and used oil and chemical containers are separately stored within the maintenance shed for disposal by licensed contractor.

Static plant (e.g., generators) or tracked excavators are refuelled with will be refuelled with care by appropriately trained members of staff. . In addition, spill kits are maintained on site to deal with all spills and leaks, and spill training will be provided to relevant staff members.

#### **2.4.7 WASTE MANAGEMENT**

The waste arising on site is municipal waste from staff welfare activities and is disposed of via domestic waste collection. Similarly, scrap metal arising on site is stored within a designated area at the site prior to collection by a licensed waste contractor.

## 2.4.8 WATER

### 2.4.8.1 Waste Water

There exists a holding tank on site of sufficient capacity to cater for full-time site employees and contractors. It is proposed to upgrade the existing holding tank to a proprietary wastewater treatment system (Oakstown BAF 6PE), which will be the subject of a future planning application for the site.

In addition, an Oakstown BAF 6 PE wastewater treatment system is located at the maintenance shed. This system was included in the 2019 retention application KCC Reg. Ref.: 19/1230 which was initially invalidated. The location of this tank and system is incorporated on the submitted site layout. Chapter 6 (Water) of this EIAR describes this system.

### 2.4.8.2 Potable Water

#### Office / Canteen

Water for the office / canteen and control room is supplied from a public supply. This is proposed to be maintained.

#### Maintenance Shed Welfare Facilities

Water associated with the toilets in the maintenance shed are sourced from existing water infrastructure feeding the adjacent wash plant area, which is abstracted from a pond at the base of the quarry on site (Pond K2). This source negates the requirement for a mains water connection and the need to develop a dedicated groundwater well to service the shed's welfare facilities. An ultraviolet (UV) water purification system from Glenngorey Pumps & Plant Limited was identified as an efficient, economical and chemical-free process to safeguard water in the welfare unit of the maintenance shed. The system is wholly enclosed within a container installed adjacent to the maintenance shed.

- 1) Water is taken from the incoming supply line;
- 2) This incoming water is screened through a 50 µm filter;
- 3) Water is then stored in a 950 litre storage tank;
- 4) This water is then pumped through a 25 µm screen filter;
- 5) Following this the water undergoes softening. The water passes through a water softener system which uses Resinex KW-8 (water softening resin);
- 6) Water is then sent to the UV water purification system (SC-200/SCM-200 provides sufficient capacity for the current use); and
- 7) The water then goes on for use.

Other system details are:

- The pipe fittings used in the system are 25 mm Jason compression fittings, (these fittings are approved by the UK Water Regulation Advisory Scheme (WRAS));
- A GE 760i valve will be used for the control at the water softening stage;
- The system will be installed and maintained by Glenngorey Pumps & Plant Ltd; and

- The annual service of the system which will be conducted by Glenngorey Pumps & Plant Limited, includes; the replacement of the 50 µm and 25 µm filters, and the replacement of the UV bulb (which has a ca. 8,000 hour life span). The system incorporates an alarm notification to identify servicing when required.

### **Maintenance Shed Run-off**

Water run-off from the area at the Maintenance Shed is collected on a hardstand and flows to a sump/silt-trap and then to a hydrocarbon interceptor. Run-off is then infiltrated to ground via the installed soakaway.

### **Processing Plant Water Management**

As previously permitted, the water supply for the aggregate processing plant will continue to be sourced from a pond on the base of the existing quarry void. Water for the processing of the sands and gravels is abstracted from a pond at the base of the quarry void. The pump runs periodically on demand between 0700 and 1800 hours Monday to Friday and between 0700 and 1300 hours on Saturday. The amount of water used at the Aggregate Processing Plant is dictated by a number of variables, which include wet weather and the quality of the raw material feed. On wet days less water is required as rainwater is harvested from the yard. On days when the silt content of the raw material is high, the demand for water is higher as more water is needed to transport the silt to the lagoon. Estimated average daily water requirements for the Site are approximately 276 m<sup>3</sup>/day, consisting of ca. 225 m<sup>3</sup>/day for aggregate processing, ca. 50 m<sup>3</sup>/day for dust suppression during dry periods and ca. 1 m<sup>3</sup>/d for welfare facilities (as provided from mains supply).

No formal discharge takes place from the Site, with the majority of the water used on-site in the processing of sands and gravels in a closed circuit system. The Site uses modern recycling systems to minimise water consumption when processing sand and gravel, however top-up water is required when necessary. Silt laden water from the Aggregate Processing Plant is discharged to a silt pond (for use in future restoration).

Water is also sourced from the pond (via a water bowser) for dust suppression which is undertaken to mitigate environmental nuisances to the surrounding environment

#### **2.4.8.3 Surface and Groundwater**

There is currently no below groundwater table working nor any below. Chapter 6 (Water) of this EIAR performs a water balance for proposed quarrying and extant quarry and plant and processing areas in order to demonstrate the ability of the existing water management system of water recycling unit and silt lagoon within the substitute consent area to manage within site boundaries the surface water arising within the operational areas of the EIA project area.

As noted above and previously permitted, the water supply for the aggregate processing plant will continue to be sourced from a pond on the base of the existing quarry void. This pond is a sump for surface water that collects within the quarry void, (e.g., after rainfall).

This EIAR accompanies a proposal for the extraction of rock and sand and gravel in the main pit and in the lateral extensions to the south west and north of the quarry that has been assessed to be above the groundwater table. The eventual restoration of the site proposes to maintain the existing pond on the pit floor which is proposed to add to the biodiversity of the area following cessation of quarrying.

## 2.4.9 POWER SUPPLY AND TELECOMMUNICATIONS

Power is supplied to the subject lands via the electricity network. The service maps provided by ESB indicates that the Site is connected to the grid by an underground medium/low voltage cable. Premises around the site are serviced by medium and low voltage overhead lines which traverse the area to the west, east and north.

Telecommunication transmission poles carry over ground services along the R410 and L6038-1. These lines service the ribbon residential developments situated adjacent to them. No other telecommunication lines or services were identified within the Site including telecom masts or underground services.

## 2.5 PLANNING HISTORY

### S261 registration by KCC and WCC

Aggregate extraction and processing in the general area is an historic use with the application lands having been used for aggregate production and aggregate processing since at least the 1800s prior to Hudson's presence in the area. The current business has operated since the 1950's ie. well before 1963. Following the coming into force of section 261 of the PDA in 2004, the applicant registered their facility with both Wicklow County Council under their reg. ref. QY/43, and Kildare County Council under their reg. ref. QR/42. The applicant's operational facility was correctly and properly registered in accordance with section 261 of the PDA and both registrations related to pre 1963 quarrying.

A short time following registration of this quarry which occurred in 2005, this applicant applied for planning permission to Wicklow County Council for those components of the existing quarry that lay within that county's jurisdiction under their reg. Ref. 06/6932 and for which planning permission was granted for 25 years.

Setting aside the grant of planning permission for 25 years by WCC under their reg. ref. 06/6932, for what is essentially the administrative part of the business, the key planning decisions are as follows:

- S261 registration by KCC and WCC;
- Planning permission granted under KCC reg. ref. 07/267;
- Refusal of planning permission under KCC reg. ref. 19/1230 for a maintenance shed;
- Invalidated planning application under KCC reg. ref. 20/511 for continuation of development granted under 07/267 and extended area of quarrying extraction;
- Invalidated planning application under KCC reg. ref. 20/532 for continued use for quarrying of aggregates and ancillary plant and welfare facility; and
- The grant of leave to apply for Substitute Consent conferred on the applicant by ABP under your Reg. Ref. 211633.

Planning permission was sought and obtained by the applicant under KCC reg. ref. 07/267 and ABP ref. PL09.235502 for 10 years expiring on 18<sup>th</sup> September 2020. The applications subsequently lodged upon the expiry of that permission are identified above and are set out in further detail in the accompanying planning statement by Cunnane Stratton Reynolds Limited. The inability of this applicant to apply for retention under normal planning circumstances meant at the time that they had to apply for leave to lodge a substitute consent application which was duly granted on 1<sup>st</sup> August 2023.

That has dictated the requirement to simultaneously lodge a substitute consent application with this s37L application.

A planning search has been undertaken of recent and extant planning permissions in the area, both within County Kildare and County Wicklow, and in particular any developments that might have cumulative impact with the subject development. The majority of relevant decisions in the area relate to one off housing and these are considered in the impact assessments contained within this document. There are no such decisions having potential cumulative impact with the proposed development.

Further detail on the planning history of the subject site and the surrounding area is contained within the planning statement accompanying the S37L planning application.

## **2.6 PLANNING GUIDANCE AND POLICY**

### **2.6.1 NATIONAL PLANNING FRAMEWORK (PROJECT 2040) & NATIONAL DEVELOPMENT PLAN 2018-2027**

These joint documents set out a vision for the future development of the State and support the sustainable development of rural areas by encouraging growth. National Policy Objective 23 seeks to *'Facilitate the development of the rural economy through supporting, amongst other sectors, a sustainable and economically efficient extractive industry sector, whilst at the same time noting the importance of maintaining and protecting the natural landscape and built heritage which are vital to rural tourism.'*

On page 78 under the heading 'Aggregates and Minerals' the importance of the aggregates and minerals sector to the Irish economy and to development in general is recognised where it stated in the NPF that:

*'Extractive industries are important for the supply of aggregates and construction materials and minerals to a variety of sectors, for both domestic requirements and for export. The planning process will play a key role in realising the potential of the extractive industries sector by identifying and protecting important reserves of aggregates and minerals from development that might prejudice their utilisation.'*

*'Aggregates and minerals extraction will continue to be enabled where this is compatible with the protection of the environment in terms of air and water quality, natural and cultural heritage, the quality of life of residents in the vicinity, and provides for appropriate site rehabilitation.'*

### **2.6.2 QUARRIES AND ANCILLARY ACTIVITIES GUIDELINES FOR PLANNING AUTHORITIES 2004**

In light of the commencement of Section 261 of the Planning and Development Act 2000 the Department of the Environment, Heritage and Local Government (DoEHLG) published the Quarries and Ancillary Activities Guidelines for Planning Authorities (2004). The Guidelines are intended as a practical guide to the implementation of Section 261 and to offer guidance to planning authorities in determining applications for planning permission for quarrying and ancillary activities and to land use strategies for same.

Section 1.3 of the Guidelines states that:

*“aggregates are an essential input to the construction industry, worth about €20 billion to the Irish Economy each year’ and ‘there will be a continuing need for some new or expanded aggregate quarrying operations on land to meet regional and local requirements”.*

The Guidelines further recognise that there is a:

*“continuing need for some new or expanded aggregate quarrying operations on land to meet regional and local requirements. There is thus a need to identify and protect aggregate resource areas through the planning system, to ensure an adequate supply of aggregates to meet the likely scale of future demand, while at the same time protecting Ireland’s natural and cultural heritage.”*

The Guidelines set out the potential environmental effects of quarries and, sand and gravel pits thereby providing guidance on appropriate mitigation measures for each identified effect. Guidance is also provided on matters such as restoration and after-use. It is the intention of this EIAR document to meet these Guidelines where practicable.

### **2.6.3 ENVIRONMENTAL MANAGEMENT GUIDELINES – ENVIRONMENTAL MANAGEMENT IN THE EXTRACTIVE INDUSTRY (NON – SCHEDULED MINERALS) 2006**

These guidelines were published by the EPA and are intended to further compliment the Guidelines which were published by the DoEHLG.

The EPA Guidelines go further than those of the DoEHLG in that they identify, in so far as is possible, all potential environmental effects of extractive industries and suggest mitigation measures for these effects. Suggestions on mitigation measures include advice on monitoring limits and methods of identifying and measuring environmental effects. These guidelines are aimed at practitioners and officers of the Council alike as they outline best practice measures and are considered in Chapters 3.0 to 13.0 of this EIAR. It is the intention of this EIAR document to meet these Guidelines where practicable.

### **2.6.4 REGIONAL PLANNING GUIDANCE**

#### ***Eastern and Midlands Regional Assembly Regional Spatial and Economic Strategy***

The Eastern and Midlands Regional Assembly (EMRA) Regional Spatial and Economic Strategy (RSES) 2019-2031 sets out regional goals and objectives deriving from the NPF.

Under the title ‘Enabling and Sustaining the Rural Economy’ the RSES states that ‘*The rejuvenation of rural towns and villages requires that appropriate job creation can be supported in rural areas. Traditional sectors such as agriculture, tourism, extractive industries and forestry are complemented by diversification in [other] sectors’.* There is an explicit recognition of the need to accommodate and maintain extractive industries in the countryside.

Regional Policy Objective 6.7 also encourages extractive industry development where it states that the regional authority will:

*‘Support local authorities to develop sustainable and economically efficient rural economies through initiatives to enhance sectors such as agricultural and food, forestry, fishing and*

*aquaculture, energy and extractive industries, the bioeconomy, tourism, and diversification into alternative on-farm and off-farm activities, while at the same time noting the importance of maintaining and protecting the natural landscape and built heritage.'*

The need to reconcile rural based employment and activity with the needs of tourism and protecting the environment is recognised in these guidelines such as building on strengths to sustain a strong economy and support the creation of jobs and to ensure a good standard of living for all.

It is interesting to note that page 94 of the RSES indicates that Blessington is one of those towns recording the highest growth rate in the country over the 10 years prior to the adoption of the RSES at >32% but with lower levels of employment provision.

## **2.6.5 KILDARE COUNTY DEVELOPMENT PLAN 2023 – 2029**

Chapter 9 of the Kildare County Development Plan 2023-2029 indicates that extractive industries require sensitive management. Section 9.9 (Mineral Resources and Extractive Industry) identifies the following:

- The extractive industry can only be developed where the required resources occur;
- Residential and natural amenities will be protected, pollution will be prevented, and aquifers and ground water safeguarded;
- Principles of sustainable development and environmental management;
- Aggregate resources are important to the general economy;
- The industry provides a valuable source of employment in some areas of the county;
- Environmental and landscape impact must be managed or minimised insofar as siting is based on resource locations, and the Council will protect high amenity/special/unique sensitivity areas and limit new and/or extending existing extractive industries in this area;

Rehabilitating ecology and biodiversity and restoration plans will provide for a mosaic of habitats. Infilling may be considered preferable to reverting to agricultural grassland for ecological and biodiversity purposes.

The proposal is consistent with Policy RD P8 which supports and manages appropriate future development of Kildare's natural aggregate resources in appropriate locations to ensure that there are adequate supplies to meet future needs of the county and the region consistent with the principles of sustainable development and environmental management

The following **extractive industry specific objectives** are met:

*RD O42 which seeks to ensure that there is no significant impact on any Designated Site;*

*RD O43 that there shall be no impact on any site of Geological Importance and that the planning authority shall consult with the Geological Survey of Ireland;*

*RD O44 requiring AA Screening; EIAR; EclA; detailed landscape plans indicating proposed screening for the operational life of the site; the predominant use of native plant species in proposed landscaping; detailed landscape and quarry restoration plans; habitats and species surveys will be carried out; comprehensive site restoration plan and /or after use strategy having regard to the principles of 'Rehabilitation Ecology; and finally a transport impact assessment.*



*RD O45 submission of a bond (cash deposit, bond from an insurance company or other security acceptable to the planning authority) to ensure satisfactory completion and restoration of the site.*

*RD O46 requiring road re-instatement work to be on-going during operations in the interests of road and traffic safety;*

*RD O47 protecting and safeguarding the county's natural aggregate resources from inappropriate development;*

*RD O48 managing the finite aggregate resources being mined to supply the future needs of the region while working to reach climate change targets;*

*RD O49 be consistent with the Guidelines on Quarries and Ancillary Activities; Environmental Management Guidelines, Environment Management in the Extractive Industry (non-schedules minerals); the Archaeological Code of Practice between the DEHLG and ICF; Geological Heritage Guidelines for the Extractive Industry; and Wildlife, Habitats and the Extractive Industry Guidelines for the protection of biodiversity within the extractive industry.*

*RD O50 ensuring the satisfactory and sensitive re-instatement and/or re-use of disused quarries and extraction facilities where extraction has ceased and seeking consistency with the criteria set out in Section 15.9.6 of that CDP and where there is no significant or unnecessary alteration of the natural landscape and topography unless it can be demonstrated that significant landscape remodelling would enhance the landscape and/or not give rise to adverse impacts.*

*RD O51 requiring that quarry remediation plans provide for environmental benefit, biodiversity and re-wilding in all instances. It is noted that the 80% requirement for environmental/biodiversity may be waived at sites closer to urban areas where a significant portion of the site is being provided for sports, recreation and amenity.*

The aforementioned Section 15.9.6 sets out the **requirements for assessing planning applications** under Section 261A of the PDA and in particular accordance with the previously cited guidelines as well as the requirements for impact assessment including the environmental baseline of the area in which extraction is imposed, the likely impacts and proposed mitigation measures in relation to: human health; groundwater; Natura 2000 sites, Natural Heritage Areas, proposed Natural Heritage Areas and other sites for environmental or ecological protection; flora and fauna; sensitive local receptors including residences, Areas of High Amenity, Landscape Sensitivity Areas, Key Scenic Views and Prospects, and Key Amenity Routes, all of which have been assessed in this application; landscaping, berms and screening proposals; local transport networks including haul routes, trip movements and articulated lorry heights; noise, vibration and dust emissions; and archaeological and architectural heritage of the area.

The current CDP also sets out the technical requirements of planning applications including necessary details of the of the subject development, all of which are provided in this application. We emphasise in this instance there is no blasting.

There are several **economic based policies** all of which support the subject development as an existing quarry.

*RE P1 seeking to facilitate employment creation;*

*RE P2 supporting economic development in the county;*

In terms of **access and transport** the following is noted by the applicants and assessed by their consultant team:

*Objective TM A24 which seeks to upgrade the N81 National Secondary Road.*

In terms of **biodiversity** the subject proposal is consistent with the following biodiversity based policies and objectives:

*BI P1 requiring the protection and enhancement of biodiversity and landscape features by applying the mitigation hierarchy to potential adverse impacts on important ecological feature, where mitigation and/or compensation measures as appropriate. The applicant notes that opportunities for biodiversity net gain are encouraged.*

*BI O6 which applies the precautionary principle in relation to developments in environmentally sensitive areas, and which seeks to ensure that all potential impacts on a designated NHA or Natura 2000 site can be avoided, remedied or mitigated.*

*BI O7 seeking insofar as possible a biodiversity nett gain.*

*BI P2 seeking the maintaining or restoration of the conservation status of all designated or proposed designated sites.*

*BI O9 avoid development that would adversely affect the integrity of any Natura 2000 site.*

*BI O10 ensuring that Appropriate Assessment Screening is carried out to determine the likelihood of having any significant effect on a Natura 2000 site ether individually or in combination with other plans or projects.*

In respect of **natural heritage areas**, including Red Bog NHA, and Poulaphouca Reservoir, the subject development is consistent with the following:

*BI P3 ensuring that any proposal within or adjacent to any NHA is designed and sited to minimise its impact on the biodiversity, ecological, geological and landscape value of the site, particularly plant and animal species listed under the Wildlife Acts and the Habitats and Birds Directive including their habitats.*

*BI O12 requiring ecological impact assessment in accordance with the appropriate guidance by a suitably qualified for proposals within or adjacent to a NHA or proposed NHA to ensure that development is designed and sited to minimise impact on biodiversity, ecological, geological and landscape value of the site and particularly plant and animal species listed under the Wildlife Acts.*

*BI O14 minimising impact on ecological and landscape values on sites under National ad European legislation and International Agreements.*

*In respect of protected habitats and species the subject development accords with the following:*

*BI P4 ensuring development does not have a significant adverse impact, is not incapable of satisfactory mitigation on plant, animal or bird species which are protected by law.*

*BI O15 ensuring that there is no significant adverse impact on rare and threatened species.*

*BI O16 ensuring that appropriate species and habit avoidance and mitigation measures are incorporated into all new development proposals.*

*BI O17 requiring a derogation licence where necessary.*

*BI O18 requiring developments to identify, protect and sensitively enhance the most ecological features and habitats and incorporate these into the overall open space network and making provision of local diversity.*

*BI O22 identifying and protecting areas of high nature conservation value (including but not limited to SAC, SPA, pNHA) and supporting landscape features which act as ecological corridors/networks and stepping-stones such as river corridors, hedgerows etc so as to minimise loss of habitats and features of wider countryside which are of major importance for wild fauna and flora.*

In respect of **ecologically important sites** the following policy requirements are met:

*BI P8 ensuring that Kildare's wetlands and watercourses are retained.*

*BI O49 requiring that any development within the zone of influence of listed wetland sites should be subject to EclA and where appropriate hydrological assessment.*

*BO O50 protecting and conserving wetlands and resisting development that would destroy, fragment or degrade any identified wetland in the county.*

*BI O52 requiring preparation and submission of a hydrological report/assessment for significant developments within and in close proximity to protected raised bogs and the assessment of impact on the integrity of peatland ecosystems.*

*BI O55 protecting conserving and managing the character and appearance of ecological and archaeological heritage.*

*BI O56 preventing impact on sensitive water habitats without mitigation measures.*

*In the terms of geology the subject development complies with the following on geology as follows:*

*BI P10 maintaining and protecting the conservation of value of geological sites of national or local importance and seek sustainable management of the county's geological heritage resource.*

*BI O60 consulting with Geological Survey of Ireland regarding development likely to impact on Sites of Geological Importance.*

*BI O62 promoting, encouraging and supporting provision of access to geological and geomorphological features of interest in co-operation/consultation with landowners where practicable.*

*BI O63 Where appropriate support the restoration of Sites of Geological Importance (identified in Table 12.7).*

*BI O74 Strengthen ecological networks between urban areas to create greater linkages to Natura 2000 sites, proposed Natural Heritage Areas, parks and open spaces and the wider regional Green Infrastructure network.'*

In respect of **green infrastructure** the subject development is consistent with the following:

*BI O77 which seeks to integrate nature-based solutions and climate change considerations into the design, planning and implementation of development proposals at the earliest possible stage of the design process.*

*BI O78 which actively promotes and encourages nature-based approaches and green infrastructure solutions as viable mitigation and adaptation measures to surface water management.*

In terms of **landscape character** and **landscape and visual impact** the subject site is located within an area of medium landscape sensitivity where extraction of sand, gravel and rock is shown of medium appropriateness and is *'likely to be compatible with great care'*.

The subject development is consistent with the following:

*LR P1 which seeks to protect and enhance the county's landscape.*

*LR O2 which requires a landscape/visual impact assessment where proposals may affect landscape sensitivity factors or may affect a route or view contained within 500m of the site boundary.*

*LR O4 requiring retention of local landscape features.*

*LR O7 restricting the quarrying of sensitive sites within Landscape Character Areas and protecting and conserving ecological, archaeological, biodiversity and visual amenity surrounding quarry.*

*LR O8 requiring all quarrying activities and projects associated with the extractive industry comply with the relevant guidelines and legislation.*

*LR O12 requiring appropriate environmental assessment for any development that may impact on boglands.*

*LR O14 maintaining the visual integrity of the Eastern Transition Lands which have retained an upland character.*

*LR O15 continuing to facilitate appropriate development in the Eastern Transition Lands in an incremental and clustered manner, where feasible, that respects the scale, character and sensitivities of the local landscape, and recognising the need for sustainable economic activity within the county.*

In respect of **assessing impact on designated high amenity areas** the subject development, although not within such a defined area, is consistent with the following:

*LR P2 protecting High Amenity Areas from inappropriate development and reinforcement of their character, distinctiveness and sense of place in so far as this is a well-established use, and a key or determining feature of the existing and well established landscape.*

*LR O17 controlling development that will adversely affect the visual integrity of Areas of High Amenity by restricting incongruous structures out of scale with the landscape within the Areas of High Amenity and where they will disrupt the open nature of these areas.*

*LRO30 facilitating the utilisation of existing structures taking account the visual absorption opportunities provided by existing topography and vegetation.*

*LR O30 considering the need for activities that have a functional and locational requirement to be situated on elevated sites where it can be explicitly demonstrated that residual adverse visual impacts are minimised or mitigated.*

*LR O31 having regard to potential for screening vegetation when evaluating proposals for development within Upland Character Areas including the East Kildare Uplands.*

In respect of **protected views and prospects** the following policy requirements are met in this instance:

*LR P3 protecting, sustaining and enhancing the established appearance and character of all important views and prospects.*

*LR O32 avoiding any development that could disrupt the vistas or have a disproportionate impact on the landscape character of the area, particularly upland views and listed views. Listed views that may be affected by the subject development are not affected.*

*LR O33 ensuring no disproportionate visual impact or significantly interfere with or detract from scenic upland vistas when viewed from nearby areas, scenic routes, viewpoints and settlements.*

*LR O35 encouraging appropriate landscaping and screen planting along scenic routes.*

*In terms of recreation the following is complied with:*

*LR P4 protecting and maintaining existing recreation infrastructure in the county and supporting diversification of the rural economy.*

Each of the designations, policies and objectives of the 2023 – 2029 Kildare Development Plan are reproduced in full in the accompanying planning statement undertaken by Cunnane Stratton Reynolds Limited.

## **2.6.6 PLANNING AND DEVELOPMENT, MARITIME AND VALUATION (AMENDMENT) ACT 2022 (COMMENCEMENT OF CERTAIN PROVISIONS) (NO.2) ORDER 2023**

The Planning and Development, Maritime and Valuation (Amendment) Act 2022 (Commencement of Certain Provisions) (no.2) Order 2023 (SI 645 of 2023) provides an amendment to S37L of the 2000 Act. The amendment extends simultaneous applications for both substitute consent and future development of land from quarries only to all types of development.

## 2.7 REFERENCES

Kildare County Development Plan 2023 – 2029.

Environmental Impact Assessments of Projects Guidance on the Preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU). European Commission 2018.

Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, Department of Environment, Community and Local Government, 2018.

Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EIAR) 2023.

Environmental Protection Agency, Johnstown Castle Estate, Co. Wexford, Ireland. EPA. 2017.

Circular Letter PL 1/2017 - Implementation of Directive 2014/52/EU on the Effects of Certain Public and Private Projects on the Environment (EIA Directive).

Planning and Development, Maritime and Valuation (Amendment) Act 2022 (Commencement of Certain Provisions) (no.2) Order 2023 (SI 645 of 2023).

Guidelines on the Information to be contained in Environmental Impact Assessment Reports. Environmental Protection Agency, Johnstown Castle Estate, Co. Wexford, Ireland. EPA. 2017.

Key Issues Consultation Paper - Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licencing Systems, 2017.

EU Environmental Impact Assessment Directive (Council Directive 2014/52/EU).

Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements. Institute of Geologist of Ireland, 2013.

Archaeological Code of Practice (Irish Concrete Federation, 2009);

Geological Heritage Guidelines for the Extractive Industry (Irish Concrete Federation, 2008).

HSA's 'Guidelines to the Safety, Health and Welfare at Work (Quarries) Regulations 2008.

Environmental Management in the Extractive Industry: Guidelines for Regulators 2006.

Environmental Code (Irish Concrete Federation, 2005).

Department of the Environment, Quarries and Ancillary Activities, Guidelines for Planning Authorities 2004.

Environmental Management in the Extractive Industry (Non Scheduled Minerals) (Environmental Protection Agency, 2002)

# 3

## POPULATION AND HUMAN HEALTH



## 3 POPULATION AND HUMAN HEALTH

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### 3.1 INTRODUCTION

This chapter of the EIAR was prepared by Cunnane Stratton Reynolds, Landscaping and Planning Consultants. This chapter has regard to the other inputs to this EIAR and the application, and in particular the following chapters addressing Ecology and Biodiversity (Chapter 4.0); Land, Soils and Geology (Chapter 5.0); Water (Chapter 6.0); Air Quality (Chapter 7.0); Climate (Chapter 8.0); Noise and Vibration (Chapter 9.0); and Landscape and Visual (Chapter 11.0).

Population and Human Health comprise an important aspect of the environment to be considered. Any significant impact on the status of human health, which may be potentially caused by a development, must therefore be comprehensively addressed. Population and Human Health is a broad ranging topic and addresses the existence, activities and wellbeing of people as groups or 'populations'.

Construction and operational related impacts from the subject development in relation to Traffic and Transport have been addressed in Chapter 12.0 of this EIAR, (Traffic and Transport). Impact in relation to other built services, (such as electricity, telecommunications, water supply and foul water capacity) have also been addressed in Chapter 13.0, (Material Assets).

The assessments in combination with the relevant sections presented above proposes mitigation measures, as appropriate, to reduce the significance of adverse impacts from the development.

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

- Economic Activity
- Social Patterns;
- Land Use and Settlement Patterns;
- Employment;
- Health & Safety; and
- Risk of Major Accidents and Disasters.

#### 3.1.1 PROJECT BACKGROUND AND OVERVIEW

##### **Characteristics of the Subject Development**

Consideration of the characteristics of the subject development allows for an assessment of the level of impact on any particular aspect of the environment that would have or continues to arise for the subject development. In this chapter the impact on population and human health is assessed. A full description of the subject S37L application is provided in Chapter 2 of this EIAR

Effects of a development on the environment can impinge upon the surrounding human environment, directly and indirectly, positively and negatively. Direct effects may include such matters as safety, air and water quality, noise, landscape quality and road traffic. Indirect effects pertain to such matters as ecology and biodiversity, heritage and archaeology. These matters form discreet sections of this EIAR in their own right and corresponding mitigation measures are comprehensively provided in those individual sections and within the specific mitigation section of the EIAR, (Chapter 16).

### Study area

The study area defined for the population and demographic trends is the Electoral Division (ED) of Rathmore and Newtown, shown in Figure 3-1 below. An assessment of residential receptors has been made within a 500 m radius of the EIA project boundary. A total of 25 No. existing residential dwellings were found to be within 500 m of the EIA boundary. One further dwelling was noted to have been granted planning permission and construction of this development is underway; nevertheless this has been included in the assessment. Of the 25 residential receptors identified, 7 No. residential receptors are located within 250 m of the EIA boundary. The number of residences is based on a field survey, a review of the aerial photography, DCCA Eircode mapping and a local authority planning permission search.

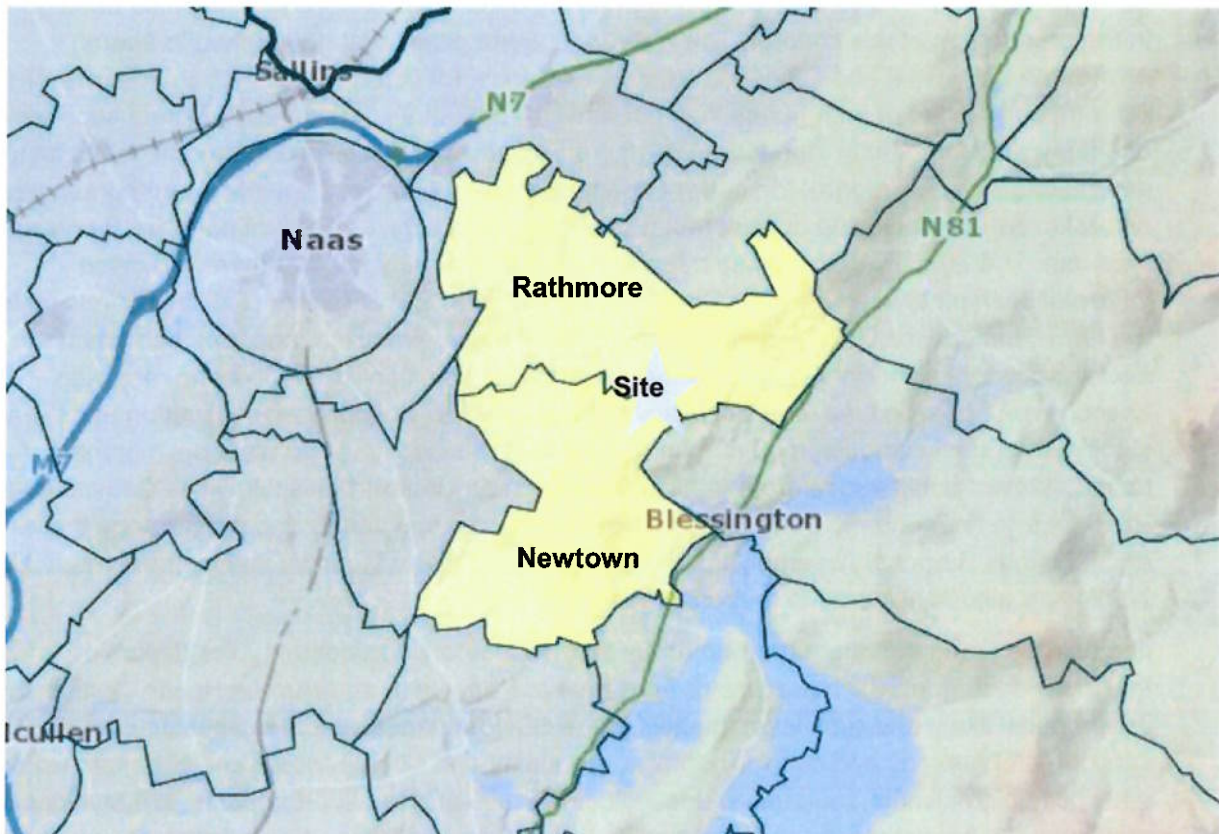


Figure 3-1: Electoral Divisions which the application site is located within.

## 3.2 METHODOLOGY

At the time of writing there is no specific guidance from the EU Commission on the 2014 EIA Directive to indicate how the new term 'Human Health' should be addressed. Therefore, this chapter of the EIAR document has primarily been prepared with reference to recent national publications which provide guidance on the 2014 EIA Directive including the Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (2018) and the Guidelines on the information to be contained in environmental impact assessment reports, published by the EPA in May 2022.

The preparation of this chapter has also had regard to the guidance published by the European Commission in 2022 on the preparation of EIARs (taking account of the changes introduced under

the 2014 Directive). The European Commission guidance states the following in relation to the assessment of Human Health:

*“In an EIAR, the assessment of impacts on population & human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in the EIAR e.g. under the environmental factors of air, water, soil etc.. The Advice Notes provide further discussion of how this can be addressed”*

In accordance with this approach to Human Health espoused in the Commission Guidance, this chapter addresses human health in the context of other factors addressed elsewhere in further detail within the EIAR where relevant. Relevant factors identified include inter alia water, air quality, noise, and the risk of major accidents and disasters. The insight provided by the Institute of Environmental Management and Assessment (IEMA) high level primer document (2017) has also been considered in the preparation of this chapter. The IEMA document posits that human health spans environmental, social and economic aspects and does not merely represent an absence of disease. A broad conception of human health is put forward, that should encompass factors such as local economy and community, rather than relying on a narrower focus on biophysical health factors and determinants. In this regard, the current chapter seeks to address population and human health in a holistic manner, including consideration of economic factors, settlement patterns, landscape and land-use. The 2018 EIA Guidelines published by the DHPLG state that there is a close interrelationship between the SEA Directive and the 2014 EIA Directive. The Guidelines state that the term ‘Human Health’ is contained within both of these directives, and that a common interpretation of this term should therefore be applied. To establish the existing receiving environment / baseline, several site visits were undertaken to appraise the location and likely and significant potential impact upon human receptors of this substitute consent development. A desk-based study of published reference documents such as Central Statistics Office Census data, the ESRI Quarterly Economic Commentary, the Regional Spatial and Economic Strategy for the Eastern and Midlands Regional Assembly 2019-2031, and the Kildare County Development Plans 2023 - 2029 were also considered in preparing this EIAR.

It should be noted that there are numerous inter-related environmental topics described throughout this EIAR document which are also of relevance to Population and Human Health. Issues such as the potential likely and significant impacts of the S37L on landscape and visual impact, daylight and sunlight, archaeology and cultural heritage, air quality and climate, noise and vibration, water, land and soils, microclimate, material assets including traffic and transport impacts, are of intrinsic direct and indirect consequences to human health. For detailed reference to particular environmental topics please refer to the corresponding chapter of the EIAR and other accompanying substitute consent application reports and drawings. The Guidelines on the information to be contained in environmental impact assessment reports, published by the EPA states that ‘in an EIAR, the assessment of impacts on population & human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in the EIAR e.g. under the environmental factors of air, water, soil etc’. This chapter of the EIAR document focuses primarily on the potential likely and significant impact on population, which includes human beings, and human health in relation to health effects/issues and environmental hazards arising from the other environmental factors. Where there are identified associated and inter-related potential likely and significant impacts which are more comprehensively addressed elsewhere in this EIAR document, these are referred to. The reader is directed to the relevant environmental chapter of this EIAR document for a more detailed assessment.

Information for the assessment of potential impacts on populations and human health was obtained by means of a desk-based review, and included the following sources:

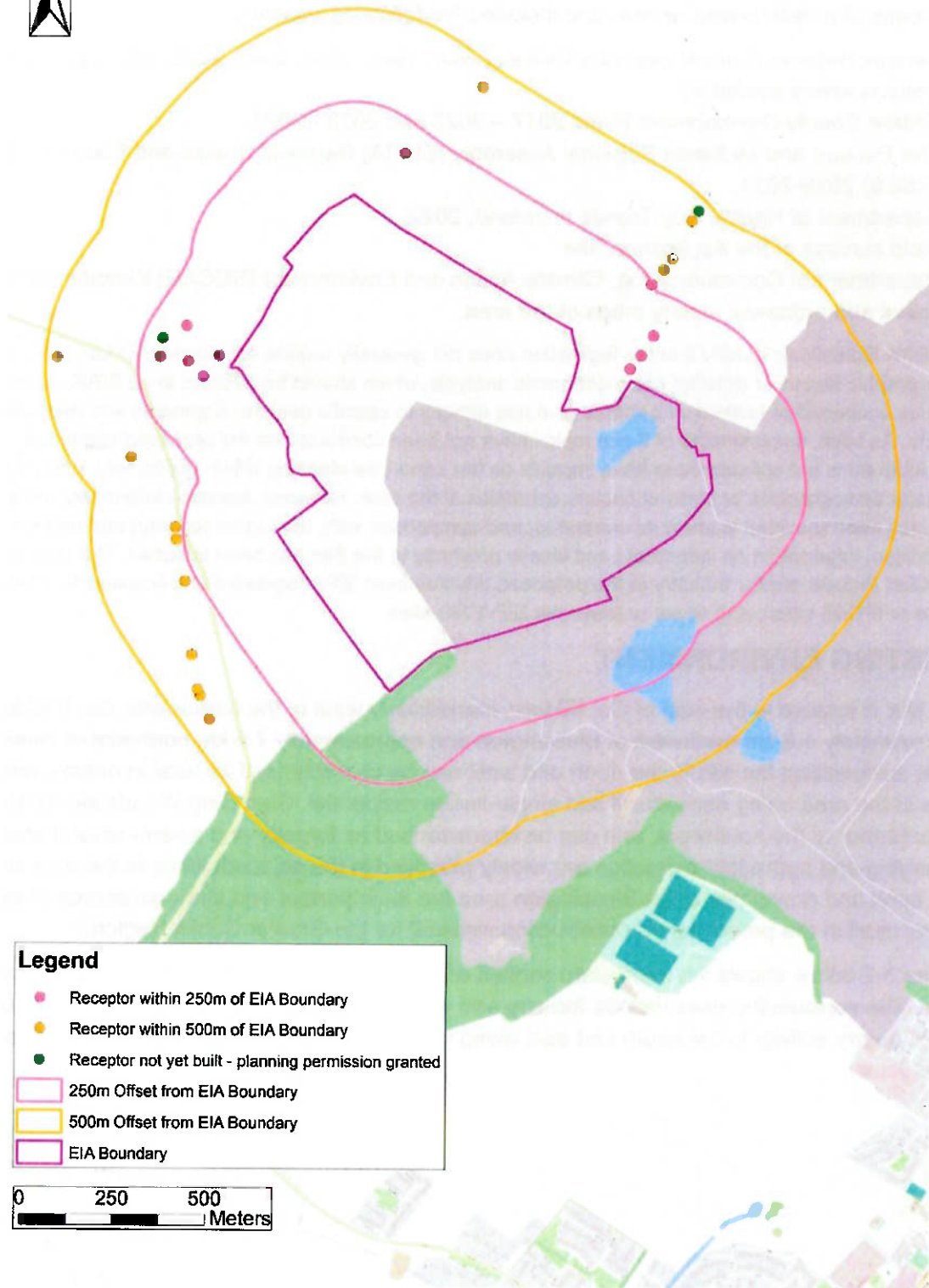
- Census Returns (Central Statistics Office (CSO), 1991, 1996, 2002, 2006, 2011, 2016 and 2022 Census where available);
- Kildare County Development Plans 2017 – 2023 and 2023 - 2029;
- The Eastern and Midlands Regional Assembly (EMRA) Regional Spatial and Economic Strategy (RSES) 2019-2031;
- Department of Health, Key Trends in Ireland, 2022;
- Field surveys of the Application Site;
- Department of Communication, Climate Action and Environment (DCCA) Eircode maps; and
- Aerial and ordnance survey maps of the area.

The EPA Guidelines identify that the legislation does not generally require assessment of Land Use planning, demographic issues or detailed socio-economic analysis, which should be avoided in an EIAR, unless issues such as economic or settlement patterns give rise directly to specific new developments and associated effects. As such, assessments of these topics have not been conducted as the proposed continued development is not considered to have impacts on the Land Use planning within the locality, nor will it affect the local demographics or socio-economic dynamics of the area. However, baseline information on the local area has been provided to show its context to, and comparison with, the region (county) and national average. In addition, information on industrial Land Use in proximity to the Site has been included. The land-uses identified include: similar industry to the proposed development, EPA regulated and licenced facilities (such as waste or IPC/IE sites); and upper or lower tier SEVESO sites.

### 3.3 EXISTING ENVIRONMENT

The site is located in the east of Co. Kildare, immediately west of the border with Co. Wicklow, and approximately 1.8 km northwest of Blessington and approximately 7.5 km northeast of Naas. The lands surrounding the site to the north and west can be characterised as rural in nature, with land uses in the area being agricultural and single-house residential. Glen Ding Woods are located on lands further to the southwest, and can be characterised as forestry and a semi-natural area. Quarrying and aggregate extraction are widely practiced in the adjacent lands to the east and south. The sand and gravel pits in the Blessington area are an important and strategic source of sand and gravel used in the production of construction material for the Greater Dublin Region.

Figure 3-2 below shows the immediate context of the application site in the context of surrounding uses. The surrounding uses include forestry and woodlands to the south west, agriculture to the north, quarry activity to the south and east along with residential development to the north and east in particular.



**Figure 3-2: Receptors within 250m and 500m of the EIA boundary.**

### 3.3.1 THE EXISTING RECEIVING ENVIRONMENT (BASELINE SITUATION)

A description of the relevant aspects of the current state of the environment (baseline scenario) in relation to population and human health is provided below. Specific environmental chapters in this EIAR provide a baseline scenario relevant to the environmental topic being discussed. Therefore, the baseline scenario for separate environmental topics is not duplicated in this section; however, in line with guidance provided by the European Commission, the EPA and the DHPLG, the assessment of impacts on population and human health refers to those environmental topics under which human health effects might occur, e.g. noise, water, air quality etc. An outline of the likely evolution without implementation of the project as regards natural changes from the baseline scenario is also provided. This is the “Do Nothing” scenario.

### 3.3.2 BASELINE – POPULATION

#### Population Growth

Table 3-1 below summarises population statistics for the State, Kildare and the Rathmore and Newtown EDs within which this S37L application is located. The percentage population increase has been calculated between the Census periods of 2006 to 2011, 2011 to 2016 and 2016 to 2022 where the latter census data is currently available. Generally consistent increases in population were observed in the State, Kildare and the Electoral Division areas over the Census periods of 2006 to 2022 with subsequent lower rates of population increase observed in the period of 2011 to 2016. The population of Rathmore ED decreased slightly over the Census periods of 2011 to 2022. During these periods, the population increased in the county, regionally and nationally. Population increase in Newtown was experienced over the same period.

**Table 3-1: Population statistics for the State, Co. Kildare and the Rathmore and Newtown Eds (CSO)**

	2006	2011	2016	2022
Ireland	4,239,848 (+8.11%)	4,588,252 (+7.82%)	4,761,865 (+3.78%)	5,149,139 (+8.12%)
Kildare	186335	210312 (+13%)	222504 (5.8%)	247774 (+11.4%)
Rathmore ED	N/A	1169	1142 (-2.3%)	1139 (-0.26%)
Newtown ED	N/A	920	941 (+2.3%)	1035 (9.9%)

Over the 6 year period to 2022 which is during the period that only the substitute consent will apply (i.e., after September 2020 the growth in population in Newtown ED exceeded by a small rate the population growth across the whole State but was less than the rate of growth across the whole county. The population of Rathmore experienced marginal decline. The population of Newtown ED increased by 94 persons in the 2016-2022 period suggesting that there may have been new housing development in the area in that period. The extension of the extraction area of the existing quarry as set out in this S3n7L application is not expected to have any bearing on population growth or otherwise over the next census period.

## Population Age Distribution

The current age profile of the area is shown in Table 3-2 below.

**Table 3-2: Population Age Distribution, 2011 and 2016 (CSO)**

Year	Area	% Person aged 0-14	% Person aged 15-29	% Person aged 30-44	% Person aged 45-64	% Person aged 65+
2011	State	21.3	32.5	23.7	22.7	11.7
2016	State	21.1	18.4	23.3	23.8	13.4
2011	Kildare	24.5	20.2	25.8	21.6	7.9
2016	Kildare	24.1	18.1	24.8	23.2	9.9
2011	Rathmore ED	25.2	19.6	17.2	29.5	8.5
2016	Rathmore ED	20.4	18.3	17.1	32.8	10.9
2011	Newtown ED	28.2	15.6	29.4	20.5	6.3
2016	Newtown ED	28.4	14.0	27.5	21.3	8.8

Table 3-2 summarises population distribution across the key age cohorts for the State, Leinster, Co. Kildare and the Rathmore and Newtown EDs. Rathmore has an age profile that is greater in the 15-29 age group than in the State, the county or in comparison with Newtown ED. Newtown has a greater proportion of its population in the youngest cohort 0-14, less in the 15-29 age group, more in the 30-44 age group, and less over 45 years old than Rathmore ED. A typical age scenario in Newtown ED for the year 2016, which is the last year for which there are census records on age available, is one of households or families with parents in the 30-44 age group and children more likely in the 0-14 age group.

Population densities are also available between the Census periods of 2002 to 2006, 2006 to 2011 and 2011 to 2016, as the 2022 figures are not yet available. Population densities also increased in the State, province and county areas in the period to 2016. The population density of Rathmore ED increased from 42.4 persons per km<sup>2</sup> in 2006 to 47.8 persons per km<sup>2</sup> in 2011, whereas the density of the Newtown ED increased from 23.2 to 41.2 during the same period. This increase in density in this period as noted above could be attributed to the development of a housing estate within the Newtown ED during this time. The population density of the Rathmore and Newtown EDs are still lower than that observed in the county, regionally and nationally, which reflects the rural nature of these EDs.

### 3.3.3 BASELINE - EMPLOYMENT

#### National Employment



Nationally, the CSO's Quarterly Labour Force Survey (which has now replaced the Quarterly Household Survey) for Q2 2023, which is the latest available, indicates that the employment rate for persons aged 15-64 years was 74.2% in Quarter 2 2023, which was the highest rate recorded since the surveys began in 1998. The number of persons aged 15-89 years in employment increased by 88,400 or 3.5% to 2,643,000 persons in the year to Q2 2023.

### **Local Employment Centres**

As previously described, the application site is situated adjacent to the Kildare-Wicklow border, north-west of the N81 national road. The site is in close proximity to the towns of Blessington and Naas. The site is also well positioned to serve the aggregate needs of the greater Dublin area through an extension of its extraction area, and its location in a regional context has continued influence on the economic activity of the area. Public transport linkages and the N81 road provide vital compact connections and strengthen the area's status as a centre for economic investment and activity, and as a commuter zone. Using the N81 road, Dublin city centre is approximately 50 minutes away by car, while Blessington can be reached in less than 5 minutes. Naas is approximately a 20 minute drive using the R410 road. Such ease of access increases the attractiveness of the site as a source of high value aggregate to meet the demands of the region. An extension of extraction area is required to meet this demand. The ease of access also makes the area an ideal location for commuters, but it is accepted that the Applicant provides substantial local employment both directly and indirectly.

### **3.3.4 BASELINE - AMENITY**

The immediate area surrounding the application site is primarily used for quarrying and agriculture, and therefore has limited amenities. A large proportion of public amenities, recreational clubs/areas, and areas of tourism value in the vicinity of the Site are concentrated in and around the town of Blessington. Some of these main areas have been identified and are described below. Blessington acts a gateway to the north-western part of the Dublin and Wicklow Mountains, providing a wide range of accommodation and food services.

Sport and recreational grounds within the vicinity the site include the Blessington Association Football Club, which is located approximately 700 m east of the of this S37L Site; and the Blessington Gaelic Athletic Association Club which is located approximately 1 km to the south. The Poulaphouca Reservoir (Blessington Lake) is located east of Blessington, ca. 2.2 km south-east of the Site. It offers opportunities for sports and recreation with the Three Castles Rowing Club and The Avon Activity Centre. It also acts as an attractive area for walking and mountain biking along tracks such as the Blessington Greenway.

There are two formal gardens open to visitors, namely June Blake's Garden and Hunting Brook Gardens, approximately 4.2 km north-east of the site, respectively. June Blake's Garden also offers holiday accommodation on-site. The clubs and amenities presented above are utilised by the wider east Kildare and west Wicklow communities and not just limited to the local population of the surrounding area.

### **3.3.5 BASELINE - LAND USE**

The S37L application site is approximately 64.0 ha in area within an EIA boundary area of 95.8 ha. The site comprises lands which are currently used for quarrying activities and are classified (Level 3) in Corine Landcover (EPA, 2018) as 'Mineral Extraction Sites'. The lands to the north and west are defined as 'Agricultural areas' and 'Pastures'. The lands surrounding the site to the north and west can be characterised as rural in nature, with land uses in the area being agricultural and single-house residential. Glen Ding Woods located on lands further to the southwest are defined as

forestry and a semi-natural area. Quarrying and aggregate extraction are widely practiced on adjacent lands to the east and south. The boundaries of the lands owned by the Applicant comprise hedgerows and areas of scrub. There are a number of one-off residential properties located in the vicinity of the site, primarily concentrated to the west, north and east of the site.

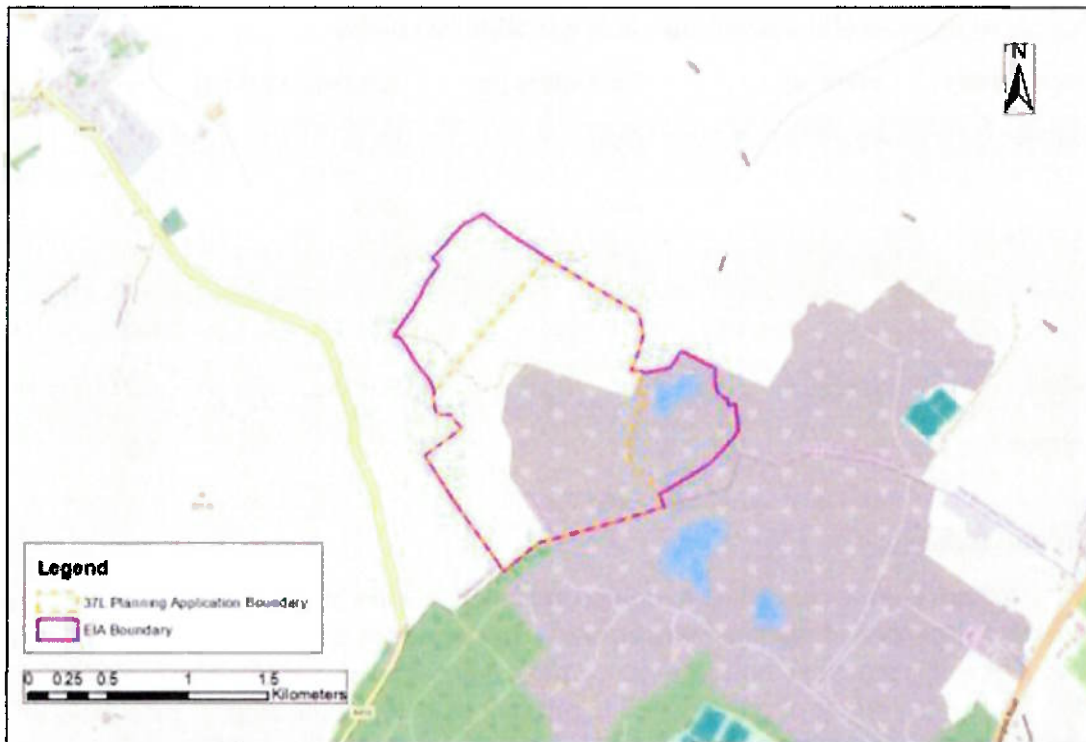
There are no waste licenced or IE/IPC Licenced facilities within 1 km of the subject development. Within 5 km of the site, there are seven EPA regulated activities;

- Dillonsdown (waste facility; EPA Waste Licence No. W0080-01), adjacent lands to the south-east;
  - Roadstone Dublin Remediation Landfill (surrendered waste facility; EPA Waste Licence No. W0213-01), ca. 700 m south-east;
  - A.B. Group Packaging (IPPC Licence No. P0197-02), ca. 2.7 km south;
  - Blackhall Soil Recovery Facility, (waste facility; EPA Licence No. W0247-01), ca. 3.0 km east;
  - Glassco Recycling Ltd (waste facility; EPA Waste Licence No. W0279-02), ca. 3.0 km north;
  - Walshestown Restoration Ltd (waste facility; EPA Waste Licence No. W0254-01), ca. 3.8 km east; and
  - Arthurstown Landfill (waste facility; EPA Waste Licence No. W0004-04), ca. 3.8 km north-west.
- Within 5 km of the site, there are four consented Section 4 discharges:
- Scoil Cheile Chriost National School, S4033-15, ca. 1.3 km north-west;
  - Scoil Cheile Chriost National School, S4033-15(b), ca. 1.3 km north-west;
  - Breton Rocrete WPL/60, ca. 3.6 km north-east; and
  - Teehill Management Company Ltd, WP218/05, ca. 4.9 km north-east.

There are no upper or lower tier SEVESO sites within 5 km of the subject development. The closest SEVESO site is Johnston Logistics Ltd, which is an upper tier SEVESO site and is located approximately 8.5 km to the north of the subject site.

### **Demographic and Development Pattern**

The S37L application area holds the main pit extraction area of the quarry and also (1) a proposed northern extension of approximately 21.2 ha in total of which 17.7 ha comprises an internal extraction area; and (2) a western extension of approximately 10.2 ha in total of which there is an internal extraction area of approximately 9.4 ha. The extent of this S37L application boundary in relation to the EIA boundary is shown in Figure 3-3 below.



**Figure 3-3: Extent of this S37L Planning Application Boundary in relation to the EAI Project Boundary**

The lands surrounding the Site to the north and west can be characterised as rural in nature, with land uses in the area being agricultural and single-house residential. The landscape character of the area is set out in Chapter 11 of this EIAR entitled Landscape and Visual Impact. Quarrying and aggregate extraction are widely practiced in the adjacent lands to the east and south. The sand and gravel pits in the Blessington area are an important and strategic source of sand and gravel used in the production of construction material for the Greater Dublin Region.

### 3.3.6 BASELINE - HUMAN HEALTH

Table 3-3 below summarises the general health of persons by percentage for the State, Co. Kildare and the Rathmore and Newtown EDs at the time of the 2016 census (which are the latest census figures available for health specifically). In the 2016 Census there was a greater percentage of persons in the Rathmore ED (93.5%) and Newtown ED (92.2%) who classified themselves as being in 'Good' or 'Very Good' health in comparison with the average for the State (87.0%).

The percentage of persons who classified themselves as being in 'Bad' or 'Very Bad' health in the Rathmore and Newtown EDs (0.9% and 1.0%, respectively) was lower than those in the State and Co. Kildare (1.6% and 1.3% respectively). This would indicate a relatively healthy local population as a general position on health in close proximity to the S37L application site.

**Table 3-3: General health percentage of the population (CS0)**

General Health	State(%)	Co.Kildare (%)	Rathmore ED (%)	Newtown ED (%)
Very good	59.4	63.1	68.1	70.0
Good	27.6	26.4	25.4	22.2
Fair	8.0	6.8	4.4	5.0
Bad	1.3	1.1	0.6	0.8
Very bad	0.3	0.2	0.3	0.2
Not stated	3.3	2.3	1.2	1.8

### Health and Safety

Hudson Brothers Ltd are committed to health and safety at their operations. The Site Manager is responsible for safety and management on site. That person is also responsible for the working environment, traffic management, emergency procedures, first aid arrangements and safe systems of work. There is no record of any significant accident or incident affecting, or potentially affecting the health or safety of the area

## 3.4 POTENTIAL IMPACT

### Introduction

Potential impacts from the proposed development may include nuisance from noise, vibration, dusts, landscape and visuals impacts, and impacts to groundwater and surface waters. The potential extent of these will be limited to the local community in the region of the Site. These potential impacts have been assessed in the respective chapters of: Soils and Geology (Chapter 5.0), Water (Chapter 6.0), Air Quality (Chapter 7.0), Climate (Chapter 8.0), Noise and Vibration (Chapter 9.0); and Landscape and Visual (Chapter 11.0). A significant difference from this application to the S261A substitute consent application is the proposal to recommence blasting. This operational feature of development has the potential to affect upon Water (Chapter 6.0) and Noise and Vibration (Chapter 9.0).

Traffic has the potential to impact receptors at a greater distance from the Site, however given the road infrastructure surrounding the Site this is expected to be imperceptible and medium-term. The effects of these impacts have been assessed in Chapter 12 of this EIAR (Traffic and Transport). That chapter indicates a not significant increase in traffic generation from the extraction area extensions proposed.

Employee numbers associated with the proposed development will be maintained from the existing permitted development. These are ca. 46 full-time staff and a further ca. 26 contract truck drivers; however the number of workers may fluctuate depending on market demands.

Local population growth due to workers migrating to the local area is not anticipated as the current employment levels are to be maintained. Therefore, the potential growth in local population due to the proposed development are deemed to be negligible.



It is considered that there will be no impact on other population factors such as population age distribution, population density, household composition or commuting patterns as a result of the proposed development.

### **Mitigation Measures**

Nuisance to the local population from noise, vibration, dusts, landscape and visuals impacts, and impacts to groundwater and surface waters will be mitigated during the operation at the proposed development. Specific mitigation measures and best practices have been discussed in the respective chapters of this EIAR, (Soils and Geology (Chapter 5.0), Water (Chapter 6.0), Air Quality (Chapter 7.0) and Climate (Chapter 8.0), Noise and Vibration (Chapter 9.0); and Landscape and Visual (Chapter 11.0).

### **Residual Impacts**

With the successful site management and the implementation of the Environmental Management System (EMS) it is anticipated that there will be no significant residual nuisance impacts on the local population as a result of the proposed development.

## **3.4.1 POPULATION**

Potential impacts from the S37L development may include nuisance from noise, vibration, dusts, landscape and visuals impacts, and impacts to groundwater and surface waters. The potential extent of these will be limited to the local community in the region of the site. These potential impacts have been assessed in the respective chapters of: Soils and Geology (Chapter 5.0), Water (Chapter 6.0), Air Quality (Chapter 7.0), Climate (Chapter 8.0), Noise and Vibration (Chapter 9.0); and Landscape and Visual (Chapter 11.0).

Traffic has the potential to impact receptors at a greater distance from the site. However, given the road infrastructure surrounding the site this is assessed to be imperceptible and medium-term. The effects of these impacts have been assessed in the Traffic and Transportation chapter, (Chapter 12.0).

Employee numbers associated with the subject development will be maintained from the existing permitted development under Reg. ref. 07/267. These are ca. 46 full-time staff and a further ca. 26 contract truck drivers; however the number of workers may fluctuate depending on market demands. Local population growth due to workers migrating to the local area is not anticipated as the current employment levels are to be maintained. Therefore, any potential growth in local population attributable to the subject development is deemed to be negligible. It is anticipated that there will be no impact on other population factors such as population age distribution, population density, household composition or commuting patterns as a result of this S37L development proposed proceeding.

### **Commuting**

Table 3-4 summarises the commuting times per person aged 5 years or over to work, school or college for Co. Kildare and the Rathmore and Newtown EDs. The statistics have been calculated for the Census periods 2016 and 2022 for which most recent information is currently available. It is considered that the vast majority of persons who commute for a period of greater than ¾ of an hour are travelling towards Dublin and the greater Dublin area. This comprised approximately 24% of the working population within the Rathmore ED population in 2016 and 20.5% in 2022. For the Newtown ED, the comparative rate of commuting was approximately 27.5% in 2016 and 22.4% in 2022. This

is higher than commuting times for Co. Kildare as a whole during the same period (2016 – 21.6%; 2022 – 20.8%). The marginally higher percentage of persons commuting for longer times may indicate a greater proportion of persons travelling towards Dublin and the greater Dublin area. It should be noted that a significant number of employees and sub-contractors currently working within the Applicant's existing operation live locally.

**Table 3-4: Commuting times for percent of people (aged 5 years and over) in Co. Kildare and Rathmore ED, (CSO)**

<b>Journey Time</b>	<b>Kildare 2016 (%)</b>	<b>Kildare 2022 (%)</b>	<b>Rathmore ED 2016 (%)</b>	<b>Rathmore ED 2022 (%)</b>	<b>Newtown ED 2016 (%)</b>	<b>Newtown ED 2022 (%)</b>
< 15 mins	28.8	26.3	28.5	26.1	29.0	30.6
¼ hour – under ½ hour	27.3	27.2	22.1	27.0	20.7	21.9
½ hour – under ¾ hour	16.7	17.5	20.6	21.9	19.4	19.5
¾ hour – under 1 hour	7.6	7.7	10.6	8.2	12.3	10.8
1 hour – under 1 ½ hours	10.7	9.7	9.8	9.8	11.2	9.1
1 ½ hours and over	3.3	3.4	3.6	2.5	4.0	2.5
Not stated	5.6	7.9	4.8	4.4	3.3	5.3

It is considered that there will be a slight positive impact as employment will be retained by the applicant over the period of any planning permission in the area.

### **Mitigation Measures**

Elsewhere in this EIAR it is demonstrated that nuisance to the local population from noise, vibration, dusts, landscape and visuals impacts, and impacts to groundwater and surface waters will not occur with mitigation embedded in this proposed development and as set out in the mitigation measures listed within Chapter 16. Specific mitigation measures and best practices have been discussed in the respective chapters of this EIAR, (Soils and Geology (Chapter 5.0), Water (Chapter 6.0), Air Quality (Chapter 7.0) and Climate (Chapter 8.0), Noise and Vibration (Chapter 9.0); and Landscape and Visual (Chapter 11.0). An EMS will be developed for the site in line with further conditions resulting from the grant of planning permission for the subject site. The revised EMS shall provide provisions for the mitigation of nuisance and the management of the site in respect to the local environment and local population for current impacts.

The initial assessment of the significance of potential effects resulting from the S37L Proposed Development takes into consideration any embedded design and implemented Site management practices undertaken at the Site. These elements of the Proposed Development design and good working practices that reduce the potential for impacts to the surrounding human environment include the following:

- Site operations are managed in accordance with relevant health and Safety legislation (Safety, Health & Welfare at Work Act (2005, as amended); and the Mines and Quarries Act (1965, as amended)) and subsequent Quarries Regulations relating to health and safety, training, geotechnical assessments, and appropriate site management; fencing is actively maintained at the Site to ensure that the risk of injury to the public and livestock is minimised. The entrance gate is locked and controlled by the site's management;
- Exposed edges in the quarry are fenced or protected with safety berms;
- Blasting takes place at the Site using licenced and experienced operators.

### **Soils and Ecology**

- The removal of soils is proposed to be conducted in phases and remain on site as formed berms to reduce the overall potential impact on the land use and underlying groundwater;

### **Water**

The implementation of Site management practices to mitigate the impact to the water environment, as identified in Chapter 6 of this EIA, including:

- Safe storage and handling of hazardous substances;
- Maintenance of equipment and plant to ensure there are no leakages of fuels, oils and potentially contaminating substances;

### **Air Quality**

Site management practices are implemented to mitigate the impact to air quality, as identified in Chapter 7 of this EIA, including:

- Use of wet suppression of dust during dry periods, and the maintenance of physical screening of activities.
- The design and nature of the Proposed Development is such that the quarry face and benches provide natural screening as the operational phase progresses;
- Use of wheel wash to minimise dust transmission from HGVs, and the covering of loads during drier periods

### **Noise and Vibration**

The implementation of Site management practices to mitigate the impact to noise, as identified in Chapter 9 of this EIA, including:

- The design of internal haul roads is such as to have as low a gradient as possible so as to minimise excessive revving of vehicle engines on-site;
- The use of vehicle horns was and is discouraged during the daytime period and was and is banned during the early morning periods before 10:00 am;
- The maintenance of bunds, as appropriate, to mitigate noise impacts at surrounding sensitive receptors;
- Plant and equipment is shut down when not in use;
- The imposition of speed limits on site and the access road to reduce noise from moving plant and HGVs.

### **Residual Impacts**

With the successful site management and the implementation of the EMS it is anticipated that there will be no significant residual nuisance impacts on the local population of the subject development either on its own or in combination with other developments including any other quarries operating in the area.

### **3.4.2 EMPLOYMENT**

The S37L proposed development will extend the life of the operation over the next approximately 13-15 years, whilst proposing to maintain the current level of direct employment at the site, with circa 46 full-time staff and circa 26 contract truck drivers utilising the site, depending on market conditions. In addition, the site will create indirect employment through roles such as site service contractors and additional contract truck drivers, depending on market conditions. Stripping of overburden, excavation and screening of materials, and restoration will take place on a phased basis, however, these can potentially be carried out at irregular intervals and will be dependent on market demands and weather conditions.

The application site has been providing aggregates to construction sites in the Greater Dublin Region over many years and the extension to the extraction also will maintain current direct employment levels and lead to further indirect employment. The proposed extend will therefore have a 'positive' but 'slight' effect on economic activity in the area and the Greater Dublin Region.

#### **Mitigation Measures**

No mitigation measures relating to the economic factors are required for the proposed development.

### **Residual Impacts**

It is considered that there has been, and are, no residual impacts in relation to employment resulting from the proposed development either on its own or in combination with other developments in the area including existing quarry operations in the area.

There are no negative residual impacts on employment than a slight positive indirect impact in terms of secondary or indirect employment.

### **3.4.3 AMENITY**

As noted, factors such as air quality, noise nuisance, vibration, traffic and landscape and visual can affect the amenity of an area. These items have been assessed in dedicated impact assessments in their respective chapters of this EIAR. Given that any existing facilities and amenity hubs in the vicinity of the site have developed in recent years while quarrying at the application site (and other sites) has been ongoing over a period since at least the 1950's, it is unlikely that the proposed extension will have a negative impact on the amenity potential of the area. Further information regarding landscape and visual impact and mitigation measures is included in Chapter 11.0 (Landscape) of this EIAR. Proposed perimeter embankments coupled with an increased programme of planting (with native species) will consolidate the existing screening of the proposed development. Consequently, it is concluded that the development will have an imperceptible impact on tourism and recreation in the area and as long as screening berms and areas of planting are retained in place and maintained, and are supplemented as proposed, the proposed development will not give rise to any negative impact on the area.



Particular previous interest was focused on the impact of quarrying on Glen Ding Woods. The Glen Ding Woods are located to the south-west of the proposed further extended extraction area. These woods are an amenity area for the local community and contain a number of nature walking and cycling trails. An assessment of potential dust impacts on Glen Ding Woods has been documented in the Chapter 7 (Air Quality). This assessment identifies that the magnitude of dust effects on the Glen Ding Woods as a 'negligible effect'. In-situ baseline monitoring was also undertaken to assess existing impacts of dust south east of the quarry.

These results have been provided in Chapter 7 and are below the recommended dust deposition emission limit values. An assessment of predicted noise impacts on the amenity of the Glen Ding Woodland has been included in Chapter 9 (Noise and Vibration) and identifies no significant impact upon the enjoyment of that amenity.

Given the nature of the Glen Ding Woods, the forestry itself provides a visual screening to the development from its internal walking and cycling trails. It is noted that visual impacts from developments such as quarries can effect amenity woodlands when the developments are visible from the peripheral walking trails. However, there are no defined perimeter trails in the Glen Ding Woods bordering the site or the site's proposed extension area. As identified in Chapter 11 (Landscape and Visual), the Applicant has proposed to construct screening berms which will be located around the perimeter of the site and will be left intact for the life of the quarry (and in perpetuity to continue to provide biodiversity to the site and the local environment). This includes screening berms to the south-west of the development bordering the Glen Ding Woods. Coupled with the natural screening of the woodland itself, it is considered that these mitigation measures (and the increased visual screening on the quarry perimeter as the planting matures) result in 'imperceptible' visual impacts from the Glen Ding Woods.

### **Mitigation Measures**

Nuisance to the local amenity and recreation areas from noise, vibration, dusts and traffic is mitigated during the operation. Specific mitigation measures and best practices have been identified in the respective chapters of this EIAR, Air Quality (Chapter 7.0), Climate (Chapter 8.0), and Noise & Vibration (Chapter 9.0) and Material Assets (Chapter 12.0). As noted previously, an EMS has been used for the environmental management for the development up to this point in time and will be continued for this S37L development.

### **Residual Impacts**

With the implementation of appropriate operational management practices and the mitigation measures identified in this EIAR it is considered that residual impacts upon amenity are considered to be not significant.

## **3.4.4 LAND USE**

The existing operational quarry has been in use since the early 1950's. Quarrying activities on the lands have been operated since then by various parties including members of the Hudson family. Quarrying activities in the vicinity of the site have gradually increased in the subsequent years and the local area is very well known for quarries. With respect to social considerations, there has been little or no change to local activities and land uses as a result of quarrying activities in the vicinity of the site since operations began to the current day. Apart from quarrying and farming, the mainstay of local activities being agriculturally based including one-off low-density residential housing.

Therefore, as quarrying is an established practice, the continuation and expansion of extraction activities will have an 'imperceptible' effect on social considerations compared with the current dynamics.

It is important to acknowledge that aggregate resources can only be worked where they naturally occur. The subject continuance and expansion of activities does incorporate an additional land take from surrounding agricultural lands for extractive use. However agricultural lands are widely available in the locality.

#### **Mitigation Measures**

As identified previously, specific mitigation measures and best practices have been discussed in the respective chapters of this EIAR. There are no additional specific mitigation measures identified in relation to Land Use.

#### **Residual Impacts**

With the implementation of appropriate environmental management practices and the mitigation measures identified in the EIAR it is considered that the likelihood of residual impacts to land use is considered to be not significant.

### **3.4.5 HUMAN HEALTH, AND HEALTH AND SAFETY**

#### **Human Health**

Potential impacts to human health from the effects of the extraction extension to the environment surrounding the site include discharges to the underlying groundwater. This could result in a change in water quality depending on the activities that are undertaken. There is the potential for impacted underlying groundwater to migrate to local groundwater wells and effect the users of such water supplies.

Potential impacts to human health from the impacts to air include dust generating activities on the site and increase in concentrations of airborne particles and nitrogen dioxide due to exhaust emissions from diesel powered vehicles and equipment used on-site and vehicles accessing the site. Blasting was not undertaken on the Site in recent years. Impacts to human health from excess noise and vibration on-site has potential to result in hearing loss and various vibration syndromes of workers from high level occupational exposure and also annoyance and effects on mental health in the surrounding residential receptors. Good environmental practice for water, air, and noise and vibration management will be undertaken as specified in Chapters 6.0 (Water), Chapter 7.0 (Air Quality), and Chapter 9.0 (Noise and Vibration) of this EIAR. Mitigation measures are detailed in the respective discipline chapters and consolidated in Chapter 16 of this EIAR.

### **3.4.6 WATER**

A concern in general and in health terms for local residents was the impact of development under 20/532 on nearby residents.

The effect of extending excavation to the north and west on water is assessed in Chapter 6 of the EIAR. The key components of the proposed scheme are set out as embedded features which include the following: excavation will not occur below the groundwater table; run off from the floor and faces of all areas of the extraction slope runs towards a low elevation point with trenches helping water to collect in Pond K2; there is no discharge to surface water; wash water is discharged into the silt pond with that pond being located above the groundwater table and is not in a direct



connection; wheel washing will be undertaken; mobile plant maintenance activities use a concrete apron with associated interceptors at the maintenance shed with spill kits managed on site and spill training given to all relevant staff; refuelling takes place on hardstanding on a designated location; all plant and machinery will continue to be regularly serviced and maintained; hydrocarbons are stored in bunded tanks on an impermeable hardstanding surface with all diesel fuel and hydraulic fuel stored in bunded fuel tanks; and finally, monitoring of groundwater and surface water quality using available monitoring wells and artificial wells and artificial ponds will ensure no pollution of groundwater or surface water occurs.

When samples were compared to the Drinking Water Regulations, it should be noted that all samples were below the thresholds for these parameters. The main potential risks associated with the subject extension of excavation at the site to the water environment (and subsequently human health) are identified to be:

- the release of hydrocarbons to surface water and groundwater.
- the capacity of the waste water treatment facilities on-site.

Deficient management of site activities and design of waste water treatment facilities have the potential to impact underlying groundwater and neighbouring residential groundwater supplies.

Mitigation measures identified in Chapter 6 (Water) will ensure that there is no adverse environmental impact to the underlying groundwater. It is therefore considered that there will be no significant risk of water related impacts from the proposed development on human health.

### **3.4.7 AIR QUALITY**

Receptors are identified in Chapter 7 - Air Quality of the EIAR that are within 500m of and 50m of the application site respectively. Residential receptors are categorised as high sensitivity receptors. The remaining non-residential (industrial) receptors are categorised as medium sensitivity receptors.

The air quality assessment within Chapter 7 of the EIAR concludes that the impact of coarse particulates (dust) on the surrounding area as a result of the continued activities at the Site is considered to be 'slight' and therefore Not Significant. The assessment considered the employed mitigation measures which will continue to be in place and considered them effective.

With regards to fine particulates, it is considered that there may be the potential for an increase in PM10 and PM2.5 concentrations at the residential receptors downwind in the vicinity of the Site, due to the moving of the extraction area, but the predicted environmental concentration (PEC) is still predicted to be below the annual Air Quality Standard (AQS), with headroom. The impact of fine particles from the continued operation of the site is therefore considered to be imperceptible and therefore Not Significant.

Residual impacts of deposited dust and particulates generated during the continued operations at the site on air quality are considered to be slight. During long spells of dry weather, dust emissions may have the potential to be elevated, however dust nuisance from the continued operations is expected to be unlikely as the above mitigation measures will continue to be implemented. The overall impact from the continued operation of the site, in terms of dust emissions and particulates, is considered 'slight' to the air environment and Not Significant.

Potential Air Quality accidents and unplanned events could occur relating to the malfunction of dust mitigation equipment particularly during dry and windy periods and the failure of covers resulting in the spillage of dusty material during transport. Unmitigated unplanned events may lead to short-term increases in dust emission

from the site with the potential for short-term increases in dust nuisance and an increase in PM10 concentrations. Due to the limited spatial and temporal scale of any unplanned event and the climate/meteorological conditions in the area, any impacts from accidents and unplanned events are deemed to be insignificant.

Furthermore, as identified in Traffic and Transport Chapter 12.0, and Chapter 7.0 Air Quality, the traffic flows associated with the extension of extraction are not expected to be significant compared to the previous operating scenario under 07/267, so any worsening of pollutants is assessed to be not perceptible. Considering the likelihood that most airborne particulates are deposited within 200m (as presented in Chapter 7.0 Air Quality), and the traffic flows associated with the site are not anticipated to change substantially, the impacts of air emissions from the site on human health are not perceived to pose a significant risk.

### **3.4.8 NOISE AND VIBRATION**

The impact of the subject development in terms of noise and vibration is assessed in Chapter 9.0 of this EIAR. Noise and vibration can have direct impacts on human health (i.e. damage to hearing from long term exposure, and the development of vibration syndromes such as hand-arm vibration syndrome, vibration white finger or carpal tunnel syndrome). Such risks and impacts to employees are managed on-site through the health and safety management system and by the use of personal protective equipment during certain tasks (including hearing protection).

Noise and vibration from the site can also have indirect impacts to surrounding residential developments through annoyance and effects on mental health. Blasting did not occur from the expiry of 07/267 in September 2020 to the current day. Monitoring did take place at the closest noise sensitive receptor (NSR) location (i.e. residential dwelling) during each blast historically. Planning conditions for the site and industry standards define appropriate limits for vibration peak particle velocity, air-overpressure, and the frequency at which blasting can be conducted at the site. Monitoring records to date show compliance with planning conditions limits and industry standards for the period that blasting did previously occur but as indicated above and vibration. With the continued application of site mitigation measures and cessation of blasting operations, it is considered that there has been, and there is, no current significant impact of vibration on human health surrounding the site.

Operational noise from the quarry has been predicted for three future operational scenarios within the proposed extensions to the quarry. These scenarios occur during daytime periods only; nighttime operations are not proposed (and do not currently take place). All modelled scenarios have followed a conservative approach to determine the likely 'worst-case' noise levels at NSRs. Predicted noise levels for each operational scenario are within the permitted daytime limits and the levels recommended by the EPA Environmental Management Guidelines – Environmental Management in Extractive Industry.

The specific noise levels from quarry operations for each modelled scenario are predicted to not exceed the permitted threshold level, resulting in a negligible adverse impact at all NSRs which is not significant.

At NSRs R3 and R6, noise levels are predicted to increase the ambient noise level above the measured noise level (relative to the nearest measurement location) by <3dB for Scenarios 1 and 3 and no increase for Scenario 2, which may result in a negligible or low adverse impact at these NSRs which is not significant.

At NSR R4, the noise level is predicted to increase the ambient noise level above the measured noise level (relative to the nearest measurement location) by >3dB but <5dB for all future operational scenarios, which may result in a low to medium adverse impact at this noise sensitive location which is not significant.

At all other NSRs and at Glen Ding Wood, there is predicted to be no or negligible change in ambient noise level (relative to the nearest measurement location) due to proposed future quarrying activities, which is not significant.

Vibration monitoring undertaken between 2018 and 2020 at the nearest vibration sensitive receptors to the quarry, including the GNI gas pipeline, determined there were no exceedances in the specified vibration or air overpressure limits. Regression analysis indicates that at the NSR closest to the proposed new quarry face (approximately 300m from the nearest proposed blasting site), the PPV at the typical maximum MIC of 285 kg would be around 6 mm/s (at 95% CL), below the permitted threshold of 12 mm/s. The measured air overpressure levels were substantially lower than the levels which would see structural damage to windows. The predicted vibration impact due to blasting is predicted to be negligible to low adverse, depending on the proximity to the blast site, which is not significant.

When taking into account the predicted absolute noise level, the change in ambient noise level and the likely vibration level due to blasting, the overall magnitude of impact at each receptor is not significant.

Noise from operational activities associated with other quarries in the vicinity of the Site were ascertained to be imperceptible at all measurement locations. As such, the cumulative impact is not significant.

Potential noise and vibration impacts will be controlled by the continued implementation of mitigation measures at the quarry. Supplementary measures have been proposed to ensure that blasting is monitored appropriately, and potential impacts associated with the GNI pipeline are considered. With these mitigation measures in place, residual noise and vibration impacts due to proposed quarry operations have been determined to be not significant.

Regarding the Gas Networks Ireland (GNI) pipeline, Section 9.5.2.3 recognises that there is potential for an improperly managed blast to damage the gas transmission line. Fractures in the line could result in gas leaks and an explosion. The loss of gas transmission would result in further indirect effects elsewhere on the line. The blasted rock face of the quarry is approximately 370 m from the gas transmission line. As the proposed quarry extension progresses westwards, the blasting activities will occur nearer to the transmission line. However, the closest blasted face will be located approximately 315 m away from the line at its closest point. The GNI 2021 'Code of Practice for Working in the Vicinity of the Transmission Network' dictates that: 'blasting shall not be permitted within 400 metres of a transmission network without consulting GNI and making an assessment of the vibration levels at the pipeline'. The Applicant has liaised with GNI on this matter and a site visit has been conducted by GNI.

In order to mitigate and reduce the potential of damage to the gas transmission line, numerous mitigation measures are employed during blasts, as identified in Section 9.7.2. These measures include a number of operational controls and also the requirement for blasting contractors to be trained and competent.

The applicant deploys a vibration monitor at the gas transmission line during all blasting events. From these monitoring records the blasting contractor can determine whether the MIC or methods need to be altered for future blasting events.

### 3.4.9 HEALTH AND SAFETY

#### General Health and Safety

The Site Manager has been, and is currently, responsible for safety management on the site. The predominant health and safety concerns for the human environment relates to the possibility of humans and livestock straying into the quarry area and from blast related activity at the site. To mitigate against such events the following are already in place at the site:

Fencing will continue to be actively maintained at the application site to ensure that the risk of injury to civilians and livestock is minimised. The entrance gate will continue to be locked and controlled by the sites' management;

Exposed edges in the subject extension will be appropriately protected with safety berms. These edges will also be sign-posted appropriately to identify any potential hazard;

The health and safety of all those working for the applicant will continue to receive the highest priority and has been the case over many years. The applicant is committed to implementing the provisions of the Safety, Health and Welfare at Work Act 2005; the Safety, Health and Welfare at Work (General Application) Regulations 2007; the Safety (Working At Height) Regulations 2006; the Health and Welfare at Work (Construction) Regulations 2013; and the Safety, Health and Welfare at Work General Application 2016, S.I. 36 of 2016, to ensure so far as is reasonably practicable the safety, health and welfare of all employees and other persons who may be affected by site activities. The applicant is committed to providing appropriate information, training and supervision to employees have been and who are operating at the application site.

All site employees, contractors and subcontractors are required to wear a minimum personal protective equipment (PPE) whilst on-site, these are steel toed boots and a high visibility jacket or vest. Other task specific PPE which will be used at the application site include, safety glasses/goggles, hard hats, gloves and hearing protection.

The following health & safety improvements have been enforced since 2020 and the expiry of 07/267 and will continue to be activated for the extraction envisaged in this S37 application:

- Dust monitoring locations in numerous field areas within distance of the quarry to check dust levels monthly. These are reported quarterly by an external environmental consultant.
- Water sprinklers and a water bowser utilised to help keep dust levels low during drier periods.
- All plant and machinery are serviced regularly to help ensure they are running smoothly.
- Generators are maintained regularly, and any leakages are repaired almost immediately.
- Edge protection in place on wash plant.
- More lighting put in place.
- More safety signage put in place.
- A new H&S Officer started in August 2023.
- Guards and protection put in place on large wash plant.
- All fire extinguishers tested yearly.
- First aid kits stocked and checked regularly.
- All employees trained and receive regular safety training.

- Safety talks held regularly with employees
- Defibrillators on site checked and serviced when required.
- All safety data sheets on file for oils and chemicals.
- All stockpiles are monitored and grounds assessed for large machinery.
- Reg. Ref.: 07/267 operational hours maintained.
- Wheel was for all vehicles exiting the quarry.
- Road sweeper cleaning access roads.
- Hudson Brothers strive to achieve a high level of safety in their company. H&S Officer is on site full time and does daily checks in the quarry.
- Regular safety training to issued to employees and all new employees undergo a safety induction.

### **Site Security and Boundary Treatment**

Existing management and maintenance of existing boundaries will be extended to the proposed boundary under this application.

It should also be noted that the formalised boundary condition inspections are now included in the EMS. It should also be noted that fencing has been and will continue to be actively maintained at the site to ensure the risk of injury to the public and livestock is minimised. The entrance gate will continue to be locked and controlled by the site's management.

Finally, it should be noted that inspections and deficiencies on the boundaries, fencing and security are to be reported to the applicant's Environmental Officer. That Environmental Officer will be responsible for ensuring that appropriate corrective actions are taken to repair boundaries.

If emergency services are required at the application site, the closest Accident and Emergency unit operates out of Naas General Hospital, Naas, Co. Kildare (and also Tallaght University Hospital, Dublin 24). Fire emergency services for the site operate from Blessington Co. Wicklow. There have been no significant accidents.

### **Impact on Water Quality and Health**

The main potential risks associated with the proposed continuation of quarrying activities at the Site to the water environment (and subsequently human health) are identified to be: the release of hydrocarbons to surface water and groundwater, and the use of the waste water facilities on-site. Deficient management of site activities during the assessment period have the potential to impact underlying groundwater and neighbouring residential groundwater supplies.

As the extraction of both sand and gravel and rock will occur at least 1 m above the highest winter water table no discharge to the environment takes place.

Occasionally perched water is encountered during the extraction of sand and gravel and it drains away naturally as excavation progresses. Water is used in the processing of sand and gravel in a closed circuit 'wet' aggregate processing plant where water is recycled throughout the process. Silt laden water is disposed of in the silt lagoon, where the silt settles out over time and is subsequently made available for site restoration. Water used in the processing of the aggregate is supplied from a pond (Pond K2) on the pit floor. Processing of extracted rock takes place at the quarry face prior to being transported to market. No water is used in the processing of rock.

No streams overrun on the site or the immediate surroundings, due to the underlying sand and gravel.

The nearest surface water features are unnamed streams to the south (1.3 km south west of the application boundary), 240 m from the Red Bog Special Area of Conservation (SAC) and 2.2 km from Poulaphouca Reservoir and a small pond contained within this application site. None of those existing streams, the Red Bog SAC or the reservoir are linking hydrologically to this application site by any surface water features, and as excavation does not occur below the water table, there is no connection and consequently no risk of potential pollution from the recent and continued operation of the application site. The impact from excavation or blasting on the Blessington Public Supply Scheme is identified as imperceptible.

Impact on ground and surface water in the case of flooding due to elevated rainfall and/or discharge of silt laden process water into the silt pond, resulting in uncontrolled overflow to the quarry floor, would be 'slight'. Impact on water supply is imperceptible and impact on surface water is in most cases imperceptible.

Although the initial assessment of effects (considering embedded mitigation) has not identified any significant adverse effects additional mitigation is proposed as follows:

- Extraction of greywacke in the central area should remain at a level of 188 mAOD as there is increased risk that the water confined within the bedrock will be intercepted. Some lateral extension in the central greywacke is planned to level the area and continue extract of the valuable rock to this depth;
- Extraction of sand and gravel in the proposed northern and western extension areas should be undertaken to the proposed levels in the absence of further understanding of the localised groundwater levels in each area;
- Future phasing of the quarried depth is to be considered along with the anticipated depth to the aquifer for each area of the quarry. Borehole logs and quarrying to 188 mAOD have shown that the aquifer is confined in the bedrock and this depth is variable across the site;
- Boreholes to be installed to help better define the depth to the bedrock aquifer and variations across the site. BH3K is to be replaced with a bore that intercepts the bedrock aquifer;
- The silt pond should have a geotechnical assessment and be inspected regularly for signs of any structural defects that may cause a leak of material or failure; and,
- The silt pond is to be moved into the base of the quarry allowing the silt pond to cover a larger area to reduce overflow requirements.

Following mitigation, the residual impact is identified in all cases as negligible/imperceptible or negligible/slight.

The main potential polluting impact from existing and current operations is the introduction of hydrocarbon to the underlying groundwater. The existing mitigation and management systems maintain protection measures for water against hydrocarbon pollution. Water monitoring undertaken during the assessment period did not identify any hydrocarbon impacts to the underlying groundwater. Other potential sources of waste water pollution include domestic waste water from the office/canteen similarly water monitoring did not identify impacts from domestic waste water systems. As such, the risk of pollution to surrounding water bodies including private wells during the assessment period is imperceptible.

Whilst the current and ongoing finished floor levels on site will vary due to topography and incline of the site. However, excavation has not taken place below a level of at least 1 m above the highest seasonal water table level. Accordingly, there has been no groundwater discharged from the site



and therefore no impacts on surrounding water uses including numerous private wells referred to in the Water Chapter.

The current design, mitigation measures and monitoring already being undertaken and proposed to be undertaken for this S37L development result in no residual deleterious effects on surrounding waterbodies or underlying groundwater aquifers nor indeed on water supply or water quality for surrounding residents.

### **Mitigation Measures**

As identified previously, specific mitigation measures and health and safety best practices have historically and are currently employed and enforced on-site; no further remedial mitigation measures are considered necessary. Mitigation measures are identified in each of the relevant chapters of the EIAR.

### **Residual Impacts**

With the implementation of appropriate environmental, health and safety management practices, and the mitigation measures identified in the EIAR it is considered that the likelihood of residual health and safety impacts is considered to be not significant.

## **3.5 CUMULATIVE IMPACTS**

Sand and gravel quarrying activities currently take place in adjacent quarries to the south and east of the site. The closest quarries in the surrounding area which conduct rock extraction are located approximately 2.2 km to the northeast. It is considered that this S37L development will have slight beneficial impacts on both direct and indirect employment and economies surrounding the site as evidenced in a substantial number of letters received during the consultation period of 20/532 in support of the applicant's development. Cumulative impacts of these surrounding quarrying activities during the assessment period in relation to water, air quality, and noise and vibration are considered in the respective chapters of this EIAR. With the maintenance of on-site mitigation measures and the adherence to applicable thresholds there are no significant negative cumulative impacts to population and human health anticipated.

There are no other industrial operations in the vicinity of the site that would have generated a cumulative impact upon human beings over the substitute consent period.

## **3.6 'DO NOTHING' IMPACT**

As there is a current quarrying and aggregate extraction operation ongoing there is not estimated to be a significant difference between the 'do nothing' impact and effects associated with the extension of those existing extraction operations.

## **3.7 ECONOMIC ACTIVITY CONSTRUCTION PHASE**

There is limited if any construction activity within the terms of this extension and expansion of extraction area.

## **3.8 SOCIAL PATTERNS CONSTRUCTION PHASE**

There is no significant social pattern to a construction phase that is very limited to permit extraction being extended within the site.



### **3.9 MONITORING**

There is no monitoring required other than that identified in other chapters of this EIAR.

### 3.10 REFERENCES

Central Statistics Office. Census Returns 1991, 1996, 2002, 2006, 2011 and 2016 and 2022  
<http://www.cso.ie/en/census/>

Department of the Environment, Quarries and Ancillary Activities, Guidelines for Planning Authorities 2004.

Environmental Impact Assessments of Projects Guidance on the Preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU). EPA 2022.

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Environmental Management in the Extractive Industry: Guidelines for Regulators 2006.

Economic and Social Research Institute's (ESRI), Quarterly Economic Commentary, Spring 2022.

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[https://www.hsa.ie/eng/your\\_industry/chemicals/legislation\\_enforcement/comah/list\\_of\\_establishments/](https://www.hsa.ie/eng/your_industry/chemicals/legislation_enforcement/comah/list_of_establishments/), accessed 11 December 2019.

Kildare County Development Plans 2017-2023 and 2023 - 2029.

Geological Heritage Guidelines for the Extractive Industry (Irish Concrete Federation, 2008).

Environmental Code (Irish Concrete Federation, 2005).

Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, Department of Environment, Community and Local Government, 2018.

Safety, Health and Welfare at Work (Quarries) Regulations 2008, S.I. 28 of 2008.

Safety, Health and Welfare at Work General Application 2016, S.I. 36 of 2016.

World Health Organisation (WHO), 1994, Berglund, B., Lindvall, T., and Schwela, D.H., Guidelines for Community Noise.



# 4

## ECOLOGY AND BIODIVERSITY



## 4 ECOLOGY AND BIODIVERSITY

### 4.1 INTRODUCTION

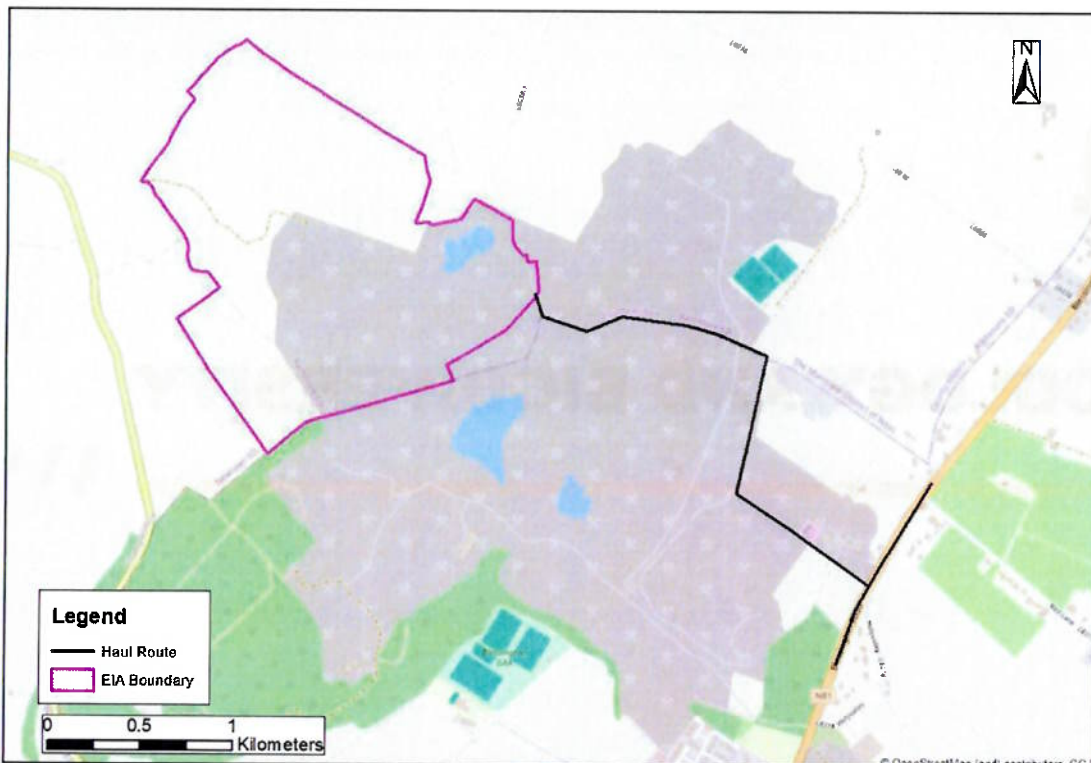
This chapter of the Environmental Impact Assessment Report (EIAR) presents an assessment of the potential effects that may occur on ecological receptors as a result of proposed activities at the existing quarry site at Athgarrett, Philipstown and Redbog, Co. Kildare ('the Site'). This assessment characterises the (current) pre-extension baseline conditions and gives consideration to the potential effects of extension and restoration on ecological receptors.

#### 4.1.1 PROJECT BACKGROUND AND OVERVIEW

The Site is located within an area of historical quarrying. The Site is accessed via a privately-owned track connecting to the N81 national road. The town of Blessington is located ca. 1.8 km south of the Site along the N81. The undulating land surrounding the Site slopes upwards in a north-westerly direction to the north of the Site, and away in a south-easterly direction to the south. The southern boundary of the Site lies adjacent to the Kildare-Wicklow County border. The quarry is accessed via Danker Lane through lands owned by the Applicant in Co. Wicklow. The Co. Wicklow land is accessed via the N81 National Secondary Road (Figure 4-1).

The quarry at the Site has been in use since the early 1950s and has been registered with Section 261, Planning & Development Act 2000 (Quarry Ref. No. QR42) and subsequent planning permission for continuance of quarrying operations was granted under Planning Reg. Ref. 07/267.

A detailed description of the Site and the activities that are proposed ('the Proposed Development') can be found in Chapter 2 of this EIAR (Project Description).



**Figure 4-1 - EIA Boundary and Haul Route to the Site**

#### 4.1.1.1 Substitute Consent and Section 37L Applications

It should be noted that an rEIAR has been submitted separately to accompany an application for substitute consent under the Planning and Development Act 2000 as amended (hereafter 'PDA'), for unauthorised works at the existing quarry, by the same applicant.

This EIAR accompanies an application under Section 37L (S.37L) of the PDA, and is submitted in tandem with the substitute consent application.

#### 4.1.2 TECHNICAL SCOPE

The focus of this assessment is centred on the establishment of current baseline ecological conditions (flora, fauna and habitat composition). This enables an assessment of potential impacts attributed to land take, disturbance and environmental emissions that may occur as a result of the Proposed Development.

#### 4.1.3 GEOGRAPHICAL AND TEMPORAL SCOPE

The further development of the quarry is proposed over areas directly adjacent to the main operational lands already excavated as well as within the existing quarry for the purpose of recovering the economic reserve that remains in the void. The geographical study area for the assessment covers the EIA boundary, which is approximately 95.8 ha. For certain aspects of the ecology and biodiversity assessment effects may extend beyond the EIA boundary and these have been documented where appropriate. In the context of this rEIAR, this EIA boundary contains lands which form the existing quarry area and some areas which extend beyond the working areas. The EIA boundary encompasses the Section 37L application boundary (approximately 64.0 ha).

Under this programme, it is expected that the duration of the proposed extraction operations will be 13 to 15 years depending on market conditions. The restoration phase of the Proposed Development will last between 2 to 3 years. The duration of is therefore classified as 'medium-term' by the Environmental Protection Agency's (EPA) 2022 'Guidelines on the information to be contained in environmental impact assessment reports'.

## 4.2 LEGISLATIVE AND POLICY CONTEXT

The assessment of the likely impacts from the Proposed Development on ecological resources is in compliance with the following legislation and guidance:

### 4.2.1 LEGISLATION

- European Communities (EC) (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011) as amended; hereafter referred to as the Birds and Habitats Regulations);
- EC Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (hereafter referred to as EU Habitats Directive 92/43/EEC);
- EC Council Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (hereafter referred to as EU Birds Directive (2009/147/EC));
- Wildlife Act, 1976 and Wildlife (Amendment) Act (2000) including all amendments. In this document, the legislation is referred to collectively as the Wildlife Acts (referred to in this report as WA); and
- S.I. No. 356/2015 - Flora (Protection) Order, 2022.

## 4.2.2 RELEVANT POLICIES AND PLANS

- National Biodiversity Plan, 2017-2021;
- Ireland's National Strategy for Plant Conservation;
- Kildare County Development Plan 2023-2029, in particular Chapter 12 (Biodiversity and Green Infrastructure);
- County Kildare Biodiversity Plan 2009-2014;
- All Ireland Pollinator Plan 2015 – 2020; and
- County Kildare Heritage Plan 2019-2025

## 4.2.3 RELEVANT GUIDANCE

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### 4.3 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

The approach to this impact assessment comprises analysis of reports submitted with the 2020 planning application<sup>1</sup>, environmental emissions monitoring results from the site, as well as data gathered in 2023 for this Section 37L application. Conclusions are drawn as to whether (and to what extent) site conditions are likely to change as a result of the Proposed Development, and whether these changes represent significant ecological impacts.

#### 4.3.1 DESK STUDY

A review of freely available online data from the National Parks and Wildlife Services (NPWS) and of freely available data sets from the National Biodiversity Data Centre (NBDC) was undertaken in December 2023. A review of rare higher plants was undertaken from the National Biodiversity Data Centre (NBDC). The NPWS viewer for Flora Protection Order (FPO) (2022) protected bryophytes<sup>2</sup> was also reviewed. The aim of the review was to identify designated sites/protected areas, irreplaceable/priority<sup>3</sup> habitats and legally protected and notable<sup>4</sup> species that may be present within the Proposed Development's Ecological Zone of Influence (EZoI)<sup>5</sup>, including:

- European sites such as SACs, SPAs, and international Ramsar sites; within 15 km of the Proposed Development. This was extended to 20 km for SPAs based on the upper-range commuting distance of pink-footed and greylag geese (outlined in Scottish Natural Heritage (SNH), 2016);

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<sup>1</sup> Golder (2020) – EIAR and NIS

<sup>2</sup> <https://www.npws.ie/maps-and-data/flora-protection-order-map-viewer-bryophytes>

<sup>3</sup> Habitats that are considered irreplaceable or listed under Annex I on EU Habitats Directive 92/43/EEC.

<sup>4</sup> Notable species are species considered rare or important/endemic in Ireland. Specifically, if they are categorised as Vulnerable, Endangered or Critically Endangered, Extinct in the Wild, or Extinct as per the International Union for the Conservation of Nature and Natural Resources (IUCN) Red Lists. Available at: <https://www.npws.ie/publications/red-lists>

<sup>5</sup> The CIEEM EclA Guidelines define the EZoI as the area over which important ecological features may be subject to significant effects resulting from the Proposed Development; this may extend beyond the footprint of the Proposed Development. The EZoI may vary for each ecological feature due to the varying mobility range of the feature being assessed. For example, the EZoI for otter (which are mobile) will be greater than the EZoI for habitats (which are sedentary). The EZoI in the context of this project refers to the Survey Area (described in Section 6.1.9), as well as the areas searched during the desk study.

- Natural Heritage Areas (NHAs)<sup>6</sup> and proposed NHAs (pNHAs) within 5 km of the Proposed Development, unless hydrological connectivity exists, in which case these would be considered up to a distance of 15 km.
- Protected or notable species within 5 km of the Proposed Development, limited to records returned from within the last 20 years.
- Bird species listed in Annex I of the EU Birds Directive, and those currently on the Red and Amber list as per Birds of Conservation Concern in Ireland (BoCCI) (Gilbert, et al., 2021); and
- The Irish Wetland Bird Survey (I-WeBS) dataset<sup>7</sup> was reviewed to identify I-WeBS survey sites within 2 km of the Proposed Development.

In addition to the resources above, the desk study made use of free online resources to assess the context of the land associated with the Proposed Development (all accessed November and December 2023):

- Bing maps (<https://www.bing.com/maps/>);
- Google Earth;
- EPA maps (<https://gis.epa.ie/EPAMaps/>);
- 2019 Article 17 Spatial Data (<https://www.npws.ie/maps-and-data/habitat-and-species-data/article-17/2019>); and
- Review of any other relevant ecological reports and literature – cited as necessary.

The freely available desk study results should not be considered definitive data sets for the desk study area. An absence of desk study data does not necessarily correspond that a site is absent of notable flora or fauna.

#### 4.3.1.1 Site Boundaries

As mentioned in the Introduction to this chapter, the Site is subject to a concurrent substitute consent application and this Section 37L application, which have different spatial extents. In the interest of efficiency, WSP has combined both boundaries to create a consolidated 'EIA boundary', which is the basis of the impact assessment (see Figure 4-1). Distances between the Site and offsite ecological receptors are measured from the EIA boundary.

#### 4.3.2 FIELD SURVEYS – 2019/2020

Field surveys were conducted in 2019 and 2020 by O'Donnell Environmental, and Delichon Ecology in the case of hedgerow surveys specifically. Methodologies are provided below for each ecological receptor, as described in the 2020 EIAR (Golder, 2020).

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<sup>6</sup> Per the NPWS, the NHA is an area considered important for the habitats present or which holds species of plants and animals whose habitat needs protection.

<sup>7</sup> Irish Wetland Bird Survey (2023) Available at: <https://birdwatchireland.ie/our-work/surveys-research/research-surveys/irish-wetland-bird-survey>.

#### 4.3.2.1 Habitats

A walkover survey of the area was conducted by Golder on 13 August 2019 to record the habitats and flora in the area within and adjacent to the Proposed Development site, and to detect the presence or likely presence of protected species, and the presence of suitable habitat for those species. The study was also concerned with identifying the need for further, more specialist surveys as applicable.

Ecological survey methods were in accordance with those outlined in the following documents:

- Heritage Council (2011). Best Practice Guidance for Habitat Survey and Mapping;
- Phase 1 Habitat Survey methodology (JNCC, 2010)<sup>8</sup>; and
- Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes (NRA, 2009).

Aerial photographs and site maps assisted the habitat survey. Habitats have been named and described following Fossitt (2000). The survey also aimed to identify any invasive species which may occur on the Site.

#### 4.3.2.2 Hedgerow Survey

On behalf of Golder, Delichon Ecology carried out a site walkover survey on the morning and afternoon of Thursday 10 September 2020. The survey identified linear woodland habitats (i.e. treelines and hedgerows) within the proposed extension areas located to the north, west and south-west of the existing quarry footprint. Survey methodology was undertaken in accordance with the guidelines and parameters outlined in Hedgerow Appraisal System Best Practise Guidance on Hedgerow Surveying, Data Collation and Appraisal (Foulkes, et al., 2013). This allowed for a detailed and systematic assessment of each hedgerow and treeline within the extension boundary following fixed assessment criteria based on hedgerow management, growth form, integrity, structure and adjacent land use.

#### 4.3.2.3 Fauna

##### Bats

Bat survey work at the Site was based upon guidance set out within 'Bat Mitigation Guidelines for Ireland' (Kelleher & Marnell, 2006), and 'Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes' (NRA, 2006), with reference to good practice guidelines set out by the Bat Conservation Trust (Collins, 2016).

##### Visual examination

Visual inspections for bat roosting potential were carried out on 13 August 2019 in order to search for any features of bat roosting potential in trees. Inspections were carried out within daylight hours, using binoculars where necessary. Examples of the type of features searched for is outlined below:

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<sup>8</sup> Joint Nature Conservation Committee

- Split limbs; rot holes; Lifted bark; cracks; and dense or mature ivy cover. Where trees were of a size and age that features could be present out of sight, these were also recorded; and
- Evidence for the presence of bats themselves was also searched for, such as live or dead bats, any audio cues, scratch marks, urine staining, prey remains or droppings.

### Badger Survey

To supplement the general protected species walkover, targeted badger (*Meles meles*) surveys were also undertaken at a sett on the periphery of the Proposed Development site. The badger sett was inspected by O'Donnell Environmental on behalf of Golder on 19 August; 27 August and 7 September 2020. In addition, a camera trap was deployed at the sett location and recording was carried out for 23 days from 19 August to 10 September 2020. The camera was infra-red equipped to allow monitoring of activity by night as well as by day. The camera was triggered by movement, at which point a photo and 5 second video were recorded. The aim of the camera trap survey was to determine whether, and to what extent badgers were utilising the sett.

### Breeding Bird Survey

Due to Covid-19 restrictions, appropriate surveys were not conducted prior to the submission of the 2020 planning application.

## 4.3.3 FIELD SURVEYS - 2023

A survey of the Site was carried out on 14 and 15 November 2023. The survey comprised a multi-disciplinary site walkover, with a view to updating baseline data since the previous surveys in August 2019 and August 2020. The survey area included the existing quarry pit, as well as surrounding lands within the EIA boundary as shown in Error! Reference source not found.. The survey area included a 50m buffer<sup>9</sup> to account for the potential presence of badger setts outside the EIA boundary.

The scope of the surveys included:

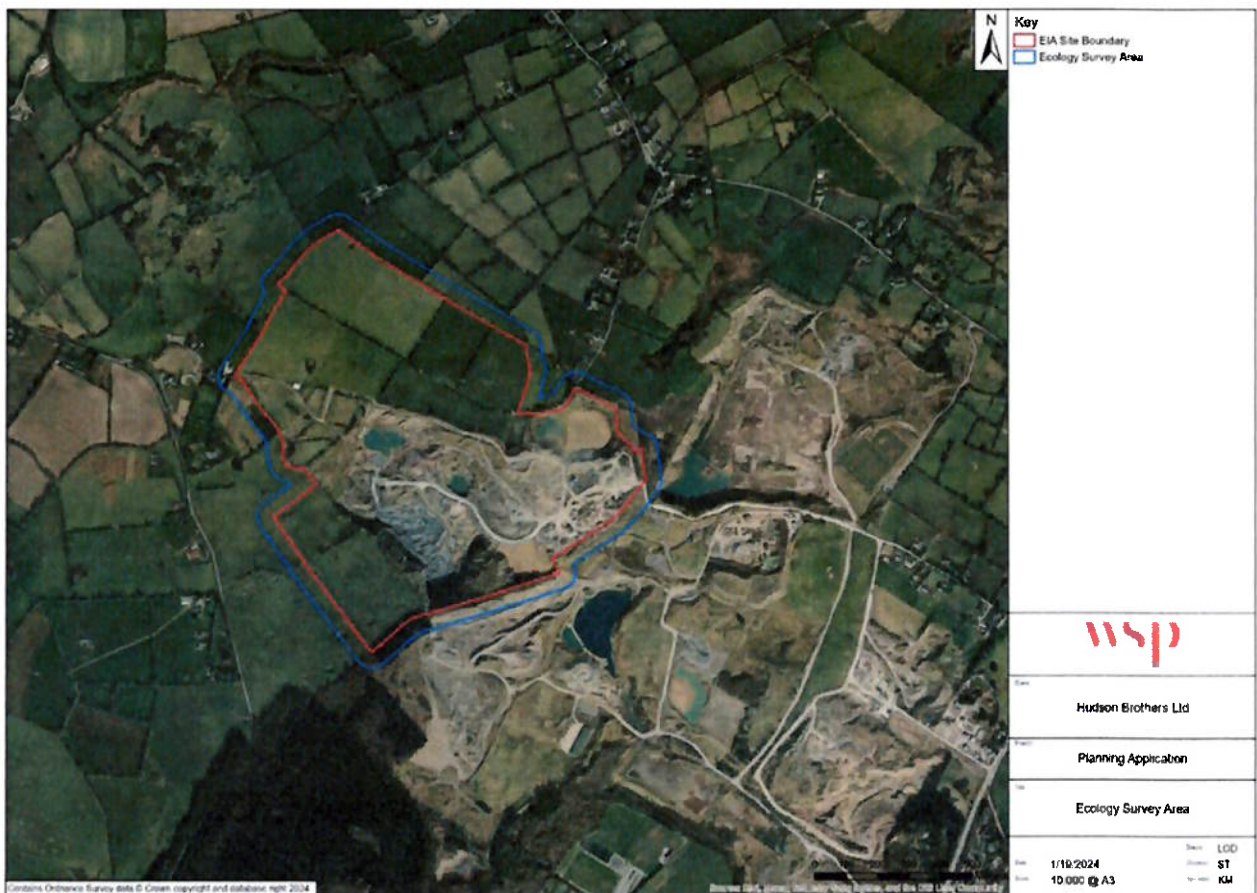
- Habitats – in accordance with guidance by Smith *et al.* (2011) and Fossitt (2000), but with a focus on comparing the habitat assemblage with that reported in the 2020 EIAR (Golder, 2020).
- Protected species:
  - Badger – in accordance with NRA (2009). A search was made for signs of badger activity, which included looking for evidence such as sett holes, footprints, latrines, dung pits, hairs and mammal paths with evidence of use by badgers.
  - Bats – potential bat roost assessment (PBRA) of trees in accordance with Collins (2023) and Marnell *et al.* (2022) – methodology as described earlier for 2019 surveys.
    - Potential roost features (PRFs) were classified in accordance with Collins (2023):
    - **PRF-I** – PRF is only suitable for individual bats or very small numbers of bats, either due to size or lack of suitable surrounding habitats.

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<sup>9</sup> In accordance with guidance (NRA, 2006) recommending surveys within 50m of any proposed works.

- **PRF-M** – PRF is suitable for multiple bats and may therefore be used by a maternity colony.
- Other species – hedgehog, Irish hare, pygmy shrew and herpetofauna – incidental observations were recorded of any evidence of these species, with guidance from Olsen (2013).
- Birds – incidental observations of wintering birds were made – particularly any in association with waterbodies, or any waterfowl grazing on grassland.
- The suitability of habitats for the above-mentioned protected species was also assessed.

Field surveys and reporting was carried out by WSP ecologists Steven Toohar ACIEEM (Principal Ecologist) and Lisa O'Dowd (Consultant Ecologist), who have 8 and 3 years' experience respectively of habitat and protected species survey assessments. Both surveyors are at least 'capable'<sup>10</sup> in accordance with CIEEM's competency framework.



**Figure 4-2 - Ecology Survey Area**

<sup>10</sup> Using CIEEM's competency level framework (Available at [cieem.net/wp-content/uploads/2022/01/Competency-Framework-2022-Web.pdf](http://cieem.net/wp-content/uploads/2022/01/Competency-Framework-2022-Web.pdf)) a surveyor deemed as capable has the knowledge and experience to carry out standard relevant tasks confidently and consistently without supervision.



### Aquatic Ecology

The assessment considers the potential for hydrological connectivity between the Site and surface water features, and also considered potential impacts to aquatic flora/fauna and habitat receptors. It is important to note that no watercourses cross the Site, and apart from silt lagoons associated with the operations of the quarry, there are no proposals to interfere with any open waterbodies.

#### 4.3.4 INVASIVE SPECIES

Unless specified otherwise, the term 'invasive species' in this report refers to species listed in the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations (S.I. 477/2011) and subsequent amendments. In terms of invasive flora, the Regulations make it an offence to plant, disperse, allow or cause to disperse, spread or otherwise cause to grow any of the scheduled plant species. In terms of fauna, the Regulations make it an offence for a person to breed, reproduce or release, allow or cause to disperse, or escape from confinement, any of the scheduled animal species.

#### 4.3.5 SURVEY LIMITATIONS

Details on survey limitations are provided in Section 4.4.6. Limitations are discussed after the results, because their significance is related to the existing conditions onsite, which are described in the results section.

#### 4.3.6 BASELINE EVALUATION CRITERIA OF ECOLOGICAL FEATURES

Ecological features are evaluated following NRA (2009) guidelines (Table 4-1) which set out the importance of the resource/receptor in a geographic site-based context.

**Table 4-1– Criteria for Establishing Important Ecological Features (IEFs)**

Importance	Ecological Valuation
International importance	<ul style="list-style-type: none"> <li>■ European Site including SAC, Site of Community Importance (SCI) or SPA</li> <li>■ Features essential to maintaining the coherence of the European Network<sup>11</sup>.</li> </ul> <p>Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive.</p> <p>Resident or regularly occurring populations (assessed to be important at the national level)<sup>12</sup> of the following:</p> <ul style="list-style-type: none"> <li>• Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or</li> <li>• Species of animal and plants listed in Annex II and/or IV of the Habitats Directive.</li> </ul>

<sup>11</sup> See Article 3 and 10 of the Habitats Directive.

<sup>12</sup> It is suggested that, in general, 1% of the national population of such species qualifies as internationally important. However, a smaller population may qualify as internationally important where the population forms a critical part of the wider population or the species is at a critical phase of its life cycle.



Importance	Ecological Valuation
	<p>Ramsar Site (Convention on Wetland of International Importance Especially Waterfowl Habitat, 1971).</p> <p>World Heritage Site (Convention for the Protection of World Cultural &amp; Natural Heritage, 1972).</p> <p>Biosphere Reserve (UNESCO Man &amp; The Biosphere Programme).</p> <p>Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979).</p> <p>Biogenetic Reserve under the Council of Europe.</p> <p>Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).<sup>13</sup></p>
National Importance	<p>Site designated or proposed as a Natural Heritage Area (NHA).</p> <p>Statutory Nature Reserve.</p> <p>Refuge for Fauna and Flora protected under the Wildlife Acts.</p> <p>National Park.</p> <p>Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA).</p> <p>Resident or regularly occurring populations (assessed to be important at the national level)<sup>14</sup> of the following:</p> <p>Species protected under the Wildlife Acts; and/or</p> <p>Species listed on the relevant Red Data list.</p> <p>Site containing 'viable areas'<sup>15</sup> of the habitat types listed in Annex I of the Habitats Directive.</p>
County Importance	<p>Area subject to a Tree Preservation Order.</p> <p>Area of High Amenity<sup>16</sup>, or equivalent, designated under the County Development Plan.</p>

<sup>13</sup> Note that such waters are designated based on these waters' capabilities of supporting salmon, char and whitefish *Coregonus*.

<sup>14</sup> It is suggested that, in general, 1% of the national population of such species qualifies as nationally important. However, a smaller population may qualify as internationally important where the population forms a critical part of the wider population or the species is at a critical phase of its life cycle.

<sup>15</sup> A 'viable area' is defined as an area of habitat that, given the particular characteristic of that habitat, was of a sufficient size and shape, such that its integrity (in terms of species composition, and ecological process and function) would be maintained in the face of stochastic change (e.g. as a result of climate change)

<sup>16</sup> It should be noted that whilst areas such as Areas of High Amenity and areas subject to a Tree Preservation Order are often designated on the basis of their ecological value, they may also be designated for other reasons such as their amenity or recreational value. Therefore, it should not be automatically assessed that such sites are of county importance from an ecological perspective.

Importance	Ecological Valuation
	<p>Resident or regularly occurring populations (assessed to be important at the County level)<sup>17</sup> of the following:</p> <ul style="list-style-type: none"> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> <li>Species protected under the Wildlife Acts; and/or</li> <li>Species listed on the relevant Red Data list.</li> </ul> <p>Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.</p> <p>County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or Local BAP, if this has been prepared.</p> <p>Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.</p> <p>Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.</p>
<p>Local Importance (Higher Value)</p>	<p>Locally important populations of priority species or habitats or natural heritage features identified in the Local Biodiversity Action Plan (LBAP) if this has been prepared.</p> <p>Resident or regularly occurring populations (assessed to be important at the Local level)<sup>18</sup> of the following:</p> <ul style="list-style-type: none"> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> <li>Species protected under the Wildlife Acts; and/or</li> <li>Species listed on the relevant Red Data list.</li> </ul> <p>Sites containing semi-natural habitat types with the high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality.</p> <p>Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.</p>

<sup>17</sup> It is suggested that, in general, 1% of the County population of such species qualifies as a County important population. However, a smaller population may qualify as County important where the population forms a critical part of the wider population or the species is at a critical phase of its life cycle.

<sup>18</sup> It is suggested that, in general, 1% of the Local population of such species qualifies as a locally important population. However, a smaller population may qualify as locally important where the population forms a critical part of the wider population or the species is at a critical phase of its life cycle.



Importance	Ecological Valuation
Local Importance (Lower Value)	<p>Sites containing small areas of semi-natural habitat that are of some local importance for wildlife.</p> <p>Sites or features containing non-native species that are of some importance in maintaining habitat links.</p>

In accordance with NRA (2009) guidelines, ecological sites of below 'Local Importance (higher value)' should not be selected as 'IEFs' for which impact assessment is required during subsequent stages of the process. Impacts on these features would not be considered significant.

### 4.3.7 IMPACT ASSESSMENT

The potential for impacts on IEFs has been assessed considering the habitats and species that are likely to be affected by the Proposed Development.

CIEEM (2022) defines an ecologically **Significant Impact** as an impact (negative or positive) on the integrity of a defined site or ecosystem and/or the conservation status of habitats or species within a given geographic area. The integrity of a site is the coherence of its ecological structure and function, across its whole area, which enables it to sustain the habitat, complex of habitats, and/or the levels of population of the species for which it was classified.

The following parameters in Table 4-2 are described when characterising impacts (following CIEEM (2022) and NRA (2009) guidance):

**Table 4-2 - Methods of Characterising Impacts**

Impact	Description
Direct and Indirect	An impact can be caused either as a direct or as an indirect consequence of a Development.
Magnitude	A measurement of the size of an impact, which is described as high, medium, low or negligible.
Extent	The area over which the impact occurs.
Duration	<p>The time for which the impact is expected to last prior to recovery or replacement of the resource or feature:</p> <ul style="list-style-type: none"> <li>■ Temporary: Up to 1 year.</li> <li>■ Short Term: The effects would take 1-7 years to be mitigated.</li> <li>■ Medium Term: The effects would take 7-15 years to be mitigated.</li> <li>■ Long Term: The effects would take 15-60 years to be mitigated.</li> <li>■ Permanent: The effects would take 60+ years to be mitigated.</li> </ul>
Likelihood	<ul style="list-style-type: none"> <li>■ Certain/Near Certain: &gt;95% chance as occurring as predicted.</li> <li>■ Likely: 50-95% chance as occurring as predicted.</li> <li>■ Unlikely: 5-50% chance as occurring as predicted.</li> <li>■ Extremely Unlikely: &lt;5% chance as occurring as predicted.</li> </ul>

### 4.3.8 MITIGATION

The approach to mitigation is as set out in the mitigation hierarchy (as per CIEEM (2022)), reproduced in Table 4-3. The principle underlying the mitigation hierarchy is that avoidance is favoured over mitigation, and mitigation is favoured over compensation, which should be viewed as a last resort. Measures for the implementation of biodiversity enhancement should be included regardless of whether avoidance, mitigation or compensation is necessary.

#### 4.3.8.1 Biodiversity Enhancement – Recent Policy

Kildare County Development Plan 2023-2029 (Chapter 12) has introduced a new objective (BI O7) to “pursue insofar as possible and practical, a policy of biodiversity net gain through strategies, plans, developments, mitigation measures, appropriate offsetting and/or investment in Blue-Green Infrastructure”.

A new briefing paper has also recently been produced by CIEEM (2023) on the implementation of biodiversity enhancement (BE) in Ireland. Two key recommendations include:

- The mitigation hierarchy should always be followed sequentially. The primary emphasis should always be on avoidance; and
- BE should be mandatory for all large-scale developments, e.g. infrastructure projects, renewable energy, or those that require Environmental Impact Assessment.

**Table 4-3 – Mitigation Hierarchy**

Stage	Description
Avoidance	Seek options that avoid harm to ecological features (for example, by locating on an alternative site).
Mitigation	Negative effects should be avoided or minimised through mitigation measures, either through the design of the project or subsequent measures that can be guaranteed – for example, through a condition or planning obligation.
Compensation	Where there are significant residual negative ecological effects despite the mitigation proposed, these should be offset by appropriate compensatory measures.
Enhancement	Seek to provide net benefits for biodiversity over and above requirements for avoidance, mitigation or compensation.

## 4.4 BASELINE CONDITIONS

Designated and Notable conservation sites Table 4-4 lists eight European sites of nature conservation importance located within the 20 km EZoI of the Proposed Development. For European sites a Natura Impact Statement (NIS) accompanies this Section 37L application. Figure 4-3 shows the proximity of designated sites to the Proposed Development.

4.4.1 There are no NHAs located within 5 km of the Proposed Development, with the closest being Hodgestown Bog NHA, located approximately 20.2 km north-west of the site.

4.4.2 Table 6.2 also lists three pNHAs within 5 km of the Proposed Development. Two of these, Red Bog, Kildare pNHA and Poulaphouca Reservoir pNHA are the nearest pNHAs to the Site. Given that these pNHAs are designated as European sites, which carry a higher level of protection, the impact



assessment for these sites is covered separately within the NIS which accompanies this application. Information and conclusions from the NIS are summarised where appropriate.

**Table 4-4 – Designated and Notable Sites within the EZol of the Proposed Development**

Site Name and Code	Distance from Proposed Development	Connectivity	Qualifying Interests [Habitats/Birds Directive Code, where applicable]
Red Bog, Kildare SAC (000397) Red Bog, Kildare pNHA (000397)	SAC boundary <sup>19</sup> adjacent to EIA Boundary and 37L Boundary, but separated by a local (L) road.	<p>Per Geological Survey Ireland (GSI) Spatial Resources<sup>20</sup>, the Site and this SAC are situated within the same groundwater body (European Code: IE_EA_G_085).</p> <p>According to GSI, Red Bog SAC is a Groundwater-Dependent Terrestrial Ecosystem (GWDTE) within this groundwater body. However, Chapter 7 clarifies that the water associated with this SAC is perched, and not connected with the above groundwater body. Chapter 7 also shows that groundwater flows southwest from beneath the SAC, and leaves the quarry in a north-westerly direction. Furthermore, evidence is provided to show that the Proposed Development has not excavated below the groundwater table. As such, it is concluded that there is <b>no groundwater connectivity</b>.</p> <p>The SAC boundary is more than 100 m from the nearest source of dust emissions, which according to IAQM<sup>21</sup> (2016) is outside the range in which significant impacts are likely to occur. The haul road in question is separated from the SAC by an earthen berm. Further detail on the likely impacts of dust emissions from the Site on this SAC are discussed later in the report. At this stage it is concluded that there is <b>potential connectivity for dust emissions</b></p>	<ul style="list-style-type: none"> <li>▪ Transition Mires [7140]</li> </ul>

<sup>19</sup> It should be noted that the SAC boundary surrounds the main area of qualifying habitat (transition mire), as well as up to 240 m of peripheral improved agricultural grassland.

<sup>20</sup> <https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aac3c228> (accessed 21 November 2023)

<sup>21</sup> Institute of Air Quality Management

Site Name and Code	Distance from Proposed Development	Connectivity	Qualifying Interests [Habitats/Birds Directive Code, where applicable]
<p>Poulaphouca Reservoir SPA (004063)</p> <p>Poulaphouca Reservoir pNHA (000731)</p>	2.2 km south-east	<p><b>No hydrological connectivity.</b></p> <p>The qualifying species of this SPA are primarily associated with large bodies of water, which are present onsite in the form of (albeit small) settlement lagoons. The magnitude of disturbance associated with the activities at the Site is such that the lagoons are completely devoid of vegetation and do not provide a foraging resource for waterfowl (see Section 4.3.3). Greylag goose is known to occasionally forage away from water on agricultural grassland, which is present at the Site around the periphery of the existing quarry pit.</p> <p>According to the Bird Foraging Table, prepared by the Department of Agriculture, Food and the Marine (DAFM, 2019), projects more than 1 km from an SPA may be screened out for impacts on foraging lesser black-backed gulls, on the grounds that it is further than its established core foraging range. The core foraging range for greylag geese is accepted as being 20 km (SNH, 2016).</p> <p>Given that the Proposed Development is within the core foraging range of greylag geese, and given the presence of suitable foraging habitat on adjacent lands, <b>there is functional connectivity</b> with this SPA. There is no functional connectivity for lesser black-backed gull.</p>	<ul style="list-style-type: none"> <li>■ Greylag Goose [A043]</li> <li>■ Lesser Black-backed Gull <i>Larus fuscus</i> [A183]</li> </ul>
Kilteel Wood pNHA (1394)	4.5 km north	<p><b>No hydrological connectivity.</b></p> <p>The site is proposed as a NHA for the woodland habitat that is present onsite. there is therefore <b>no functional connectivity</b> with the Proposed Development.</p>	<ul style="list-style-type: none"> <li>■ Deciduous woodland</li> </ul>
Wicklow Mountains SAC (002122)	4.7 km south-east	<p><b>No hydrological connectivity.</b></p> <p>This SAC is designated for habitats only; there is therefore <b>no functional connectivity</b> with the Proposed Development.</p>	<ul style="list-style-type: none"> <li>■ Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]</li> <li>■ Natural dystrophic lakes and ponds [3160]</li> <li>■ Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]</li> <li>■ European dry heaths [4030]</li> </ul>

Site Name and Code	Distance from Proposed Development	Connectivity	Qualifying Interests [Habitats/Birds Directive Code, where applicable]
			<ul style="list-style-type: none"> <li>■ Alpine and Boreal heaths [4060]</li> <li>■ Calaminarian grasslands of the <i>Violetalia calaminariae</i> [6130]</li> <li>■ Species-rich <i>Nardus</i> grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230]</li> <li>■ Blanket bogs (* if active bog) [7130]</li> <li>■ Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>) [8110]</li> <li>■ Calcareous rocky slopes with chasmophytic vegetation [8210]</li> <li>■ Siliceous rocky slopes with chasmophytic vegetation [8220]</li> <li>■ Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</li> <li>■ Otter <i>Lutra lutra</i> [1355]</li> </ul>
Wicklow Mountains SPA (004040)	7.9 km south-east	<p><b>No hydrological connectivity.</b></p> <p>According to SNH (2016), Merlin nests are separated by a mean distance of ca. 500 m, and a maximum of 1.5 km. Peregrine falcon nests are separated by a mean distance of ca. 3 km, and a maximum of 6.5 km. In a study of Co. Wicklow peregrine populations, Burke <i>et al.</i> (2015) found that the mean distance between nests was 5.7 km.</p> <p>The Proposed Development is therefore out of the range in which SPA populations would nest at the Site. There is <b>no functional connectivity</b> for <u>nesting</u> merlins or peregrine falcons.</p> <p>According to SNH (2016), the core foraging range for merlin is 5 km, and is 2 km for peregrine falcon. Peregrines have however been recorded foraging at a maximum of 18 km from their nest.</p> <p>Natural England (2020) states that peregrine falcons will defend a nesting territory ranging from 2-9 km from their nest. For this reason, Natural England recommends a</p>	<ul style="list-style-type: none"> <li>■ Merlin <i>Falco columbarius</i> [A098]</li> <li>■ Peregrine falcon <i>Falco peregrinus</i> [A103]</li> </ul>

Site Name and Code	Distance from Proposed Development	Connectivity	Qualifying Interests [Habitats/Birds Directive Code, where applicable]
		<p>zone of influence of 10 km for peregrine falcon.</p> <p>The Proposed Development is within the range in which SPA populations of peregrine falcon may forage and defend a nesting territory. As such, <b>there is functional connectivity for foraging peregrine falcon. There is no functional connectivity for foraging merlin.</b></p> <p>Previous reporting, as well as information provided to WSP by the Applicant, indicates that peregrine falcons regularly nest at the top of one of the walls of the quarry pit.</p> <p><b>It should be noted that the presence of peregrine falcons at the Site does not represent connectivity with Wicklow Mountains SPA. For the reasons outlined above, these individuals are not associated with the population for which the SPA is designated. As such, they fall outside the remit of AA, but are addressed separately through the Ecological Impact Assessment process, as presented in the EIAR.</b></p>	
Glenasmole Valley SAC (001209)	12.6 km north-east	<p><b>No hydrological connectivity.</b></p> <p>Petrifying springs are GWDTEs, but this SAC is not in the same groundwater body as the Site. There is <b>no groundwater connectivity.</b></p> <p>This SAC is designated for habitats only; there is therefore <b>no functional connectivity</b> with the Proposed Development.</p>	<ul style="list-style-type: none"> <li>■ Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (*important orchid sites) [6210]</li> <li>■ Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]</li> <li>■ Petrifying springs with tufa formation (Cratoneurion) [7220]</li> </ul>
Moud's Bog SAC	15.7 km west	<p><b>No hydrological connectivity.</b></p> <p>This SAC is designated for habitats only; there is therefore <b>no functional connectivity</b> with the Proposed Development.</p>	<ul style="list-style-type: none"> <li>■ Active raised bogs [7110]</li> <li>■ Degraded raised bogs still capable of natural regeneration [7120]</li> <li>■ Depressions on peat substrates of the Rhynchosporion [7150]</li> </ul>
Ballynafagh Lake SAC	17.3 km north-west	<p><b>No hydrological connectivity.</b></p>	<ul style="list-style-type: none"> <li>■ Alkaline fens [7230]</li> <li>■ Desmoulin's Whorl Snail <i>Vertigo moulinsiana</i> [1016]</li> </ul>

Site Name and Code	Distance from Proposed Development	Connectivity	Qualifying Interests [Habitats/Birds Directive Code, where applicable]
		<p>Alkaline fens are GWDTEs, but this SAC is not in the same groundwater body as the Site. There is <b>no groundwater connectivity</b>.</p> <p>Given that there is no hydrological connectivity, and given the distance between the SAC and the Site, there is therefore <b>no functional connectivity</b>.</p>	<ul style="list-style-type: none"> <li>Marsh Fritillary <i>Euphydryas aurinia</i> [1065]</li> </ul>
Ballynafagh Bog SAC	17.7 km north-west	<p><b>No hydrological connectivity.</b></p> <p>This SAC is designated for habitats only; there is therefore <b>no functional connectivity</b> with the Proposed Development.</p>	<ul style="list-style-type: none"> <li>Active raised bogs [7110]</li> <li>Degraded raised bogs still capable of natural regeneration [7120]</li> <li>Depressions on peat substrates of the Rhynchosporion [7150]</li> </ul>
Pollardstown Fen SAC	18.4 km west	<p><b>No hydrological connectivity.</b></p> <p>Petrifying springs and alkaline fens are GWDTEs, but this SAC is not in the same groundwater body as the Site. There is <b>no groundwater connectivity</b>.</p> <p>The fauna associated with this SAC are species of snails. Given that there is no hydrological connectivity, and given the distance between the SAC and the Site, there is therefore <b>no functional connectivity</b>.</p>	<ul style="list-style-type: none"> <li>Calcareous fens with <i>Cladium mariscus</i> and species of the Caricion davallianae [7210]</li> <li>Petrifying springs with tufa formation (Cratoneurion) [7220]</li> <li>Alkaline fens [7230]</li> <li>Geyer's Whorl Snail <i>Vertigo geyeri</i> [1013]</li> <li>Narrow-mouthed Whorl Snail <i>Vertigo angustior</i> [1014]</li> <li>Desmoulin's Whorl Snail [1016]</li> </ul>
Rye water Valley/Carton SAC (001398)	18.8 km north	<p>There is <b>no hydrological connectivity</b> between this SAC and the Site.</p> <p>Petrifying springs and alkaline fens are GWDTEs, but this SAC is not in the same groundwater body as the Site. There is <b>no groundwater connectivity</b> with the Site.</p> <p>The fauna associated with this SAC are minute species of whorl snails. Given that there is no hydrological connectivity and given the distance between the SAC and the Site, there is therefore <b>no functional connectivity</b> with the Site.</p>	<ul style="list-style-type: none"> <li>Petrifying springs with tufa formation (Cratoneurion) [7220]</li> <li>Narrow-mouthed Whorl Snail [1014]</li> <li>Desmoulin's Whorl Snail [1016]</li> </ul>



### 4.4.3 DESK STUDY

This section presents the available historical species records within 5 km of the Proposed Development (as per buffer shown in Figure 4-3) that have been submitted within the last 20 years.

#### Flora

The desk study returned 363 records of conifers, flowering plants, mosses, liverworts and horsetails. None of these species are listed as Vulnerable or above on the IUCN Red List, and nor are they afforded any protection.

#### Bats

Historical records for brown long-eared bat (*Plecotus auritus*), Daubenton's bat (*Myotis daubentonii*), pipistrelle (*Pipistrellus* sp.), soprano pipistrelle (*Pipistrellus pygmaeus*) and Leisler's bat (*Nyctalus leisleri*) exist within 5 km of the Site. All Irish bat species are protected under the WA, and listed under Annex IV of the Habitats Directive.

#### Birds

The desk study returned records of 101 bird species. Of these, 48 are afforded protection under the Birds Directive and/or are listed on the BoCCI Red or Amber list (Gilbert, et al., 2021) – see Table 4-5. All wild birds are protected under the WA.

**Table 4-5 - Desk Study – Protected and Notable Bird Species**

Common Name	Scientific Name	Designation and/or Conservation Status
Little Egret	<i>Egretta garzetta</i>	Birds Directive - Annex I
Red-footed Falcon	<i>Falco vespertinus</i>	Birds Directive - Annex I
Kingfisher	<i>Alcedo atthis</i>	Birds Directive - Annex I BoCCI - Amber List
Whooper Swan	<i>Cygnus cygnus</i>	Birds Directive - Annex I BoCCI - Amber List
Greater White-fronted Goose	<i>Anser albifrons</i>	Birds Directive - Annex I/II/III BoCCI - Amber List
Golden Plover	<i>Pluvialis apricaria</i>	Birds Directive - Annex I/II/III BoCCI - Red List
Goosander	<i>Mergus merganser</i>	Birds Directive - Annex II BoCCI - Amber List
Goldeneye	<i>Bucephala clangula</i>	Birds Directive - Annex II BoCCI - Red List
Curlew	<i>Numenius arquata</i>	Birds Directive - Annex II BoCCI - Red List
Lapwing	<i>Vanellus vanellus</i>	Birds Directive - Annex II BoCCI - Red List
Pheasant	<i>Phasianus colchicus</i>	Birds Directive - Annex II/III <sup>Note 1</sup>
Coot	<i>Fulica atra</i>	Birds Directive - Annex II/III BoCCI - Amber List



Common Name	Scientific Name	Designation and/or Conservation Status
Teal	<i>Anas crecca</i>	Birds Directive - Annex II/III BoCCI - Amber List
Tufted Duck	<i>Aythya fuligula</i>	Birds Directive - Annex II/III BoCCI - Amber List
Snipe	<i>Gallinago gallinago</i>	Birds Directive - Annex II/III BoCCI - Red List
Woodcock	<i>Scolopax rusticola</i>	Birds Directive - Annex II/III BoCCI - Red List
Shoveler	<i>Spatula clypeata</i>	Birds Directive - Annex II/III BoCCI - Red List
Red Grouse	<i>Lagopus lagopus</i>	Birds Directive - Annex II/III BoCCI - Red List
Barn Swallow	<i>Hirundo rustica</i>	BoCCI - Amber List
Kestrel	<i>Falco tinnunculus</i>	BoCCI - Amber List
Sandpiper	<i>Actitis hypoleucos</i>	BoCCI - Amber List
Starling	<i>Sturnus vulgaris</i>	BoCCI - Amber List
Tree Sparrow	<i>Passer montanus</i>	BoCCI - Amber List
Great Cormorant	<i>Phalacrocorax carbo</i>	BoCCI - Amber List
Great Crested Grebe	<i>Podiceps cristatus</i>	BoCCI - Amber List
House Martin	<i>Delichon urbicum</i>	BoCCI - Amber List
House Sparrow	<i>Passer domesticus</i>	BoCCI - Amber List
Lesser Black-backed Gull	<i>Larus fuscus</i>	BoCCI - Amber List
Mute Swan	<i>Cygnus olor</i>	BoCCI - Amber List
Wheatear	<i>Oenanthe oenanthe</i>	BoCCI - Amber List
Ringed Plover	<i>Charadrius hiaticula</i>	BoCCI - Amber List
Sand Martin	<i>Riparia riparia</i>	BoCCI - Amber List
Sky Lark	<i>Alauda arvensis</i>	BoCCI - Amber List
Black-headed Gull	<i>Larus ridibundus</i>	BoCCI - Amber List
Goldcrest	<i>Regulus regulus</i>	BoCCI - Amber List
Grey Wagtail	<i>Motacilla cinerea</i>	BoCCI - Amber List
Little Plover	<i>Charadrius dubius</i>	BoCCI - Amber List
Willow Warbler	<i>Phylloscopus trochilus</i>	BoCCI - Amber List
Swift	<i>Apus apus</i>	BoCCI - Red List
Red Kite	<i>Milvus milvus</i>	BoCCI - Red List
Redshank	<i>Tringa totanus</i>	BoCCI - Red List
Yellowhammer	<i>Emberiza citrinella</i>	BoCCI - Red List
Meadow Pipit	<i>Anthus pratensis</i>	BoCCI - Red List
Redwing	<i>Turdus iliacus</i>	BoCCI - Red List

Common Name	Scientific Name	Designation and/or Conservation Status
Greylag Goose	<i>Anser anser</i>	Invasive Species - S.I. 477/2011 <sup>Note 2</sup> Birds Directive - Annex II/III BoCCI - Amber List

**Note 1:** Pheasant does not fulfil 'notable' criteria<sup>4</sup> but is retained for visibility as it is a ground-nesting species (relevant in this case because it is proposed to remove grassland as part of the Proposed Development).

**Note 2:** According to Burke et al. (2022), much of Ireland's resident greylag goose population is descended from birds released in the 20th century. This group is referred to here as the 'feral' population. The term 'naturalised' may be more appropriate (or perhaps naturalised introduced) and the historic status of breeding greylag geese in Ireland is not fully clear. Although this population falls under the monitoring remit of the Irish Rare Breeding Birds Panel as a non-native breeding species, the true distribution and changes in numbers of the feral greylag goose population in Ireland has only been monitored intermittently and is not well understood. The other population is comprised of winter visitors that breed in Iceland. It is not possible to differentiate between individuals from these populations in the field, unless ringing data can be obtained. Greylag goose is a qualifying feature of Poulaphouca Reservoir SPA, and according to Burke et al. (2022), the population in Poulaphouca Reservoir is Icelandic in origin. As such, in the context of the Proposed Development, records are assumed to be associated with the same population and therefore do not represent the presence of invasive species.

## Mammals

The desk study returned records of 21 mammal species (see Table 4-6). Of these, 8 are afforded protection under the Habitats Directive and/or the WA. There are 5 species that are designated as invasive under S.I. 477/2011.

**Table 4-6 - Desk Study – Mammals**

Common Name	Scientific Name	Designation and/or Conservation Status
Otter	<i>Lutra lutra</i>	Habitats Directive - Annex II/IV Protected Species - Wildlife Acts
Pine Marten	<i>Martes martes</i>	Habitats Directive - Annex V Protected Species - Wildlife Acts
Badger	<i>Meles meles</i>	Protected Species - Wildlife Acts
Pygmy Shrew	<i>Sorex minutus</i>	Protected Species - Wildlife Acts
Red Squirrel	<i>Sciurus vulgaris</i>	Protected Species - Wildlife Acts
Red Deer	<i>Cervus elaphus</i>	Protected Species - Wildlife Acts
Hedgehog	<i>Erinaceus europaeus</i>	Protected Species - Wildlife Acts
Irish Hare	<i>Lepus timidus hibernicus</i>	Protected Species - Wildlife Acts
Rabbit	<i>Oryctolagus cuniculus</i>	None
Feral Ferret	<i>Mustela furo</i>	None
Feral Goat	<i>Capra hircus</i>	None
Hazel Dormouse	<i>Muscardinus avellanarius</i>	None
House Mouse	<i>Mus musculus</i>	None
Red Fox	<i>Vulpes vulpes</i>	None

Common Name	Scientific Name	Designation and/or Conservation Status
Wood Mouse	<i>Apodemus sylvaticus</i>	None
American Mink	<i>Mustela vison</i>	Invasive Species - S.I. 477/2011
Brown Rat	<i>Rattus norvegicus</i>	Invasive Species - S.I. 477/2011
Grey Squirrel	<i>Sciurus carolinensis</i>	Invasive Species - S.I. 477/2011
Fallow Deer	<i>Dama dama</i>	Invasive Species - S.I. 477/2011
Sika Deer	<i>Cervus nippon</i>	Invasive Species - S.I. 477/2011

### Herpetofauna

The desk study returned 3 records of herpetofauna. All herpetofauna are protected under the WA. Common frog is listed under Annex V of the Habitats Directive (see Table 4-7).

**Table 4-7 - Desk Study - Herpetofauna**

Type	Common Name	Scientific Name	Designation and/or Conservation Status
Amphibian	Common Frog	<i>Rana temporaria</i>	Habitats Directive - Annex V Protected Species - Wildlife Acts
Amphibian	Smooth Newt	<i>Lissotriton vulgaris</i>	Protected Species - Wildlife Acts
Reptile	Common Lizard	<i>Zootoca vivipara</i>	Protected Species - Wildlife Acts

### Invertebrates

The desk study returned 5 notable invertebrate species (see Table 4-8). Four of the species listed are generalists (i.e. they will feed from a variety of foodplants). The small sallow mining bee is the only exception, favouring willow catkins.

**Table 4-8 - Desk Study - Notable Invertebrates**

Type	Common Name	Scientific Name	Designation and/or Conservation Status
Butterfly	Wall Butterfly	<i>Lasiommata megera</i>	IUCN Red List - Endangered
Bee	Small Sallow Mining Bee	<i>Andrena (Andrena) praecox</i>	IUCN Red List - Vulnerable
Bee	Buff Mining Bee	<i>Andrena (Melandrena) nigroaenea</i>	IUCN Red List - Vulnerable
Bee	Gooden's Nomad Bee	<i>Nomada goodeniana</i>	IUCN Red List - Endangered
Bee	Blunt-jawed Nomad Bee	<i>Nomada striata</i>	IUCN Red List - Endangered



#### 4.4.4 SURVEY RESULTS (2019/2020)

The information presented in this section has been adapted from the EIAR submitted in 2020 (Golder, 2020).

##### 4.4.4.1 Habitats

The Site was found to be almost entirely comprised of an active quarry, with surrounding habitats including improved grassland, trees, hedgerows, and trees (Table 4-9). The 2020 habitat map is presented in Figure 4-4. No protected habitats or flora were recorded during the 2019/2020 survey.

**Table 4-9 – Habitats recorded during 2019/2020 surveys (nomenclature as per Fossitt, 2000)**

Habitat	Code
Mesotrophic Lakes	FL4
Artificial Lakes and Ponds	FL8
Improved Agricultural Grassland	GA1
Conifer Plantation	WD3 <sup>22</sup>
Scrub	WS1
Hedgerows	WL1
Treelines	WL2
Exposed Sand, Gravel and Till	ED1
Spoil and Bare Ground	ED2
Recolonising Bare Ground	ED3
Active Quarries and Mines	ED4
Buildings and Artificial Surfaces	BL3

<sup>22</sup> Having been to site, WSP considers WD3 to be the correct habitat classification, but the corresponding title should be 'Mixed Conifer Woodland'. Golder's classification of 'Conifer Plantation' should be coded WD4. WSP considers the code to be correct but the title erroneous.



**Figure 4-4 - Habitat Map (Golder, 2020)**

**Active Quarries and Mines - ED4**

The centre and south-east of the Site was dominated by bare ground, associated with the footprint of the quarrying activities. Whilst the vast majority of the active quarry footprint was sterile in terms of species presence and composition, some peripheral development of flora was noted. The steep quarry faces preclude vehicular disturbance and pioneering species were able to survive.

**Improved Agricultural Grassland - GA1**

A number of agricultural fields were present within the north and south-west of the Site. The grassland was dominated by grasses, with species including Yorkshire-fog (*Holcus lanatus*), cock's-foot (*Dactylis glomerata*), crested dog's-tail (*Cynosurus cristatus*), false oat-grass (*Arrhenatherum elatius*), sweet vernal-grass (*Anthoxanthum odoratum*), and perennial rye-grass (*Lolium perenne*). Very few herbaceous plants were recorded. Where present, these species were more prevalent at field boundaries, and included species such as thistle (*Cirsium sp.*), chickweed (*Stellaria media*), common nettle (*Urtica dioica*) and yarrow (*Achillea millefolium*).



The fields within the north of the Site were recorded to be subject to more intensive management than the field in the south-west. The south-western field supports a tussocky sward up to 30 cm in height, whilst the fields within the north of the Site were generally grazed to ground level, with a sward up to a maximum of 10 cm in height.

### Treelines - WL2

Ash (*Fraxinus excelsior*) was the most dominant species recorded. Bracket fungus was observed on a number of the trees. No understorey was recorded associated with the treelines, whilst ground flora was recorded to be consistent with species present in the adjacent grassland.

### Scrub - WS1

Areas of scattered scrub were present within the Site. Where this scrub was associated with field boundaries, it was considered likely to be representative of defunct hedgerows. Scrub species recorded within the Site included blackthorn (*Prunus spinosa*), hawthorn (*Crataegus monogyna*), and gorse (*Ulex europaeus*).

### Hedgerows - WL1

Hedgerows marked field boundaries within the Site. These hedgerows were largely recorded as outgrown and leggy in nature, dominated by hawthorn, with some gorse.

The hedgerows were found to vary in structure, with some being relatively dense, whilst others did not appear to be subject to regular management and had become gappy and defunct in nature, beginning to resemble individual trees. A number of the hedges were set within shallow depressions.

#### Hedgerow Survey

In summary, this assessment found that the majority of hedgerows and treelines within the study area were located upon or adjoined by earth banks and were adjoined by improved grassland habitats. All hedgerows surveyed were single line hedges, were not stock proof and were adjoined by a small earth bank, typically less than 1 m in height. Most earth banks exhibited localised erosion and exposure due tracking or sheltering by sheep.

Most hedgerow shrubs within the Site were deemed to be overgrown, with the average hedgerow height being 2.5 m and 4 m. Hedgerows were gappy within the Site; on average 10-25% of the hedgerows surveyed no longer had a cover of hedgerow shrubs. In addition, all hedgerows within the Site had not received management in the recent past, with only one hedgerow exhibiting management in the short-term. The condition of most hedgerows surveyed were classified as either relict or overgrown.

Hedgerows within the Site were dominated by hawthorn shrubs with occasional occurrences of semi-mature ash trees, sycamore, beech, gorse and elder. Hedgerow ground flora was poor, with an absence of vernal or woodland ground flora species. Some hedgerows supported localised abundances of dense nettle growth spreading from the base. The site supports two treeline habitats comprising tall semi-mature and maturing ash trees. All hedgerows and treelines within the Site were bordered by post and wire (including barbed wire) fencing.

#### 4.4.4.2 Fauna

##### Badger

One badger sett was noted in a field boundary in the south-western portion of the Site. It was deemed to be an 'outlier' sett<sup>23</sup>, and appeared in recent use. It was subjected to an infrared camera survey between the 27<sup>th</sup> of August and the 7<sup>th</sup> of September, which did not detect the presence of badgers at the sett.

##### Other Terrestrial Mammals

During the camera survey of the badger sett, incidental recordings of fox (*Vulpes vulpes*), red squirrel (*Sciurus vulgaris*), Sika deer (*Cervus nippon*), rabbit (*Oryctolagus cuniculus*) and grey squirrel (*Sciurus carolinensis*) were made.

Of these, only red squirrel is afforded protection under the WA. Grey squirrel and Sika deer are designated as invasive species under the Birds and Natural Habitats Regulations (S.I. 477/2011).

##### Bats

A number of trees within the Site were deemed to have the potential to support roosting bats, in particular the trees in field boundaries in the south-west of the Site.

##### Birds

A small number of bird species were recorded within the Site at the time of the survey, largely associated with the grassland, hedgerows and trees within the west and north of the Site. Species recorded include woodpigeon (*Columba palumbus*) and pheasant (*Phasianus colchicus*). In particular, a number of birds were observed associated with a hedgerow in the north of the Site, including blue tit (*Cyanistes caeruleus*), chaffinch (*Fringilla coelebs*), chiffchaff (*Phylloscopus collybita*) coal tit (*Periparus ater*), robin (*Erithacus rubecula*), and treecreeper (*Certhia familiaris*), whilst buzzard (*Buteo buteo*) was observed flying over the land in the north of the Site. In addition, there are anecdotal reports of peregrine falcons (*Falco peregrinus*) nesting on one of the cliff faces of the quarry, although none were observed at the time of survey.

#### 4.4.5 SURVEY RESULTS (2023)

This section presents the data gathered during the survey in November 2023.

##### 4.4.5.1 Habitats

The assemblage of habitats onsite in 2023 was found to broadly correspond to that described in Golder (2020).

A small number of discrepancies were noted, as described in the following text, with reference to the annotations in Figure 4-5. It should be noted that not all discrepancies represent changes in

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<sup>23</sup> Outlier setts are typically located on the periphery of a badger territory. They are smaller and experience comparatively little use relative to other sett types.

circumstance during the period between surveys – they may have simply been missed during the previous suite of surveys and reporting.



**Figure 4-5 - Annotated 2020 Habitat Map (adapted from Golder, 2020) – ‘Site Boundary’ refers to the 2020 application boundary.**

- A. This ring of scrub surrounds a small depression, in which the surface is gravelled and what appears to be a manhole chamber is in place. It is labelled as a spring in historic mapping by Ordnance Survey Ireland (OSI, 2023), although it is not included in the database of springs maintained by Geological Survey Ireland (GSI, 2023). Downhill, approximately 60 m to the south-west, a small area (ca. 140 m<sup>2</sup>) of standing water was observed (refer to ‘A1’ in Figure 4-5). This was considered most appropriately classified as another example of mesotrophic lakes (FL4) (see Figure 4-6). The pathway between this feature and the spring was surfaced with gravel, suggesting that spring discharge is piped along this route.
- a. It should be noted that this arrangement is evident in freely-available aerial imagery (Google Earth in this case) as far back as 2009.

- b. Anecdotal evidence from the Applicant and from other WSP staff who have visited the Site in recent years suggests that standing water in this area is not always present.
- B. The grassland habitat in this area was classified as GA1 (improved agricultural grassland) in 2020. In 2023 it was noted that this area is dominated by dry meadows and grassy verges (GS2), which is typical for what was once an improved pasture but has subsequently been left alone for some time. Occasional patches of wet grassland (GS4) were noted in lower-lying areas and fringing areas of the above-mentioned pond, marked by a notable abundance of soft rush (*Juncus effusus*). GS4 accounted for ca. 10% of the coverage within this area – the rest (ca. 90%) was GS2.
- C. A new lagoon has been created in this area since 2020, labelled 'Pond K2', and is used as a supply of water to the aggregate plant (please refer to Chapter 7 for a detailed description of how the Site utilises and recycles water). The changes to this lagoon since 2020 are shown in Figure 4-7.
- D. This area of GA1 has been subject to earthworks recently – between January and October 2023 (see Figure 4-7). This corner of the Site is now occupied by spoil and bare ground (ED2), and the grassland has been almost completely removed. The area of GA1 that has been removed is approximately 1.12 ha.
- E. Pond K is no longer in use and has been backfilled since the surveys in 2020 (see Figure 4-7).
- F. The shape of this lagoon has changed – the area that extends out to the south as shown has been backfilled (see Figure 4-7).
- G. A new lagoon has been created in this area – this is a settlement lagoon that allows sediment to fall out of solution before the water is circulated back to Pond K2 (please refer to Chapter 7 for more detail) (see Figure 4-7).



**Figure 4-6 - Infrastructure at the source of the 'spring' (left) and example of FL4 downhill (right)**



**Figure 4-7 - Site Aerials in June 2020, March 2022, January 2023 and October 2023 (Images from Google Earth, ESRI and site surveys).**

### **Mixed Conifer Woodland (WD3)**

Golder (2020) labelled this as a 'Conifer Plantation', which is normally assigned the Fossitt code WD4. WSP considers WD3 to be the correct habitat classification – this area of woodland did not appear to be part of the same forestry regime as (e.g.) the trees in Glen Ding Forest, which are in more distinct rows and appear much more homogenous in aerial imagery. The area of WD3 shown in Figure 4-4 was found to be dominated by Sitka spruce (*Picea sitchensis*), but several deciduous tree specimens were also observed, including hawthorn and ash. Spruce trees were tall (>10 m) but not particularly thick (trunk diameter <40 cm). This area was likely planted as a conifer plantation, but is now somewhat distant from the main body of Glen Ding Forest and therefore not subject to the same intensity of management.

### **Artificial Lakes and Ponds (FL8)**

The lagoons within the quarry pit were found to be completely devoid of vegetation – an indication of the magnitude of disturbance associated with the activities in this area. Accordingly, their suitability

for fauna is considered extremely low, which is supported by the lack of sightings of any fauna associated with these waterbodies during the surveys in November 2023.

#### **Red Bog, Kildare SAC and pNHA**

The majority (ca. 80%) of the area within the SAC and pNHA is occupied by improved agricultural grassland (GA1), and grazing cattle were observed on the land at the time of survey. The qualifying habitat (the habitat for which the SAC was designated), 'transition mires and quaking bogs', is at least 160 m from the nearest part of the EIA/S.37L boundary. The nearest part of the Site where activity was likely to have previously occurred is a haul road, ca. 270 m from qualifying habitat associated with the SAC/pNHA.

#### **4.4.5.2 Fauna**

##### **Badger**

Six potential setts<sup>24</sup> were identified in field boundaries in the lands surrounding the existing quarry pit. Five of these were associated with fields to the north, and one with fields to the south-west. Precise locations, and details on each potential sett can be provided in a confidential badger appendix, which can be provided to An Bord Pleanála on request. In the context of this Section 37L application, three potential setts were located within the S.37L boundary, and within the area proposed for extension of the quarry pit. The remaining potential setts were located 53 m, 93 m and 161 m from the S.37L boundary respectively.

##### **Other Terrestrial Mammals**

Excluding the potential badger setts described above, a total of seventeen mammal burrows were identified along field boundaries in the lands peripheral to the existing quarry pit. Eight of these were classified as rabbit burrows, owing to the presence of fresh droppings at the entrance. Eight were considered likely to be attributed to rabbits also, but were lacking droppings to confirm. Of these, 14 were within the S.37L boundary. A wood mouse burrow (*Apodemus sylvaticus*) was identified along the northern edge of the EIA boundary, but outside the S.37L boundary. A live rabbit was observed by the north-western boundary

Two Sika deer were observed emerging from the area of scrub surrounding the spring to the north of the Site. A herd of ca. 20 feral goats was observed grazing in the area marked as 'B' in Figure 4-5.

None of these species are afforded any protection under the WA or any other Irish or European legislation.

Sika deer are designated as invasive under Schedule 3 of S.I. 477/2011. Feral goats are not legally-designated, but are often considered invasive in an ecological context due to their rigorous grazing habits.

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<sup>24</sup> These were classified as 'potential' setts owing to their size and shape (i.e. they were large enough, and exhibited the typical D-shaped entrance associated with badger setts), but it is acknowledged that setts are often abandoned and become occupied by other species, such as rabbit or fox.



The field boundaries that were deemed suitable for the species described above, were also considered suitable for other protected mammals noted in the desk study. This includes pygmy shrew, hedgehog, Irish hare, red squirrel and pine marten. Although no direct evidence of their presence onsite was observed, habitats onsite were considered suitable for foraging, commuting and resting (i.e. for pine marten dens, squirrel dreys, hare forms etc.).

One suitable pine marten denning site was identified in one of the treelines to the southwest, in the form of a substantial cavity in an ash tree (See Figure 4-8).

### Bats

Fifteen trees within the survey area were deemed to have the potential to support roosting bats. Thirteen of these were in hedgerows or treelines in the south-western portion of the S.37L boundary, with the remaining 2 along the northern edge of the EIA boundary (270 m and 320 m from the S.37L boundary respectively). In accordance with Collins (2023), four of these were classified as -M, by virtue of their perceived potential to accommodate multiple roosting bats. The rest were classified as PRF-I. The locations of these are provided in Figure 4-8. Detailed descriptions are provided in Appendix 4A.

### Birds

Approximately forty sand martin (*Riparia riparia*) burrows (nests) were noted at the top of a cliff face in the northernmost corner of the existing quarry pit, which is within the S.37L boundary. Sand martins and their nests are protected under the WA, and are Amber-listed as per BoCCI (Gilbert, et al., 2021).

Whilst WSP ecologists were aware of reports of nesting peregrine falcons onsite, as noted in Golder (2020), none were observed. Sightings of peregrine falcons were not expected, considering that they utilise the quarry as a breeding site and surveys were carried out outside the breeding season. The Applicant was able to point out the approximate location on top of a quarry wall, where they frequently return to nest.

Peregrine falcons and their nests are protected under the WA, and are listed in Annex I of the Birds Directive. They are currently green-listed per Gilbert *et al.* (2021).

The locations of sand martin burrows and the known peregrine falcon nesting site are provided in Figure 4-8.

### Herpetofauna

One live adult specimen of common frog was recorded in a puddle in the north-western area of the Site (see Figure 4-8). The ponds (FL4) noted outside the existing quarry pit were considered suitable for breeding amphibians, including common frog and smooth newt. As mentioned, due to the level of disturbance the lagoons in the quarry pit are not considered suitable habitat for herpetofauna.



Common lizard was not observed. However, this species utilises a wide range of habitats<sup>25</sup>, and may inhabit any area where they are afforded suitable basking conditions (such as bare rock or sand that would reflect heat) and some nearby cover that they can quickly escape to in the presence of predators. Bare rock is in abundance at the Site, but the areas around the upper fringes of the quarry pit are considered particularly suitable, where bare rock interfaces with vegetation. The presence of hibernacula is considered a possibility, as common lizard has been observed hibernating in shallow excavations in the soil under rocks and dead wood (Hodges & Seabrook, 2022).

### **Aquatic Fauna**

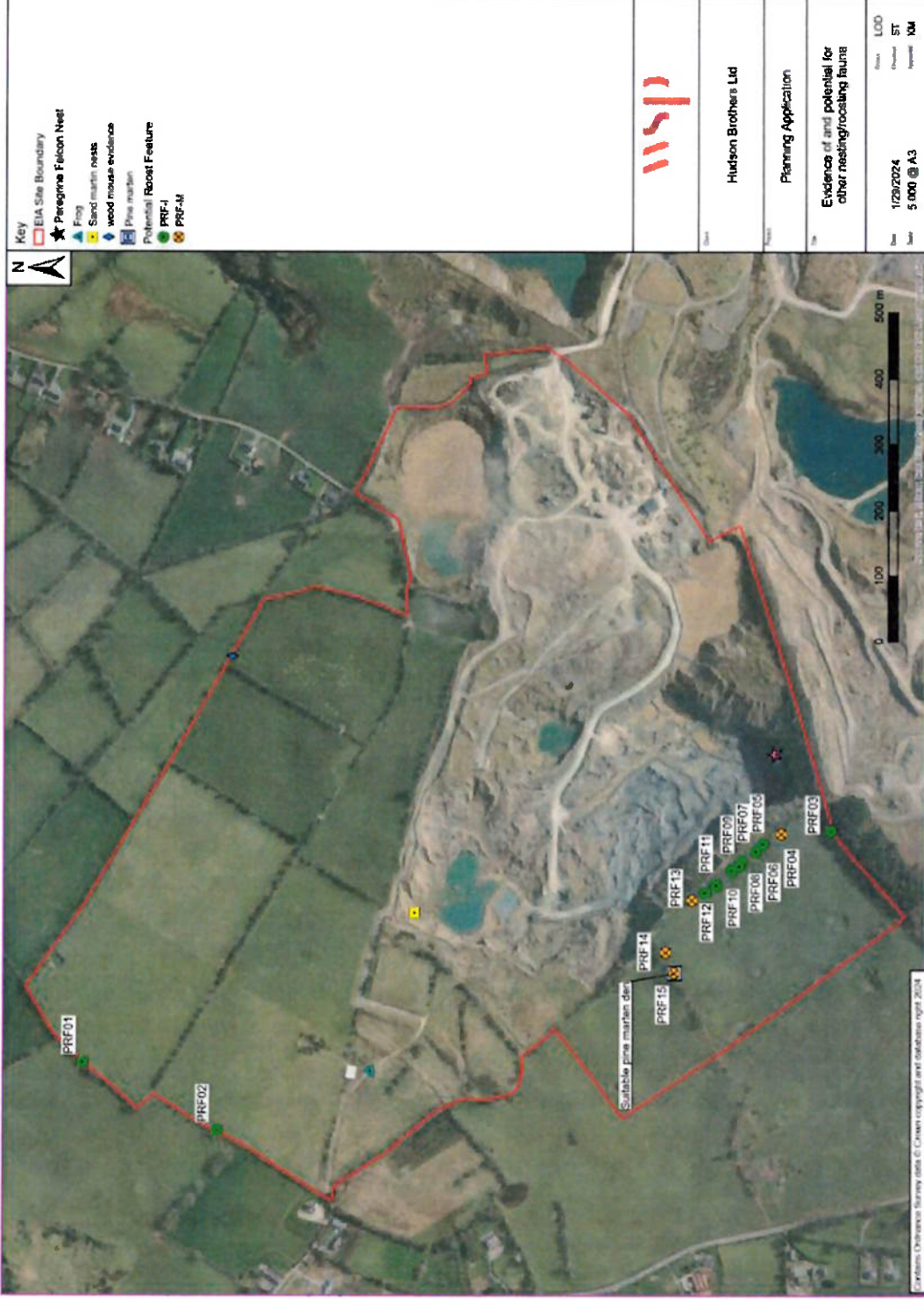
The aquatic habitats found onsite have no surface connections to the wider hydrological network. As such, it is unlikely that fish or any other aquatic macrofauna (including otter) are present at the Site.

### **Invasive Species**

No invasive flora species were observed during the 2023 surveys. As described, Sika deer and feral goats were observed. Sika deer are designated as invasive in S.I. 477/2011, and while feral goats are not designated, they have been included as invasive species for this Site, considering the notable herd size that is present, and their reputation as voracious grazers.

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<sup>25</sup> <https://iwt.ie/species-list/>



**Figure 4-8 – Fauna Observations**



## 4.4.6 SURVEY LIMITATIONS

Grant of leave to apply for substitute consent occurred on the 1<sup>st</sup> of August 2023, after which the Applicant had 12 weeks to submit an application. A series of extensions were granted by ABP, bringing the submission deadline to the end of February 2024. The S.37L application will be submitted alongside the substitute consent application. The scheduling of 2023 surveys was therefore constrained by these events. Details are provided in this section.

### 4.4.6.1 Breeding Birds

Surveys in 2019/2020 did not include breeding birds, due to Covid-19 restrictions. In 2023, breeding bird surveys were also not completed, as the site surveys were completed outside the optimal window – typically breeding bird surveys are completed over multiple visits between March and August.

### 4.4.6.2 Botany and Habitats

The 2023 surveys (November) took place outside the optimal season for botanical surveys. Many species will have experienced winter dieback and had no above-ground presence. However, the 2019/2020 surveys took place in August, which is within the optimal survey window.

### 4.4.6.3 Herpetofauna

The 2023 surveys took place outside the optimal seasons for herpetofauna. Typically, one can expect Irish herpetofauna to be hibernating by November. The 2019/2020 surveys occurred when adults would have been visible, although the breeding season was missed.

### 4.4.6.4 Invertebrates

The 2019/2020 surveys did not include a search for invertebrates. The 2023 surveys took place outside the optimal seasons for terrestrial invertebrates (ca. April-September inclusive).

### 4.4.6.5 Significance

#### Breeding Birds

The impact assessment is lacking site-specific data on breeding bird assemblages, and the Proposed Development will include the removal of suitable nesting habitat – most notably hedgerows, treelines and scrub, but also grassland, which may be utilised by ground-nesting birds. Several ground-nesting species were noted in the desk study, including meadow pipit, skylark, snipe and pheasant. WSP is aware of the potential presence of nesting peregrine falcons.

In the absence of site-specific breeding bird data, WSP has adopted a precautionary approach whereby the presence of breeding birds is assumed in areas of suitable habitat. In this manner it is possible to evaluate the ecological importance, and subsequently the significance of impacts on breeding birds based on a worst-case scenario. For this reason, this is not considered a significant limitation to the completion of this assessment.

WSP proposes to carry out a suite of breeding bird surveys at the appropriate time of year and submit a report as further information, which will contain results and recommendations. Further details are provided in Section 4.7.3.



### Botany and Habitats

Considering the 2019/2020 surveys were conducted during the optimal window, and that the peripheral habitats surrounding the quarry pit are predominantly low-diversity agricultural grassland and hedgerows, WSP considers that sufficient data is available to complete a robust impact assessment.

In this context, this is not considered to be a significant limitation.

### Herpetofauna

The 2019/2020 surveys were conducted during the optimal window. The silt lagoons within the quarry pit are so disturbed so as to be completely devoid of vegetation, and unsuitable for breeding amphibians. Impacts to herpetofauna can be minimised through the application of the precautionary principle and appropriate mitigation.

In this context, this is not considered to be a significant limitation.

### Invertebrates

The peripheral habitats surrounding the quarry pit are predominantly low-diversity agricultural grassland and hedgerows, thereby offering limited value to terrestrial invertebrates. Impacts to invertebrates can be minimised through the application of the precautionary principle and appropriate mitigation (e.g. reinstatement of semi-natural grassland).

In this context, this is not considered to be a significant limitation.

## 4.5 OVERALL EVALUATION

Based on a review of the existing environment presented in the baseline above, an evaluation of IEFs identified are provided in Table 4-10, following the criteria outlined in Table 4-1. Justification is provided for the omission and inclusion of IEFs. Only designated and notable sites deemed to have connectivity with the Site (see Table 4-4) have been considered.

Only important IEFs deemed of Local Importance (Higher Value) or above have been carried through to the assessment stage.

Reference is made to 'core areas', 'stepping stones' and 'corridors' as defined in Chapter 12 of the Kildare County Development Plan:

- **Core Areas** – these are large geographical areas of influence and importance, for reasons of ecology, landscape, designation, heritage, environmental management and ecosystem services.
- **Stepping Stones** – these are smaller geographical areas but either critically important because of their environmental quality (i.e., local native woodlands, intact bogs/peatlands, wetlands), local amenity value (i.e., urban parks) or because of their scale as undeveloped areas, such as Coillte forestry plantations.
- **Corridors** – these are the connectors providing vital linkages in the networks, for example, canals, stream/river corridors and the associated riparian corridors or valleys, disused railway lines, etc.



**Table 4-10 - Evaluation of Ecological Features**

Ecological Feature	Summary Description / Justification for inclusion or omission	Evaluation <sup>26</sup>	Important Ecological Feature (IEF)
<b>Designated and Notable Sites</b>			
Red Bog, Kildare SAC (000397) Red Bog, Kildare pNHA (000397)	European designated site and pNHA. There is no groundwater connectivity with the Proposed Development. There is potential connectivity for dust emissions, which will be discussed in more detail in the impact assessment.	International Importance	Yes
Poulaphouca Reservoir SPA (004063) Poulaphouca Reservoir pNHA (000731)	European designated site and pNHA. There is no groundwater or (surface) hydrological connectivity. However, there is functional connectivity for greylag geese, by virtue of the presence of suitable foraging habitat on the lands surrounding the quarry pit, including the grassland that has been removed (see Area 'D' in Figure 4-5).	International Importance	Yes
Wicklow Mountains SPA (004040)	European designated site Functional connectivity – it is within the maximum recorded range for foraging peregrine falcons.	International Importance	Yes
<b>Habitats</b>			
Mesotrophic Lakes FL4	Wetlands are 'stepping stones' as per County Development Plan. Suitable breeding habitat for local populations of amphibians.	Local Importance (Higher Value)	Yes

<sup>26</sup> IEFs evaluated in line with NRA (2009) Guidelines for Assessment of Ecological Impacts of national Road Schemes. Available at: <https://www.til.ie/technical-services/environment/planning/Guidelines-for-Assessment-of-Ecological-Impacts-of-National-Road-Schemes.pdf>



Ecological Feature	Summary Description / Justification for inclusion or omission	Evaluation <sup>26</sup>	Important Ecological Feature (IEF)
Artificial Lakes and Ponds FL8	Largely devoid of vegetation due to the magnitude of disturbance, and accordingly unsuitable for most fauna.	Local Importance (Lower Value)	No
Improved Agricultural Grassland GA1	This habitat, whilst utilised by wildlife is not considered as ecologically valuable as other habitats present within the Proposed Development. This habitat type is not listed in the local BAPs.	Local Importance (Lower Value)	No
Dry Meadows and Grassy Verges GS2	This habitat exhibits moderate floral diversity, and generally represents local grassland biodiversity 'hotspots' in a landscape that is otherwise dominated by agricultural pasture or tillage. Not mentioned in local BAPs, and no Annex I affinity.	Local Importance (Higher Value)	Yes
Wet Grassland GS4	As with GS2 above, this habitat exhibits moderate floral diversity, and generally represents local grassland biodiversity 'hotspots' in a landscape that is otherwise dominated by agricultural pasture or tillage. It is not a wetland (Irish Wetlands Committee, 2018) but it is suitable for amphibians, many invertebrates with an aquatic larval phase and some BoCCI. It should be noted that impacts to fauna are discussed separately.	Local Importance (Higher Value)	Yes
Mixed Conifer Woodland WD3	This woodland likely originated as a conifer plantation. Despite not being as intensively managed now, it lacks high floral diversity. It may be utilised by species such as badger, red squirrel, pine marten and BoCCI. Recent research <sup>27</sup> has found that red squirrel is more vulnerable to predation in conifer plantation, due to the lack of vegetative structural complexity. Recognised as a 'stepping stone' in the County Development Plan.	Local Importance (Higher Value)	Yes

<sup>27</sup> Twining, J. P., Sutherland, C, Reid, N. and Tosh D. G. (2022). Habitat mediates coevolved but not novel species interactions. Proceedings of the Royal Society B. 289 (1966).



**Ecological Feature**

**Summary Description / Justification for inclusion or omission**

**Evaluation<sup>26</sup>**

**Important Ecological Feature (IEF)**

Ecological Feature	Summary Description / Justification for inclusion or omission	Evaluation <sup>26</sup>	Important Ecological Feature (IEF)
Scrub WS1	<p>Considered important at a local scale.</p> <p>In areas largely devoid of woodland, scrub is an important alternative habitat for species that would otherwise utilise woodland. Unlike hedgerows (see below), scrub is not specifically mentioned in local BAPs or the County Development Plan. It lacks the status of a 'wildlife corridor' that is afforded to hedgerows. It is nonetheless an important resource for breeding birds (potentially BoCCI).</p>	Local Importance (Higher Value)	Yes
Hedgerows WL1 and Treelines WL2	<p>In areas largely devoid of woodland, hedgerows and treelines are important alternative habitats for species that would otherwise utilise woodland.</p> <p>The importance of hedgerows is acknowledged in local BAPs and the County Development Plan.</p> <p>Though they may not be designated sites, the significance of such features is recognised by the EU Habitats Directive (92/43/EEC), which obliges member states to maintain them to improve the ecological coherence of the Natura 2000 network.</p> <p>Considered important at a local scale.</p>	Local Importance (Higher Value)	Yes
Spoil and Bare Ground ED2	<p>This habitat is directly linked with anthropogenic disturbance, leading to a complete lack of vegetation. There is no reference to this habitat in the local BAPs or the County Development Plan.</p>	Local Importance (Lower Value)	No
Recolonising Bare Ground (ED3)	<p>This habitat is the first stage in ecological succession, after bare ground (see above) begins to experience colonisation by ruderal flora. Within the Proposed Development, this habitat is associated with portions of the quarry pit that have been recently disturbed but subsequently left alone for a short period. There is no reference to this habitat in the local BAPs or the County Development Plan.</p>	Local Importance (Lower Value)	No
Active Quarries and Mines (ED4)	<p>This habitat is directly linked with anthropogenic disturbance, and has no associated vegetative coverage. There is no reference to this habitat in the local BAPs or the County Development Plan.</p> <p>Please note that impacts to birds (i.e. sand martins and peregrine falcons) are covered separately.</p>	Local Importance (Lower Value)	No



**Ecological Feature**

**Summary Description / Justification for inclusion or omission**

**Evaluation<sup>26</sup>**

**Important Ecological Feature (IEF)**

Buildings and artificial surfaces BL3	Buildings, haul roads and other man-made structures are not considered of high ecological importance within the Proposed Development. This habitat type is not included in any local BAPs or the County Development Plan.	Local Importance (Lower value)	No
<b>Protected Species</b>			
Breeding birds	<p>Numerous habitats within the Proposed Development are suitable for breeding birds – in particular woodland, hedgerows/treelines and scrub. Ground-nesting species may breed in areas where land management intensity is low. Sand martins (Amber - BoCCI) and peregrine falcon (Annex I – Birds Directive) are known to breed at the Site. Populations using the Site, based on the available evidence, do not meet the threshold for county importance.</p> <p>Specific breeding bird surveys were not undertaken, but it can be assumed with confidence that numerous species use the above-described habitats for breeding, some of which may be BoCCI.</p> <p>All nesting birds are protected under the WA, which makes it an offence to intentionally kill, injure or take any wild bird or take, damage, or destroy its nest whilst in use or being built, or take or destroy its eggs.</p>	Local Importance (Higher Value)	Yes
Overwintering birds	<p>The presence of agricultural pasture within the Proposed Development and adjacent to the quarry pit equates to the presence of suitable foraging habitat for certain species of swan and goose.</p> <p>Note that impacts to greylag geese associated with Poulaphouca Reservoir SPA/pNHA are covered above under European Sites.</p> <p>The site is not considered a valuable foraging resource for non-QI species.</p>	Local Importance (Lower Value)	Yes
Bats	<p>Habitats within the Proposed Development provide important foraging, commuting and roosting habitat for bats.</p> <p>All bat species are protected under the WA and are mentioned the County Development Plan.</p>	Local Importance (Higher Value)	Yes



**Ecological Feature**

**Summary Description / Justification for inclusion or omission**

**Evaluation<sup>26</sup>**

**Important Ecological Feature (IEF)**

Ecological Feature	Summary Description / Justification for inclusion or omission	Evaluation <sup>26</sup>	Important Ecological Feature (IEF)
Badger	Badgers are likely present within the Proposed Development. Badgers are protected under the WA.	Local Importance (Higher Value)	Yes
Amphibians	Suitable habitat for breeding amphibians has been identified in both examples of FL4, and a live frog specimen was noted in a puddle to the north of the Site, outside the quarry pit. Smooth newt may also be present. Both are likely to be present in areas of periodic inundation. Common frog and smooth newt are protected under the WA.	Local Importance (Higher Value)	Yes
Reptiles	Certain areas of the Proposed Development are suitable for common lizard – particularly areas of exposed rock, which provide good opportunities for basking. It was noted in the desk study. Its presence is assumed. Common lizard is protected under the WA.	Local Importance (Higher Value)	Yes
Terrestrial invertebrates	Suitable habitat for invertebrates (in a general sense) was noted during the surveys. No protected or notable species were recorded during the surveys, although it is acknowledged that targeted invertebrate surveys were not carried out. Some notable species were noted in the desk study. Assigned Local Importance (Higher Value) as a precaution.	Local Importance (Higher Value)	Yes
Other notable species	Hedgehog, pygmy shrew, red squirrel, pine marten, Irish hare and red deer were noted during the desk study. Red squirrel was recorded during monitoring of a badger sett in 2020. The site contains suitable habitat for these species, all of which are protected under the WA.	Local Importance (Higher Value)	Yes
Rare flora	Neither the desk study nor the field surveys identified any rare flora.	Local Importance (Lower value)	No
Invasive species	Several species were noted in the desk study. During field surveys, grey squirrel and sika deer were observed. These species are listed in Schedule 3 of the Birds and Natural Habitats Regulations. Invasive species are mentioned in the County Development Plan.	Local Importance (Higher Value)	Yes

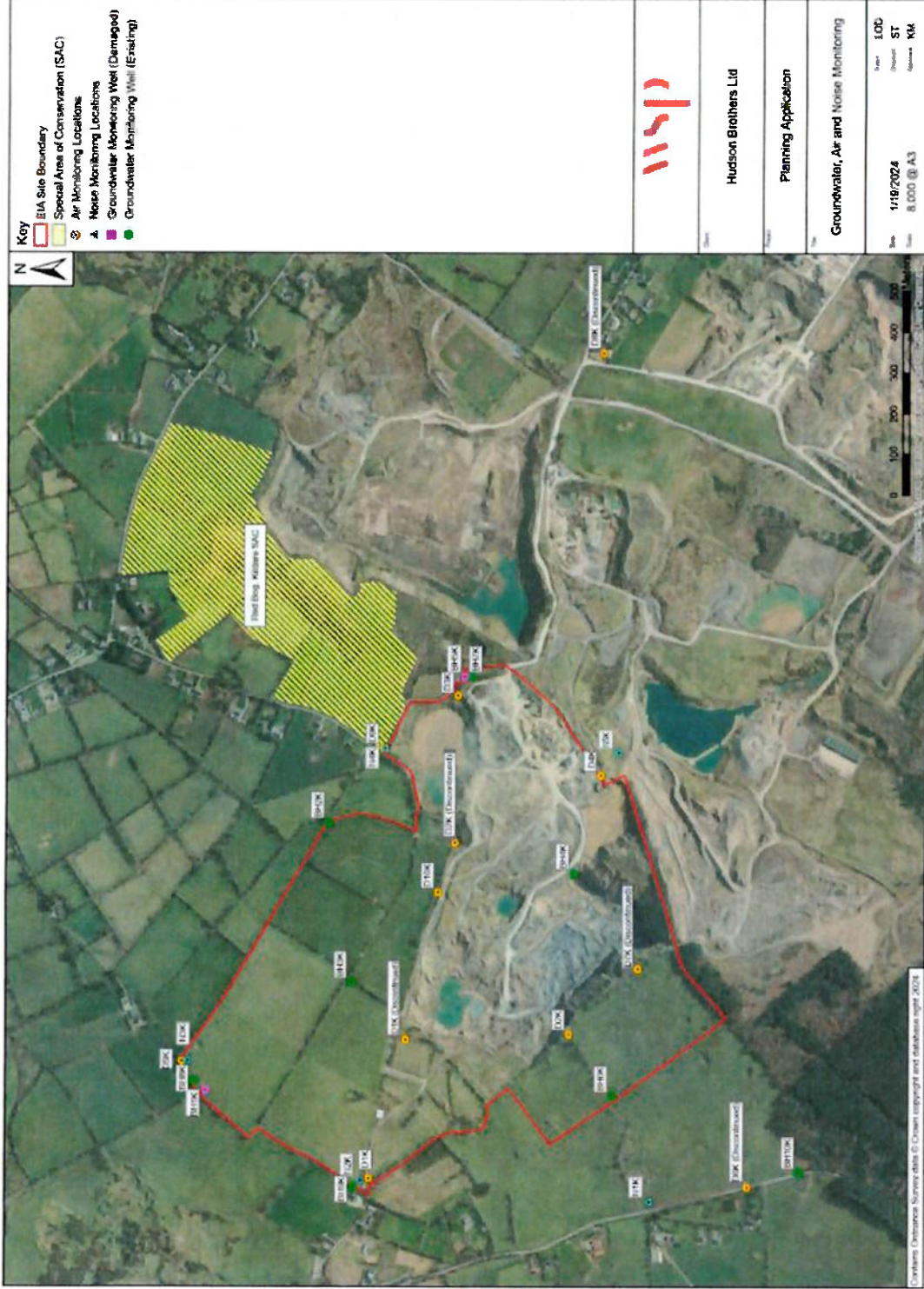


## 4.6 IMPACT ASSESSMENT

This section aims to quantify the ecological impacts of the Proposed Development with reference to the ecological evaluation of the Site as shown in Table 4-10. Assessment of impacts is in accordance with the methodology described in Section 4.3.7.

Potential impacts have been considered in the context of groundwater, dust and noise emissions, as well as habitat loss and the potential spread of invasive species. Further detail is provided in the following subsections.

Information relating to the above-mentioned emissions has been taken from the relevant chapters in this EIAR – please refer to Chapter 7 (surface water and groundwater), Chapter 9 (Air Quality) and Chapter 10 (Noise) for more detail. Monitoring locations are illustrated in Figure 4-9.



**Figure 4-9 - Emissions Monitoring Locations**

PHILIPSTOWN AND REDBOG  
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 Hudson Brothers Limited



#### 4.6.1 CONSIDERATION OF ECOLOGICAL IMPACTS - RATIONALE

The factors contributing to potential impacts have been considered. Impacts in relation to surface water, groundwater, dust and noise emissions, habitat loss and the spread of invasive species are considered plausible, considering the nature of the proposed activities onsite.

##### 4.6.1.1 Water – Surface and Ground

In accordance with the surface water management arrangements at the Site (see Chapter 7) and the nature of the topography at the Site, surface water does not discharge from the Site.

With respect to groundwater:

- Groundwater gradient is to the west/northwest; and
- Physico-chemical analysis of groundwater within, and down-gradient of the Site indicate that groundwater quality perturbations have not occurred to date, with the ongoing implementation of standard site environmental protocols.

A hydrogeological report on Red Bog, Kildare SAC (100 m from Site boundary) carried out for Hudson Brothers Ltd. (Golder Associates, 2008) states the following in relation to the bog's water source:

*'Notwithstanding the possibility of intermittent springs and seepages, the source of water for this type of formation (Red Bog) is principally confined to precipitation. The hydraulic catchment for Red Bog is expected to extend little further than its surface expression. Overland flow will occur around the immediate periphery during storm events, but this influence is not expected to extend the catchment radially by more than several metres'*

It should also be noted that the most up-to-date groundwater monitoring data from monitoring well BH2K (adjacent to Red Bog, Kildare SAC) indicates that the groundwater table has not encroached any closer than 5.8 m below the top of the well casing (mBTOC). This is consistent with conclusions drawn in the Environmental Impact Statement (EIS) submitted with the planning application in 2007, and the EIAR submitted in 2020, both of which stated that the surface waterbody associated with Red Bog, Kildare SAC is a perched water feature. Red Bog, Kildare SAC is therefore isolated from the groundwater table.

##### 1.6.1.2 Dust

The effect of airborne particulate matter on plants has been studied on several occasions, and the literature reviewed by Farmer (1993) and Prajapati (2012). Guidance from IAQM (2016) cites Farmer (1993) when making the following statement:

"The level of dust deposition likely to lead to a change in vegetation is very high (over 1 g/m<sup>2</sup>/day<sup>28</sup>) and the likelihood of a significant effect is therefore very low except on the sites with the highest dust release close to sensitive habitats."

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<sup>28</sup> >1000 mg/m<sup>2</sup>/day

Prajapati (2012) states that chemical effects of reactive materials (such as cement dust, and particulate sulphates/nitrates<sup>29</sup>) become evident at concentrations of approximately 2 g/m<sup>2</sup>, with reference to a study by Grantz *et al.* (2003).

The paper by Farmer (1993) refers to studies by Spatt and Miller (1981) and Walker and Everett (1987), both of which examined effects of dust deposition on more sensitive bryophyte communities<sup>30</sup> alongside a major road in Alaska. It was found that species of *Sphagnum* declined where dust deposition was between 1000-2500 mg/m<sup>2</sup>/day. Decline of *Sphagnum* coverage was noted up to 20 m from the road.

Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2014) provides a mechanism for determining the sensitivity of an area to ecological impacts. It is reproduced in Table 4-11 below. It essentially considers the sensitivity of an ecological receptor and the distance between it and the source of dust, in determining the likelihood of significant impacts. In the context of the Proposed Development, Red Bog, Kildare SAC is an ecological receptor of 'High' sensitivity. Dust emissions arising from within 20 m would be considered to pose a high risk of significant impacts<sup>31</sup>, and those arising from within 50 m would be considered to pose a medium risk of significant impacts. Whilst the table does not provide details for further distances, it can be reasonably inferred that emissions arising further than 50 m from a receptor of 'High' sensitivity would be considered to pose a low risk of significant impacts.

**Table 4-11 – Characterising the Sensitivity of an Area to Ecological Impacts (from IAQM, 2014)**

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

### Site Dust Emissions

The most recent area of lateral expansion (Area D as shown in Figure 4-5) occurred in 2023. The two nearest dust monitoring locations to this area are D1K and D2K (refer to Figure 4-9). The maximum recorded dust emissions in 2023 was 118 mg/m<sup>2</sup>/day and 135 mg/m<sup>2</sup>/day for D1K and

<sup>29</sup> It should be noted that no cement dust, nor any sulphate/nitrate mineral dust is produced by the Site.

<sup>30</sup> Relevant in the context of Red Bog, Kildare SAC.

<sup>31</sup> This is consistent with the studies cited by Farmer (1993).

D2K respectively. The average dust emissions for the overall site (comprising records from 2019-2023) is 231.2 mg/m<sup>2</sup>/day (please refer to Chapter 9 for additional details).

The smallest distance between the S.37L boundary (area of proposed new extraction) and the SAC is ca. 150 m.

#### 4.6.1.3 Noise

Modelling of predicted noise emissions has been carried out and the results are presented in Chapter 10. Modelling is informed by recent monitoring results and site topography, and four hypothetical scenarios are assessed for their potential noise emissions in relation to 24 different noise receptors in the surrounding landscape. The modelling predicts that:

- The maximum increase in noise emissions as a result of the Proposed Development (in any of the 4 scenarios) is 3.1 dB<sup>32</sup>;
- Increases are only predicted at 4 locations;
- At each of the other locations, future noise emissions will be lower than current emissions; and
- None of the predicted emissions at any of the locations exceeds the limit of 55 dB.

The threshold for noise emissions (55 dB), as applied in Chapter 10, is based on thresholds set by the Environmental Noise Regulations (S.I. 140/2006) and incorporated into Kildare County Council's Third Noise Action Plan 2019 - 2023<sup>33</sup>. This threshold is based primarily on impacts to humans, and is an indicator of optimal, quiet conditions. Nonetheless, the Waterbird Disturbance Mitigation Toolkit (Cutts, et al., 2013) acknowledges that noise emissions below 55 dB is unlikely to cause a response in waterbirds.

#### 4.6.1.4 Invasive Species

##### Flora

Considering the nature of the proposed activities at the Site, in particular the ingress of vehicles, plant and machinery and their associated soil disturbance, the transport into the Site of seeds and viable tissue of invasive flora is an inherent possibility. However, the below points have also been considered:

- No invasive flora were observed in 2019 or 2023;
- It is not proposed to import soil from offsite for the purpose of restoration – topsoil will be retained onsite for that purpose.
- Access to the Site is via the haul road to the south, which does not intersect or run adjacent to Red Bog, Kildare SAC and pNHA;
- The qualifying species of Poulaphouca Reservoir SPA and pNHA are not considered to be sensitive to the potential movement of terrestrial invasive flora. However, over a prolonged period, greylag goose terrestrial foraging habitat might be lost to (e.g.) Japanese knotweed scrub.

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<sup>32</sup> To give context to these increases, a 3 dB difference in noise level is usually considered to be the minimum change normally perceptible by the human ear under 'real world' situations (as opposed to a controlled laboratory environment).

<sup>33</sup> <https://kildarecoco.ie/AllServices/Environment/NoiseNuisance/>



## Fauna

Grey squirrel, sika deer and feral goats were observed during site surveys. Sika deer and feral goats are known to contribute to the deterioration of habitat condition through overgrazing, and grey squirrel out-competes native red squirrel for ecosystem resources. However, the habitat assemblage in 2023, when compared to that from 2019/2020 did not exhibit signs of substantial alteration that could be attributed to invasive fauna. Sika deer and feral goats were observed during both surveys, so their presence does not represent the recent introduction of invasive fauna.

### 4.6.1.5 Habitat Loss

The Proposed Development will involve the removal of ca.:

- 2.75 km of hedgerow/treelines (WL1/WL2);
- 28 ha of improved agricultural grassland (GA1);
- 2.7 ha of dry meadows and grassy verges/wet grassland mosaic habitat (GS2/GS4); and
- 0.19 ha of scrub

It is not proposed to disturb or remove any examples of mesotrophic lakes noted onsite.

GA1 has not been identified as an IEF (Table 4-10). Considering the abundance of this habitat in the surrounding environment, its value as a resource (for foraging waterfowl or ground-nesting birds for example) is considered low.

## Fauna

Impacts to fauna as a result of proposed habitat loss are explored in Table 4-13.

### 4.6.2 IMPACT ASSESSMENT

Table 4-12 lists potential impacts on European designated sites and pNHAs identified within the EZoI of the Proposed Development. There are no NHAs within the EZoI.

Table 4-13 lists potential impacts (in the absence of mitigation) on other habitats and protected species identified within the EZoI of the Proposed Development. It is noted that restoration is included as part of the Proposed Development, but for the purpose of impact assessment, impacts are considered in the absence of mitigation so as to appropriately inform the Restoration Plan.



**Table 4-12 – Potential Impacts on Designated or Notable Conservation Sites**

Designated Site	Evaluation	Potential Impacts	Impact Assessment	Conclusion
Red Bog, Kildare SAC (000397) Red Bog, Kildare pNHA (000397)	International Importance	Groundwater contamination, leading to deterioration in habitat condition; Changes to groundwater regime (i.e. fluctuations in level).	<p>As per Section 4.6.1.1:</p> <ul style="list-style-type: none"> <li>■ Groundwater gradient is to the west/northwest (and therefore away from the SAC/pNHA);</li> <li>■ Physico-chemical analysis of groundwater within, and down-gradient of the Site indicate that groundwater quality perturbations have not occurred; and</li> <li>■ The SAC/pNHA is a perched water feature and therefore does not interface with the groundwater table.</li> </ul> <p>There is no groundwater connectivity between the Proposed Development and the SAC/pNHA. It has therefore been concluded that significant impacts to qualifying habitat (transition mires) will not occur as a result of groundwater emissions.</p>	No Impact.
		Dust emissions, leading to deterioration in habitat condition.	<p>With reference to guidance from IAQM (2014, 2016) and literature reviews by Farmer (1993) and Prajapati (2012) (refer to Section 4.6.1.2), the dust emission levels from the Site (as measured between 2019 and 2023) have been substantially below the levels at which any appreciable impacts could occur.</p> <p>It has therefore been concluded that significant impacts to qualifying habitat (transition mires) will not occur as a result of dust emissions.</p>	No Impact.
		Spread of invasive species, leading to a deterioration of habitat condition, and a decrease in area coverage of qualifying habitat.	<p>As per Section 4.6.1.4, the spread of invasive flora into the Proposed Development is theoretically possible, but the likelihood of seeds and/or viable plant tissue being transported inside the SAC boundary (from the Proposed Development specifically) is considered extremely low – for this to occur the same vehicles, machinery and/or personnel would need to enter both sites, and viable seeds/tissue transported in tyre treads and/or the soles of footwear. There is no scope for this eventuality as part of the Proposed Development.</p> <p>It has therefore been concluded that significant impacts to qualifying habitat (transition mires) will not occur as a result of the spread of invasive flora.</p>	No Impact.



Designated Site	Evaluation	Potential Impacts	Impact Assessment	Conclusion
<p>Poulaphouca Reservoir SPA (004063)</p> <p>Poulaphouca Reservoir pNHA (000731)</p>	<p>International Importance</p>	<p>Noise emissions, leading to disturbance of foraging greylag geese in adjacent agricultural grassland.</p> <p>Spread of invasive species, leading to a decrease in available foraging habitat for greylag geese.</p> <p>Foraging habitat loss – ca. 28 ha of agricultural grassland.</p>	<p>Considering the current and ongoing presence of sika deer and feral goats within the Proposed Development Site, and that the barriers preventing their ingress to the SAC (i.e. stock-proof fencing) are not proposed to change, the Proposed Development in the absence of mitigation does not represent any change in circumstance.</p> <p>Noise monitoring and modelling has confirmed that noise emissions will not increase by an appreciable margin, and nor will they exceed the 55 dB limit that is currently enforced, and below which impacts to waterfowl are unlikely to be impacted (Cutts, et al., 2013) (see Section 4.6.1.3).</p> <p>It has therefore been concluded that significant effects to foraging greylag geese will not occur as a result of noise emissions.</p> <p>As per Section 4.6.1.4, the spread of invasive flora from the Site is possible. Even in the event that the peripheral grassland surrounding the Site is an important foraging resource for greylag geese, the spread of invasive flora (e.g. Japanese knotweed scrub) will be slow. The resulting amount of unavailable habitat is predicted to be slight in the context of the abundance of similar habitat in the wider environment.</p> <p>Impacts are therefore permanent and negative, but of a negligible magnitude.</p> <p>The area of affected habitat (28 ha) represents ~0.027% of available foraging habitat (a maximum of approximately 104321 ha<sup>34</sup>) for greylag geese from Poulaphouca SPA.</p>	<p>No Impact.</p> <p>Permanent, negative impact. <b>Not significant.</b></p> <p>Permanent, negative impact.</p>

<sup>34</sup> This area is the area of a circle with a radius of 20 km from the Site, but with the combined areas of Wicklow Mountains and Dublin City within the circle subtracted. This metric is intended to be indicative, and is applied on the premise that the majority of land coverage in Ireland is grassland and tillage agriculture, but the upland peat landscape of Wicklow Mountains and the urban landscape of Dublin suburbs are notable exceptions.



Designated Site	Evaluation	Potential Impacts	Impact Assessment	Conclusion
		<p>Visual disturbance, leading to displacement of foraging greylag geese in adjacent agricultural grassland, and ensuing population declines.</p>	<p>The loss of habitat is a permanent, negative impact, but considering this in the context of the wider landscape, as described above, this impact is not considered significant.</p> <p>Considering:</p> <ul style="list-style-type: none"> <li>■ The abundance of suitable foraging habitat in the surrounding landscape;</li> <li>■ The size of the affected area relative to the available habitat (~0.027% as described above);</li> <li>■ The most recent peak count data for Poulaphouca Reservoir suggest that greylag geese are present in very small numbers (8 individuals);</li> <li>■ The quarry has been in operation since the 1950s and fauna have become acclimatised to conditions arising from Site operations;</li> <li>■ The Proposed Development is temporary in nature.</li> </ul> <p>it is considered that disturbance from the Proposed Development will not undermine the conservation objectives of the SPA.</p>	<p><b>Not significant.</b></p> <p>Temporary, negative impact.</p> <p><b>Not significant.</b></p>
<p>Wicklow Mountains SPA (004040)</p> <p>International Importance</p>		<p>Foraging habitat loss - ca. 28 ha of agricultural grassland.</p>	<p>Approximately 28 ha of agricultural grassland is proposed for removal. Considering the abundance of this habitat in the context of the surrounding environment, and considering also the distance of the Site from the SPA (beyond peregrine falcon's core foraging range), the loss of this quantity of agricultural grassland is not considered to represent a significant loss of foraging resource for SPA populations of peregrine falcon.</p>	<p>No Impact.</p>



**Table 4-13 – Potential Impacts on Habitats and Species deemed IEFs**

Ecological Feature	Evaluation	Potential Impacts	Impact Assessment	Conclusion
<b>Habitats – Outside Designated or Notable Sites</b>				
Mesotrophic Lakes FL4	Local Importance (Higher Value)	Habitat loss; Deterioration of condition, through pollution.	There will be no loss of this habitat – there are no proposals to interfere with any existing examples. The proposed earthworks have the potential to cause temporary deterioration of habitat condition, due to pollution (e.g. ingress of petrochemicals) or sedimentation.	Temporary, negative impact. <b>Significant at a local scale.</b>
Dry Meadows and Grassy Verges GS2	Local Importance (Higher Value)	Habitat loss	There will be ca. 2.7 ha of GS2/GS4 removed to make way for extraction activities.	Permanent, negative impact. <b>Significant at a local scale.</b>
Wet Grassland GS4				
Mosaic habitat				
Mixed Conifer Woodland WD3	Local Importance (Higher Value)	Habitat loss	There will be no loss of this habitat.	No impact
Scrub WS1	Local Importance (Higher Value)	Habitat loss	There will be ca. 0.19 ha of WS1 removed to make way for extraction activities.	Permanent, negative impact. <b>Significant at a local scale.</b>
Hedgerows WL1 and Treelines WL2	Local Importance (Higher Value)	Habitat loss	There will be ca. 2.75 km of WL1/WL2 removed to make way for extraction activities.	Permanent, negative impact. <b>Significant at a local scale.</b>
<b>Species</b>				
Breeding birds	Local Importance (Higher Value)	Disturbance during breeding season	Noise and dust emissions are predicted to be comparable to previous levels, indicating no change in circumstance in this regard.	Permanent, negative impact.



Ecological Feature	Evaluation	Potential Impacts	Impact Assessment	Conclusion
	Destruction of nests and/or direct kills.	<p>It can be reasonably assumed that hedgerows, treelines, scrub and woodland are at least partially utilised by breeding birds. Ground-nesting species are generally less common than arboreal-nesting species, but they are assumed to be present in this context in the absence of survey data, and given that desktop records of ground-nesting species have been found.</p> <p>The existing sand martin nesting site will be removed to facilitate the expansion of the quarry pit.</p> <p>The unmitigated removal of suitable nesting habitat poses the following risks to breeding birds:</p> <ul style="list-style-type: none"> <li>■ Disturbance of active nests;</li> <li>■ Destruction of active nests; and</li> <li>■ Direct mortality of individuals.</li> </ul> <p><b><u>Peregrine Falcon</u></b></p> <p>There are no proposals to interfere with the existing peregrine falcon nesting site (i.e. this entire area of wall will be retained). There is potential for disturbance during the quarrying of nearby walls, but according to Moore <i>et al.</i> (1997) peregrines are often found nesting on a wall that is actively being quarried. In the case of the Proposed Development, the wall in question is ca. 60 m high, and the birds that frequently return to the Site to nest have been doing so whilst the quarry has been in operation. It is therefore considered that the existing nesting site will not be disturbed so as to result in reduced breeding efficiency or abandonment of the nest.</p> <p>Over the lifetime of the Proposed Development, a new breeding population may take up residence in another location at the Site. Without the appropriate monitoring, these new nests will not be detected and will be at risk of disturbance, destruction and the occupants at risk of direct mortality, if the nests are in or near areas where expansion of the quarry pit is proposed.</p>	<p>Significant at a local scale.</p> <p>The loss of hedgerows, treelines, scrub and grassland represents the loss of suitable nesting habitat for a variety of birds.</p>	
Loss of breeding habitat		Permanent, negative impact.		



Ecological Feature	Evaluation	Potential Impacts	Impact Assessment	Conclusion
Overwintering birds (large waterfowl)	Local Importance (Higher Value)	Disturbance and deterrence from foraging.	<p>The abundance of agricultural grassland in the wider environment diminishes the significance of the loss of this habitat, but in the absence of site-specific data on ground-nesting birds, it is assumed that it is an important resource for notable species.</p> <p>Noise and dust emissions are predicted to be comparable to previous levels, indicating no change in circumstance in this regard. Visual disturbance is a possibility when works begin to extend laterally into adjacent grassland. The abundance of agricultural grassland in the wider environment diminishes the significance of this impact.</p>	<p><b>Significant at a local scale.</b></p> <p>Temporary, negative impact. <b>Not significant.</b></p>
		Loss of foraging habitat	<p>The loss of 28 ha of improved agricultural grassland represents a loss of suitable foraging habitat for some species of goose and swan, which are most likely associated with populations roosting in Poulaphouca Reservoir. However, in the context of the surrounding environment as a whole, in particular the abundance of this habitat in all directions, the footprint of the area in question is small. With this in mind, the likelihood of grassland at the Site being frequented by foraging waterfowl is considered to be very low. Furthermore, the abundance of this habitat as mentioned, means that the removal of this quantity of habitat does not represent a substantial loss, such that foraging resources are depleted in any meaningful way.</p> <p>The loss of habitat is a permanent, negative impact, but considering this in the context of the wider landscape, as described above, this impact is not considered significant.</p>	<p>Permanent, negative impact. <b>Not significant.</b></p>
Bats	Local Importance (Higher Value)	Disturbance/destruction of roosts and/or direct mortality.	<p>13 potential tree roosts have been recorded within the S.37L boundary. 12 of these are proposed for removal, with one proposed to be retained along the site periphery. 4 of the trees proposed for removal are deemed to have the potential to accommodate multiple bats.</p> <p>Destruction of roosts is a permanent impact, and given that all bats and their breeding/resting sites are protected under the WA, this impact is considered significant.</p>	<p>Permanent, negative impact. <b>Significant at a local scale.</b></p>



Ecological Feature	Evaluation	Potential Impacts	Impact Assessment	Conclusion
Badger	Local Importance (Higher Value)	Disturbance and/or destruction of setts.	<p>3 potential setts are within the S.37L boundary and will need to be removed to facilitate the Proposed Development. Two additional setts are within 150 m of the proposed new edge of the quarry pit (53 m and 93 m). According to NRA (2005), blasting or pile driving can cause disturbance to badger setts within 150 m. The remaining sett, to the north of the S.37L boundary, is not at risk of disturbance or destruction.</p> <p>Destruction of setts is a permanent impact, and given that badgers and their breeding/resting sites are protected under the WA, this impact is considered significant.</p>	Permanent, negative impact. <b>Significant at a local scale.</b>
Amphibians	Local Importance (Higher Value)	Loss/damage of breeding habitat and hibernacula.	<p>Suitable breeding sites (mesotrophic lakes – FL4) identified during surveys are not proposed for removal.</p> <p>The proposed earthworks have the potential to cause temporary deterioration of habitat condition, due to pollution (e.g. ingress of petrochemicals) or sedimentation.</p> <p>This has the potential to temporarily affect breeding success of amphibians, which are protected under the WA. This impact is considered significant.</p>	Temporary, negative impact. <b>Significant at a local scale.</b>
Reptiles	Local Importance (Higher Value)	Loss of suitable habitat, including hibernacula. Direct mortality.	<p>The proposed expansion of the quarry pit will not result in the net loss of suitable habitat. The fringing habitat at the upper reaches of quarry walls will be disturbed and lost temporarily, but it will ultimately re-establish itself at the new periphery of the quarry pit.</p> <p>The most notable risk is the disturbance and potential mortality of individuals during the winter, which may occur in the event of hibernacula being inadvertently excavated. This is a permanent impact, and is considered significant due to the species' protection under the WA.</p>	Permanent, negative impact. <b>Significant at a local scale.</b>
Terrestrial invertebrates	Local Importance (Higher Value)	Loss of suitable habitat.	<p>The peripheral habitats that will be lost in the expansion of the existing quarry pit are of limited value to terrestrial invertebrates. The notable species found in the desk study are mostly generalists, except for the small sawfly mining bee, which favours willow, but the presence of willow was not noted during the surveys.</p>	No Impact.



Ecological Feature	Evaluation	Potential Impacts	Impact Assessment	Conclusion
Other protected mammals	Local Importance (Higher Value)	Loss of suitable habitat, Disturbance and/or destruction of burrows or other breeding/resting places. Direct kills of individuals.	<p>A site suitable for a pine marten den was identified within the S.37L boundary, and would need to be destroyed to facilitate the Proposed Development.</p> <p>Hedgerows, treelines, scrub and woodland represent suitable commuting and foraging habitat for pygmy shrew, hedgehog, Irish hare, red squirrel and pine marten. Squirrel dreys were not noted, but they could be formed in advance of the commencement of works.</p> <p>The destruction of a den, drey or resting place of any of these species is a permanent impact, and is considered significant due to the species' protection under the WA.</p>	Permanent, negative impact. <b>Significant at a local scale.</b>
Invasive species	Local Importance (Higher Value)	Deterioration of habitat condition Spread of invasive species	<p>Invasive flora were not recorded in any of the surveys, but their introduction to the site is considered possible, given the nature of the proposed works.</p> <p>Grey squirrel and sika deer were observed onsite, which are legally-designated invasive species. Feral goats were also observed.</p> <p>The do-nothing approach in relation to plant/animal species listed in Schedule 3 of S.I. 477/2011 is considered an offence under Regulation 49 of the same S.I.</p> <p>The spread of invasive species is considered a permanent impact, and considering the legal weight associated with such an eventuality (as well as the ecological consequences), this impact is considered significant.</p>	Permanent, negative impact. <b>Significant at a local scale.</b>

## 4.7 MITIGATION, COMPENSATION AND ENHANCEMENT MEASURES REQUIRED

The objective of this section is to explore potential mitigation options, to any significant impacts deemed to have the potential to occur as a result of the Proposed Development. For each significant impact identified in Table 4-13, mitigation, compensation and/or enhancement is proposed.

Proposed measures have been considered with reference to the mitigation hierarchy (see Table 4-3). Following the implementation of mitigation, compensation and/or enhancement, each impact is re-assessed to ascertain whether residual impacts remain, and to what extent these are significant. The results of this exercise are presented in Table 4-14, and additional detail is provided in the following subsections.

### 4.7.1 STANDARD OPERATIONAL EMISSIONS MITIGATION

Standard operational emission mitigation measures in relation to the protection of water have been identified in Chapter 6 (Water). These measures are implemented as a matter of routine at the Site, and the Applicant will continue to ensure that this arrangement continues. The implementation of these measures will curtail the ingress of contaminants into areas of FL4, which will concurrently safeguard their condition for amphibians that potentially use these areas for breeding.

### 4.7.2 HABITATS

#### 4.7.2.1 Restoration Plan

A Restoration Plan (see Chapter 11 Landscape and Visual) has been prepared, which proposes the creation of new habitats following the cessation of the Proposed Development. The Restoration Plan includes for the creation of habitats within the existing quarry pit, which means that substantially larger areas will be created than what is required to be removed. The Restoration Plan also includes for the diversification of species assemblages (i.e. a range of native species will be selected to be added to the Site). Losses of hedgerow/treeline, scrub and grassland will be compensated beyond existing area coverage.

### 4.7.3 BREEDING BIRDS

#### 4.7.3.1 Survey

A breeding bird survey should be carried out during the breeding season (1 March to 31 August, inclusive), and the results submitted as further information. The report will include detailed proposals for the management of nesting peregrine falcon and sand martin. Recommendations in relation to other species will also be included as necessary, based on the survey findings.

#### 4.7.3.2 Mitigation and Compensation

The clearance of woody vegetation (hedgerows, treelines, scrub and woodland) and any sand martin nests will **not** occur during the breeding season. If this is unavoidable, an ecologist must survey all areas where works are proposed with nesting habitat, and check for active nests before operations commence. If present, species-specific avoidance zones will be implemented and adhered to until any chicks have fledged or the nest is deemed to be no longer in use.

The Restoration Plan (see Chapter 11 Landscape and Visual ) includes proposals to replace at least an equivalent quantity of woody habitat, such that there will be no net loss of breeding habitat.



## 4.7.4 BATS

### 4.7.4.1 Survey

It will be necessary to confirm whether the PRFs identified during the walkover survey are in fact utilised by roosting bats. In line with guidance from Collins (2023), PRF-M features should be subject to a total of 3 'inspection' surveys (explained below) between May and September, with at least two in the period May to August. These should be carried out as close as possible to the proposed works commencement time. PRF-I features should be subject to one inspection survey.

A **PRF inspection survey** involves the use of tree-climbing or access equipment such as ladders, MEWPs or scaffold towers to gain access to PRFs. This will allow a more detailed assessment of their likely suitability for bats and to look for more conclusive evidence of bats such as live or dead bats and droppings (staining or odour may also be present).

The Applicant will engage a suitably qualified and experienced ecologist to scope and carry out bat survey works.

These surveys will lead to one of two possible conclusions – a bat roost is present or it is not. The following subsection provides broad suggestions on appropriate actions in either case.

### 4.7.4.2 Mitigation and Compensation

If roosting bats are confirmed, then the destruction or disturbance of the roosts would be considered an offence under Section 23 (5)(d) of the Wildlife Acts. In this scenario, a derogation licence would be required via application to the National Parks and Wildlife Service.

An experienced bat ecologist may suggest the following measures, or a combination thereof.

- During inspection surveys, if PRFs are found not to be in use, these can be sealed off in order to prevent bats re-entering.
- Restrict clearance works to September/October, in order to avoid the maternity and hibernation seasons, when bats are most vulnerable.
- Carry out 'soft felling', such that tree limbs are cut, lowered gently to the ground and left grounded overnight to allow any bats to make their way out;
- After bats have evacuated the roost, affix limbs that contain roosting features to existing trees (with ratchet straps or similar), so that PRFs are retained within the Site boundary;
- Affix bat roosting boxes to existing trees that are proposed for retention. This will result in a positive net gain in PRFs within the Site; and
- Appoint a suitably-experienced bat ecologist to supervise the above works.

If, after sufficient surveys have been undertaken, roosting bats are not found onsite, then a derogation licence will not be required to facilitate clearance works. However, in order to offset the loss of potential roosting habitat, it is suggested that steps 4-6 above be implemented, so that PRFs are retained and supplemented within the Site boundary.

## 4.7.5 BADGER

### 4.7.5.1 Survey

Prior to the commencement of works, confirmatory badger surveys will be undertaken to determine if the potential setts identified are in use by badger, and if any additional badger setts are present in the vicinity of the Proposed Development.

#### **4.7.5.2 Mitigation and Compensation**

Unless authorised to do so, heavy machinery will not be permitted within 30 m of an active badger sett, although lighter machinery may be used within 20 m and light work such as vegetation clearance can generally be undertaken within 10 m of setts (NRA, 2005). Where avoidance measures and exclusion zones cannot be used, consultation with NPWS will be necessary to permit disturbance (noting that the NPWS does not presently issue derogation licences for badger sett disturbance or destruction, but can give authorisation and should be consulted). This assessment assumes that if authorisation is granted then appropriate mitigation and compensation will be provided.

During the breeding season (December to June inclusive), none of the above works shall be permitted within 50 m of any active setts. Blasting will not be permitted within 150 m of an active sett.

#### **4.7.6 REPTILES – COMMON LIZARD**

##### **4.7.6.1 Survey**

In advance of any winter works involving the potential loss of hibernacula for common lizard (areas with dead wood piles or loose rocks), a confirmatory survey will be carried out to determine the presence or absence of hibernating individuals. Surveys will involve the lifting of dead wood or stones, which may disturb the animals, and as such may require a derogation licence from the NPWS.

##### **4.7.6.2 Mitigation and Compensation**

If individuals are found and destruction of hibernacula is unavoidable, bespoke mitigation must be designed and agreed with NPWS. This will likely involve the creation of alternative hibernacula in unaffected alternative habitat, and subsequently the careful translocation of individuals.

If possible, works in such an area will be delayed until the spring, when common lizard has left the hibernaculum.

#### **4.7.7 PINE MARTEN, RED SQUIRREL AND OTHER PROTECTED MAMMALS**

##### **4.7.7.1 Survey**

As a precaution, at least one month prior to the commencement of works, all woody habitat proposed for removal will be searched for evidence of pine marten dens (up to 100 m from proposed works where access allows) and squirrel dreys (up to 50 m from proposed works where access allows). During this survey, evidence of the presence of hedgehog, Irish hare and pygmy shrew will also be noted.

##### **4.7.7.2 Mitigation and Compensation**

Where a den, drey, burrow or other breeding/resting place is considered a likelihood, an infrared camera trap should also be installed at a suitable location to enable confirmation of the occupancy of a protected mammal.

If an active den/drey/burrow is confirmed, and it needs to be removed to facilitate the Proposed Development, a derogation licence will be required from NPWS. This assessment assumes that if a licence is granted then appropriate mitigation and compensation will be provided, such as:

- the exclusion of a pine marten from its den in advance of works (achieved by blocking entrances to the den when the pine marten is not inside, in line with the steps as set out by the Vincent Wildlife Trust (2014)), and subsequently;
- the provision of an alternative den site (such as a man-made den box) in an undisturbed wooded habitat as near as possible to the original den site.

If removal is not necessary, an ecologist will advise on suitable exclusion zones and/or other measures to minimise disturbance of the den/drey/burrow whilst works are underway.

## 4.7.8 INVASIVE SPECIES (FLORA)

### 4.7.8.1 Monitoring for New Growth

The magnitude of soil disturbance during quarrying operations is such that botanical surveys are considered unnecessary in active areas. However, considering the proposed phased approach to quarrying and restoration, certain areas of the Site will be undisturbed whilst others are active. The Applicant may also choose to begin operations in a certain area, move somewhere else and then come back again. For this reason, it is proposed that whilst the Site is operational an ecologist (or other suitably-experienced professional with good floral ID skills) should carry out a survey at the Site every 3 years.

Once operations have ceased and restoration has been completed as per the Restoration Plan, the Site should be surveyed annually for a period of 5 years.

In the event of emergence of invasive species within the Site, an invasive species specialist should be consulted with a view to determining the most practical and effective method for eradicating the plant(s) from the Site. The approach will be species-specific and will be informed by their location onsite.

If, after 5 years, no further growth has occurred, follow-up surveys may conclude.

## 4.7.9 INVASIVE SPECIES (FAUNA)

Regulation 49 (1) of S.I. 477/2011 states:

*“Any person who breeds, reproduces or releases or allows or causes to disperse or escape from confinement, any animal which [...] is included in Part 2A or the Third Schedule [...] or [...] Part 2B or the Third Schedule [...] shall be guilty of an offence”.*

The Regulations therefore make it mandatory for a landowner to take action against the spread of scheduled invasive fauna, because failure to act can be interpreted as “allowing to disperse”.

‘Scheduled species’ in the context of this site refers to Sika deer and grey squirrel.

An invasive species specialist shall be consulted to determine the most effective way to deal with feral goats, Sika deer and grey squirrel. The NPWS should also be consulted.



**Table 4-14 – Mitigation, Compensation, Enhancement and Residual Impacts**

<b>Important Ecological Feature</b>	<b>Potential Effects Identified</b>	<b>Potential Impact and scale</b>	<b>Mitigation, Compensation and Enhancement</b>	<b>Residual Impacts</b>
<b>Habitats</b>				
Mesotrophic Lakes FL4	Deterioration of condition, through pollution.	Temporary, negative impact. <b>Significant at a local scale.</b>	Standard operational emissions mitigation (pollution control)	No impact
Dry Meadows and Grassy Verges GS2 Wet Grassland GS4 Mosaic habitat	Habitat loss	Permanent, negative impact. <b>Significant at a local scale.</b>	Habitat compensation and enhancement, as per Restoration Plan.	Temporary, negative impact. Not significant.
Scrub WS1	Habitat loss	Permanent, negative impact. <b>Significant at a local scale.</b>	Habitat compensation and enhancement, as per Restoration Plan.	Temporary, negative impact. Not significant.
Hedgerows WL1 and Treelines WL2	Habitat loss	Permanent, negative impact. <b>Significant at a local scale.</b>	Habitat compensation and enhancement, as per Restoration Plan.	Temporary, negative impact. Not significant.
<b>Species</b>				
Breeding birds	Disturbance during breeding season Destruction of nests and/or direct kills.	Permanent, negative impact. <b>Significant at a local scale.</b>	Breeding surveys and management plan, to be submitted as FI. Avoidance of suitable breeding habitat during breeding season.	No impact



Important Ecological Feature	Potential Effects Identified	Potential Impact and scale	Mitigation, Compensation and Enhancement	Residual Impacts
Breeding birds	Loss of breeding habitat	Permanent, negative impact. <b>Significant at a local scale.</b>	Creation of excess habitat suitable for breeding birds, as per Restoration Plan.	Temporary, negative impact. Not significant.
Bats	Disturbance/destruction of roosts and/or direct mortality.	Permanent, negative impact. <b>Significant at a local scale.</b>	Pre-works roost surveys. If present, exclusion from roost, temporal felling restrictions, soft felling.	Temporary, negative impact. Not significant.
Bats	Loss of roosting habitat	Permanent, negative impact. <b>Significant at a local scale.</b>	Creation of new roosting features and retention of felled PRFs.	No impact
Badger	Disturbance and/or destruction of setts. Direct mortality.	Permanent, negative impact. <b>Significant at a local scale.</b>	Pre-works surveys. If present, exclusion zones for breeding and non-breeding season. If the sett needs to be removed, consult NPWS and agree sensitive approach.	Temporary, negative impact. Not significant.
Amphibians	Loss/damage of breeding habitat.	Temporary, negative impact. <b>Significant at a local scale.</b>	Standard operational emissions mitigation (pollution control)	No impact
Reptiles	Loss of suitable habitat, including hibernacula. Direct mortality.	Permanent, negative impact. <b>Significant at a local scale.</b>	Pre-works surveys. If present, avoidance if possible. Otherwise, creation of alternative hibernacula and translocation of specimens under licence.	Temporary, negative impact. Not significant.



Important Ecological Feature	Potential Effects Identified	Potential Impact and scale	Mitigation, Compensation and Enhancement	Residual Impacts
Other protected mammals	Loss of suitable habitat, Disturbance and/or destruction of burrows or other breeding/resting places. Direct kills of individuals.	Permanent, negative impact. <b>Significant at a local scale.</b>	Pre-works surveys. If present, avoidance if possible. If not, sensitive management under licence.	Temporary, negative impact. Not significant.
Invasive species	Deterioration of habitat condition Spread of invasive species	Permanent, negative impact. <b>Significant at a local scale.</b>	Biosecurity measures. Surveys for invasive flora and consultation with invasive species specialist. Consultation with specialist and NPWS regarding appropriate response to invasive fauna.	Temporary, negative impact. Not significant.

## 4.8 CUMULATIVE EFFECTS

As well as considering the potential significant impacts from the Site in isolation, the assessment must also consider those effects in combination with those associated with other plans or projects. Whilst a project in isolation may not result in significant impacts, non-significant impacts from one project could act in combination with non-significant impacts of another project, resulting in significant impacts overall.

In this context, an important distinction to make is whether a project in isolation may result in effects that are not significant, or whether they will not result in any effects at all.

### Groundwater

Considering the lack of groundwater connectivity between the Site and Red Bog, Kildare SAC/pNHA as described, it is considered that there is no potential for any impacts to occur as a result of the Proposed Development. Groundwater cumulative effects are therefore screened out from further assessment.

### Noise and Dust

Given that there is connectivity for noise (Poulaphouca Reservoir SPA/pNHA) and dust emissions (Red Bog, Kildare SAC/pNHA), the potential for these to act in combination with other projects must be considered. The scope of this in-combination assessment has therefore considered other plans and projects with a radius of 500 m of the Site. A distance of 500 m was chosen based on the distance of noise monitoring station N1 from the edge of the existing quarry pit. N1 is the furthest monitoring station from the existing quarry pit, and noise impacts from the quarry at this location have been deemed to be insignificant (see Section 4.6.1.3). As such, 500 m has been chosen as a representative distance beyond which noise impacts did not occur. In addition, in accordance with Table 4-11, dust impacts are considered up to a distance of 50 m from the boundary of Red Bog, Kildare SAC.

### Habitat Loss

Given that habitat loss has been considered significant from the Proposed Development in isolation, and compensation is already proposed, cumulative assessment of this impact has been scoped out.

The cumulative assessment considered planning applications for which permission was granted within the last 5 years; 2019-2024 inclusive<sup>35</sup>. Refused applications and applications for retention were not included for consideration. Retention applications refer to unauthorised works that were already complete and therefore did not interact with the operations at the Site. Similarly, applications for which a decision has yet to be made have also been excluded. Please see Table 4-15. Sources for the search of planning applications included:

- Planning Enquiry System – Kildare County Council (<https://webgeo.kildarecoco.ie/planningenquiry> - Accessed 04 December 2023);

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<sup>35</sup> Five years is the standard duration of planning permission, from the date that permission is granted (OPR, 2022).

- Planning Enquiry System – Wicklow County Council (<https://www.eplanning.ie/WicklowCC> - Accessed 04 December 2023); and
- EIA Portal (<https://www.housing.gov.ie/planning/environmental-assessment/environmental-impact-assessment-eia/eia-portal> - Accessed 04 December 2023).

Kildare County Development Plan 2023-2029<sup>36</sup> and Wicklow County Development Plan 2022-2028<sup>37</sup> were also consulted.

**Table 4-15 - Planning Applications**

Planning Reference	Year Consented/Status	Location	Description of the proposal, and conclusion in respect of significant impacts in combination with the Proposed Development
23503 (Kildare)	Granted 12/09/2023	Red Bog, Blessington, Co. Kildare.  North side of L6038-1. Property entrance is ca. 50m from the boundary of Red Bog, Kildare SAC.	<p>The construction of a detached domestic shed (ca. 60 m<sup>2</sup>) and all associated site works.</p> <p>Given the recent grant of planning permission, it is not clear whether works have commenced. For the purpose of this assessment, it is assumed that they have.</p> <p>The proposed works area is at the rear (north) of an existing dwelling and is screened by hedging on all other sides.</p> <p>Whilst the property boundary is ca. 50 m from the SAC boundary, the proposed works area is ca. 290 m from the qualifying habitat (transition mire).</p> <p>Kildare County Council did not raise any objections on the grounds of potential adverse dust emissions.</p> <p>Considering all of the above circumstances, it is therefore considered that there is no credible possibility for this project to interact with the Proposed Development so as to result in significant impacts.</p> <p><b>No Significant Impacts</b></p>

#### 4.8.1 CONCLUSION – CUMULATIVE EFFECTS

Considering the information contained in this section, it is considered that the Proposed Development will not act in combination with other plans or projects so as to result in significant impacts to any of the IEFs identified.

<sup>36</sup> <https://kildarecoco.ie/AllServices/Planning/DevelopmentPlans/KildareCountyDevelopmentPlan2023-2029/> - Accessed 04 December 2023

<sup>37</sup> <https://www.wicklow.ie/Living/CDP2021> - Accessed 04 December 2023



## 4.9 SUMMARY AND CONCLUSIONS

The Proposed Development has been assessed for its potential to result in significant impacts to important ecological features (IEFs). The impact assessment has examined survey data gathered in 2019/2020, and compared it with survey data gathered recently (November 2023). It has also used aerial imagery and environmental emissions monitoring data to inform conclusions as to the types of impacts likely to occur.

It was found that significant impacts can potentially occur from unmitigated surface water emissions, habitat loss and the spread of invasive species. Dust and noise monitoring data indicates that these emissions will not result in significant impacts. Groundwater monitoring has indicated that there is no groundwater connectivity with the nearby Red Bog, Kildare SAC and pNHA. There is no surface water connectivity between the Site and anywhere offsite.

Mitigation, compensation and enhancement measures have been proposed in the form of pollution control, supplementary surveys, timed avoidance of sensitive areas where possible and the reinstatement of habitats in the form of a Restoration Plan. The implementation of these measures will result in the identified impacts being negated or reduced to an insignificant impact.

No other impacts were identified, from the Proposed Development alone, nor cumulatively with other plans or projects.

## 4.10 REFERENCES

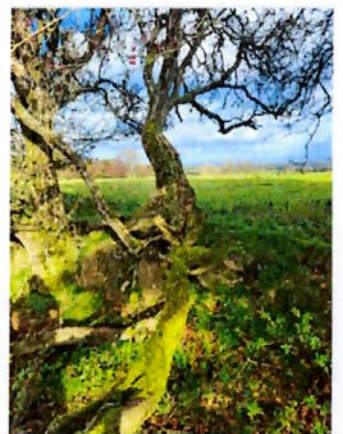

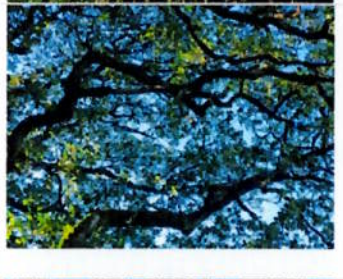
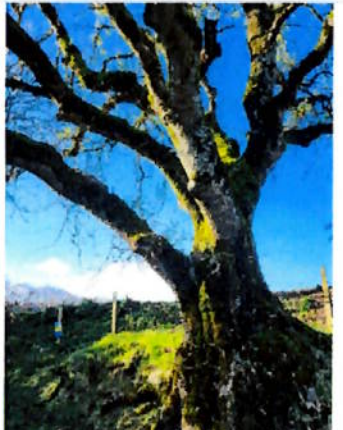
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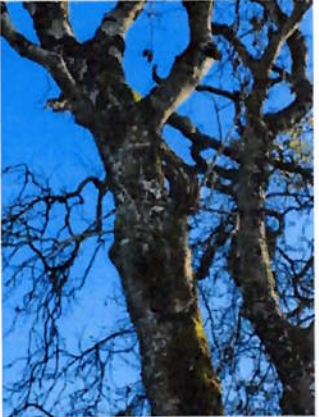

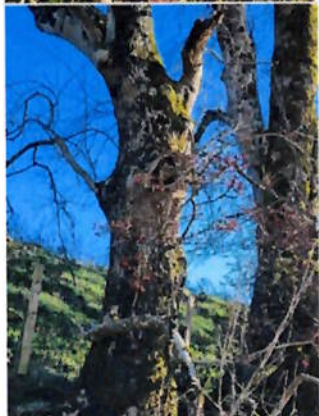
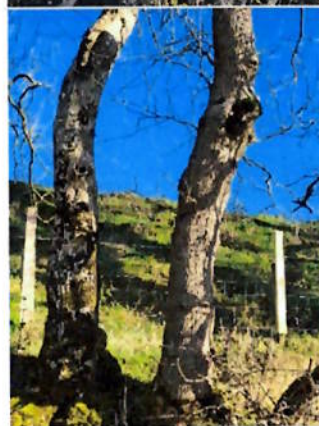
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# Appendix 4A

## BAT POTENTIAL ROOST FEATURES



PRF ID	Suitability (Collins, 2023)	Description	Photo
PRF01	PRF-I	<p>Broken horizontal limb with hollow - side entrance, Northern aspect.</p> <p>There is also a crack up the trunk of main tree, entrance at Southern aspect. Low potential, minimal drop zone</p>	
PRF02	PRF-I	<p>PRF located on a broken limb facing southwest 1 m from the main tree trunk approximately 10 m high.</p> <p>PRF facing the sky so unlikely to provide much shelter but could possibly be used as a day roost during the summer</p>	
PRF03	PRF-I	<p>Single large oak. PRF is located on a broken limb with a hollow extending towards trunk. It has a northern aspect and is 5 m high.</p> <p>A second PRF is located 4 m high in a knot hole with an eastern aspect. The PRF appears to extend into limb.</p>	
PRF04	PRF-M	<p>An ash tree with a vertical line of 3 knot holes facing west. The lowest PRF is 2 m high. However, it is unclear how deep the hole goes.</p> <p>A fourth knot hole was recorded to have a southeasterly aspect, 5 m high. It is located on a limb 1 m from the trunk.</p>	

PRF05	PRF-I	An ash tree with two broken limbs with a northerly aspect, 4 and 5 m high. The upper PRF is opens to the top so unlikely to be suitable however, a clear view was not possible from the ground.	
PRF06	PRF-I	An ash tree with a knot hole located 6m high with a westerly aspect.	
PRF07	PRF-I	An ash tree with a broken limb 2.5 m high with a northerly aspect. There is a large opening left behind the broken limb however, it is unclear how deep it goes.	
PRF08	PRF-I	Two ash trees with one opening each located 2.5m high with a westerly aspect.	

PRF09	PRF-I	<p>An ash tree with a knot hole situated 2 m high with a westerly aspect.</p>	
PRF10	PRF-I	<p>An ash tree with 3 knot holes situated 3m high with a westerly aspect.</p>	
PRF11	PRF-I	<p>An ash tree with a broken limb situated 2.5 m high with a northeasterly aspect. The PRF is located 3m from trunk where there is a hollow at the very end of the limb.</p> <p>A second PRF is found in a long knot hole situated 5 m high and 30 cm from the trunk with a northeasterly aspect.</p>	
PRF12	PRF-I	<p>An ash tree with a fracture from a limb break situated 8 m high with a north westerly aspect.</p> <p>There is a knot hole adjacent to this PRF.</p> <p>A third and fourth PRF is found at two openings in the trunk situated 3 m high with a westerly aspect.</p>	

<b>PRF13</b>	PRF-M	An ash tree with a large obvious opening and a south-westerly aspect.	
<b>PRF14</b>	PRF-M	An ash tree with a hollow trunk. Light passes through from the top to the bottom. However, numerous crevices are present in the cavity with potential to accommodate numerous bats.	
<b>PRF15</b>	PRF-M	An ash tree with a hollow trunk. There are two visible access points from the bottom with a south-westerly aspect. There seemed to be a large cavity inside with the potential to accommodate numerous bats.	

## References

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# 5

## LAND, SOILS & GEOLOGY



## 5 LAND, SOILS & GEOLOGY

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### 5.1 INTRODUCTION

This chapter of the Environmental Impact Assessment Report (EIAR) provides an assessment of potential impacts to, and the significance of effects on, soils, land and geology from the continuation and extension of quarrying activities at the Hudson Brothers Ltd Kildare quarry (the 'Site'). This EIAR is submitted in support of an application under Section 37L of the Planning and Development Act, as amended. Associated impacts to the water environment and ecology are addressed in separate chapters (Chapters 6.0 and 4.0, respectively).

The following assessment was prepared by Kit Pannell (BSc, MSc). Kit is a hydrogeologist with over 11 years experience, with focus on regulatory reporting within the mining industry.

#### 5.1.1 TECHNICAL SCOPE

The technical scope of this assessment is to consider the potential impacts and effects on soils, land and geology that can be reasonably foreseen as consequences of the normal construction and operation of the Proposed Development. This assessment considers the potential sources of change resulting from the Proposed Development activities detailed in the project description (Chapter 2.0).

The loss of agricultural soils will be considered, as will the potential geotechnical risks, impact on geologically important sites and land quality. Associated secondary potential impacts from changes to land quality on human health are also considered. It should be noted that this assessment does not, however, constitute a contaminated land risk assessment, a geotechnical/geohazard risk assessment, or detailed quantitative human health risk assessment.

The potential effects associated with hydrogeological and hydrological receptors are considered in Chapter 6.0 (Water), with reference to water quality in relation to land quality in this chapter. The effects of the Development on population and human health are addressed in Chapter 3.0 (Population & Human Health). Any secondary effects on ecology or biodiversity due to changes in land quality or habitat removal are considered in Chapter 4.0 (Ecology and Biodiversity).

#### 5.1.2 GEOGRAPHICAL AND TEMPORAL SCOPE

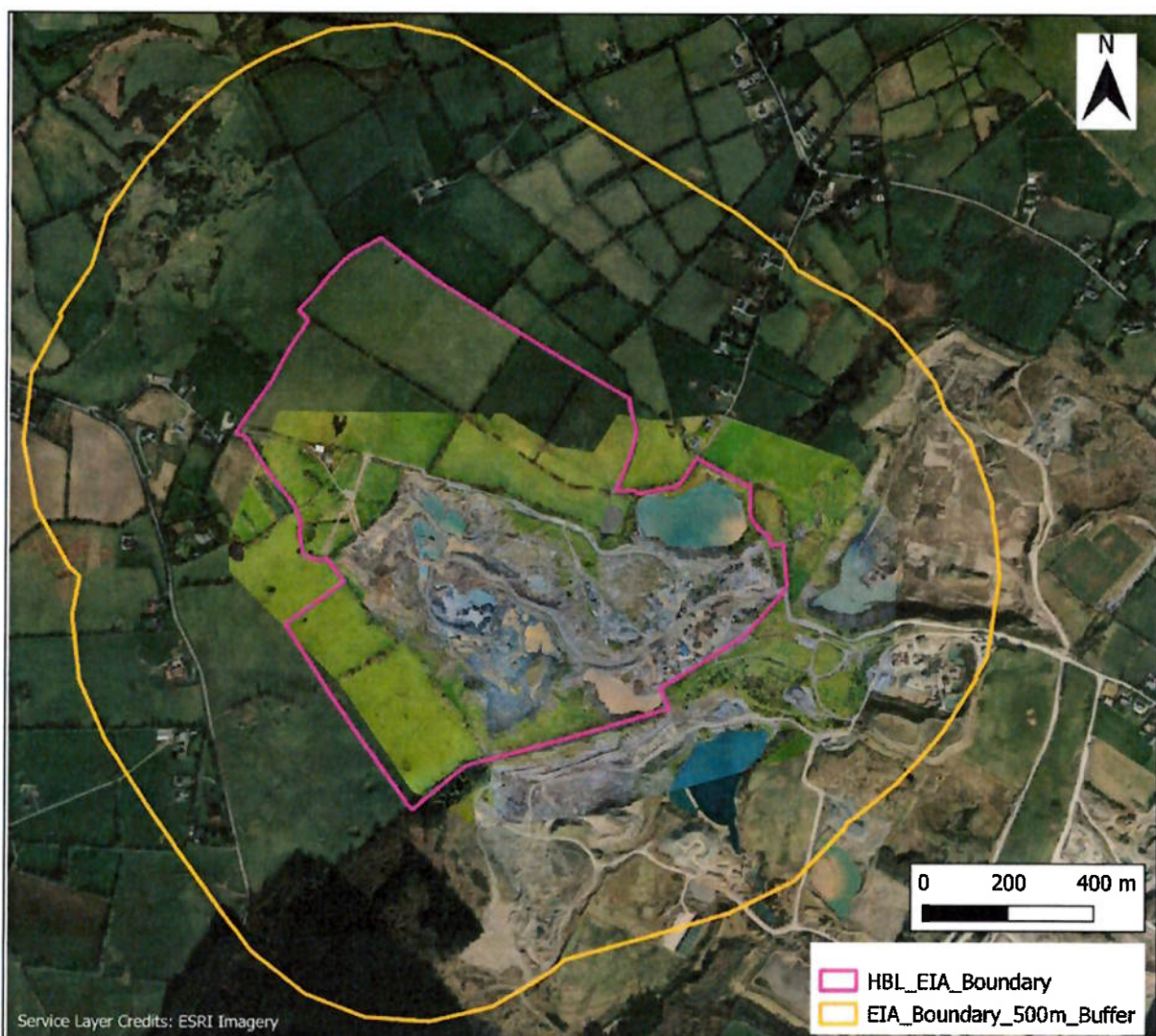
The geographical study area for the assessment covers the EIA boundary (encompassing the current Site and the Section 37L application boundary) (identified on Figure 5-1) and a buffer zone of 500 m from the EIA Site boundary, because most potential effects to geological and soil receptors are anticipated to occur within the Proposed Development footprint or immediately adjacent to it. The Proposed Development area (ca. 64.0 ha.) is entirely contained within the EIA project boundary (Site) that encloses 95.8 ha. In the context of the EIAR, the Site boundary contains lands which form the existing quarry area, the proposed extension areas and some areas which extend beyond the working areas. The Section 37L application (the Planning Application) boundary is shown on the drawing set which accompanies the planning application.

The temporal scope of this assessment covers the current quarrying activities on the Site and the extension of these permitted activities into the future, with the Section 37L application boundary. Given the phased nature of the extractive industry and the similarities between the construction and

operational phases of the Proposed Development, these will be considered together in this chapter as the overall operational phase.

Under the current programme of the Proposed Development, the extraction phase will last for 13 - 15 years, which will provide for fluctuations in market demands for the aggregate extracted from the Site. The duration of the extraction phase is therefore classified as 'medium-term' by the Environmental Protection Agency's (EPA) 2022 'Guidelines on the information to be contained in environmental impact assessment reports'. The Proposed Development totals a volume of ca. 8,708,900 m<sup>3</sup> (13,218,200 tonnes) of combined sands and gravels and rock. This is made up of ca. 5,544,900 m<sup>3</sup> (8,317,350 tonnes) of sands and gravels and ca. 1,960,345 m<sup>3</sup> (4,900,860 tonnes) of rock.

The restoration phase of the Proposed Development will follow the extraction phase and will be 2 - 3 years in duration, which is 'short-term' - those lasting from one to seven years (EPA, 2022).



**Figure 5-1 - Location of the Site (EIA Boundary) and 500 m Buffer**

## 5.2 LEGISLATIVE AND POLICY CONTEXT

This section addresses the legislation and guidance that has been considered when preparing this chapter, and key policy context relevant to soils, land and geology that has guided the focus of the assessment.

### 5.2.1 LEGISLATION

This assessment has been made with cognisance to relevant legislation, including but not limited to:

- European Union Directive 2011/92/EU as amended by Directive 2014/52/EU – these Directives required that certain private and public projects which are likely to have significant resultant environmental impacts are subject to a formalised Environmental Impact Assessment prior to their consent.
- European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (SI No. 296 of 2018) which amended the Planning and Development Act, 2000, and the Planning and Development Regulations, 2001. The 2014/52/EU Directive was transposed into Irish law through this Directive.
- The European Communities (Environmental Liability) Regulations 2008 (as amended) - These Regulations (SI 547/2008) transpose EU Directive 2004/35/CE on environmental liability with regard to the prevention and remedying of environmental damage. The purpose of these Regulations is to establish a framework of environmental liability based on the 'polluter-pays' principle, to prevent and remedy environmental damage. The Environmental Protection Agency (EPA) is designated as the competent authority for all aspects of these Regulations.
- The Environmental Protection Agency Act 1992 and the Protection of the Environment Act 2003 – which detail the requirements associated with general pollution control and activities that come under integrated pollution prevention and control.

### 5.2.2 RELEVANT POLICIES AND PLANS

The National Planning Framework (Project Ireland 2040) includes National Policy Objective 60 to “Conserve and enhance the rich qualities of natural and cultural heritage of Ireland in a manner appropriate to their significance”.

The Kildare County Development Plan 2023-2029 (KCDP) is the key strategy document which structures the proper planning and sustainable development of land-use across County Kildare over the six-year statutory period of the plan.

The KCDP acknowledges the potential environmental effects of the aggregate industry and importance of protecting surrounding residential and natural amenities. The KCDP also identifies that gravel resources are important to the general economy and provide a valuable source of employment in some areas of the county. There is an increasing demand for aggregates and that areas for extraction of aggregates and minerals are needed in the county. To address this the KCDP identifies that planning policies should be carefully constructed to avoid adverse effects on aggregate resources and related extractive industries. The KCDP notes that it is necessary to ensure that aggregates can be sourced without significantly damaging the landscape, environment, groundwater and aquifer sources, road network, heritage and / or residential amenities of the area. KCC has adopted policies and objectives within the development plan in relation to the protection of environs from adverse environmental impact from extractive industry.

Specific policies and objectives relating to the protection of the geological environment and land include the following:

- **RD P8** – (It is the policy of KCC to) Support and manage the appropriate future development of Kildare’s natural aggregate resources in appropriate locations to ensure adequate supplies are available to meet the future needs of the county and the region in line with the principles of sustainable development and environmental management and to require operators to appropriately manage extraction sites when extraction has ceased.
- **RD O42** – (It is the objective of KCC to) Ensure that development for aggregate extraction, processing and associated concrete production does not significantly impact the following:
  - *Special Areas of Conservation (SACs)*
  - *Special Protection Areas (SPAs)*
  - *Natural Heritage Areas (NHAs)*
  - *Other areas of importance for the conservation of flora and fauna.*
  - *Zones of Archaeological Potential.*
  - *The vicinity of a recorded monument.*
  - *Sensitive landscape areas as identified in Chapter 13 of this Plan.*
  - *Scenic views and prospects.*
  - *Protected Structures.*
  - *Established rights of way and walking routes.*
  - *Potential World Heritage Sites in Kildare on the UNESCO Tentative List, Ireland.*
- **RD O43** – (It is the objective of KCC to) Consult with the Geological Survey of Ireland (GSI), with regard to any developments likely to have an impact on sites of Geological Importance.
- **RD O44** – (It is the objective of KCC to) Require applications for mineral or other extraction to include (but not limited to):
  - *An Appropriate Assessment Screening where there is any potential for effects on a Natura 2000 site.*
  - *An Environmental Impact Assessment Report (EIAR).*
  - *An Ecological Impact Assessment may also be required for subthreshold developments to evaluate the existence of any protected species / habitats on site.*
- **RD O49** – (It is the objective of KCC to) Have regard to the following guidance documents (as may be amended, replaced, or supplemented) in the assessment of planning applications for quarries, ancillary services, restoration and after-use:
  - *Quarries and Ancillary Activities: Guidelines for Planning Authorities, DEHLG (2004). - Environmental Management Guidelines*
  - *Environmental Management in the Extractive Industry (Non-Scheduled Minerals), EPA (2006). - Archaeological Code of Practice between the DEHLG an ICF (2009).*
  - *Geological Heritage Guidelines for the Extractive Industry (2008).*

- *Wildlife, Habitats, and the Extractive Industry – Guidelines for the protection of biodiversity within the extractive industry, NPWS (2009).*
- **RD O50** – (It is the objective of KCC to) Ensure the satisfactory and sensitive re-instatement and/or re-use of disused quarries and extraction facilities, where active extraction use has ceased.

### 5.2.3 RELEVANT GUIDANCE

This assessment has been made with cognisance to relevant guidance and advice, including but not limited to:

- Relevant European Commission guidance – Guidance on the Preparation of the Environmental Impact Assessment Report (2017).
- The EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (May 2022) – which presents key topics of interest, high-level information on the interactions that should be considered in relation to EIA legislation, and overviews on the recommended approach to describing the baseline environment, completing impact assessments, describing effects, and addressing mitigation and monitoring.
- Department of Housing, Planning and Local Government. Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (August 2018).
- The National Roads Authority Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (2008) in relation to aspects to be considered and assessment approach (including relative receptor importance and cross discipline interactions).
- Institute of Geologists of Ireland. Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements (April 2013).
- The National Roads Authority Guidelines for the Creation, Implementation and Maintenance of an Environmental Monitoring Plan (undated) in relation to impact mitigation.
- CIRIA C741: Environmental Good Practice on Site (2015, Fourth Edition) in relation to source of impact and mitigation.
- The EPA guidelines on Environmental Management in the Extractive Industry (Non-Scheduled Minerals) (2006), for a more environmentally sustainable quarry & pit industrial sector, greater protection for the environment and human health.  
The CIRIA guidance Publication C532 Control of water pollution from construction sites: guidance for consultants and contractors (2001), which provides advice on environmental good practice for the control of water pollution arising from construction activities.

## 5.3 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

This section presents the method used to assess the impacts and effects of the Proposed Development on soils, land and geology, and to secondary associated human health receptors. It establishes the stages of the assessment, and the qualitative criteria used to assess impact magnitude and determine the level of effect significance.

### 5.3.1 QUALITATIVE ASSESSMENT METHOD

The assessment of potential effects has been undertaken using the qualitative assessment method outlined below, and is supported by the baseline condition information, desk-based information on land, soils and geology available from the Geological Survey of Ireland (GSI), the EPA and previous



ground investigations carried out onsite. The assessment follows a staged approach, which is summarised below:

- 1) Confirm baseline conditions – determine baseline and develop conceptual site model by consideration of available records and data sets, site reports and published information.
- 2) Confirm the key receptors and their value/importance, this may vary over time as new receptors are added (e.g. addition of residential housing).
- 3) Qualitatively characterise the magnitude of impacts on the receptors – describe what potential changes could occur to each receptor because of the Proposed Development, identify source-pathway receptor linkages, and assign the magnitudes of impact. This stage considers embedded design mitigation, good practice in construction environment management and pollution prevention.
- 4) Determine the effect significance of each potential impact on each sensitive receptor.
- 5) Consider the need for additional mitigation if it is considered necessary to reduce the magnitude of any impact and associated effect.
- 6) Assess the residual impact magnitude and residual effect significance after all mitigation is applied.
- 7) Identify any monitoring that may be required to measure the success of the mitigation measures.

Stages 1 and 2 have been completed using published literature, guidance and available information specific to the Proposed Development, which is presented in Chapter 2.0 of this EIAR. For the identification of receptor value/importance that completes Stage 2, and for the description of impact magnitude (Stage 3), a common framework of assessment criteria and terminology has been used based on the EPA’s Guidelines on the Information to be Contained in EIARs (EPA, 2022), with some modifications made to increase clarity. The descriptions for sensitivity of receptors are provided in Table 5-1 and the descriptions for magnitude of impact are provided in Table 5-2.

The potential for an impact to occur at a receptor has been determined using the understanding of the baseline environment and its properties and consideration of whether there is a feasible linkage between a source of impact and each receptor (i.e. a conceptual site model). This follows the method of preliminary risk assessment that is widely presented in some of the guidance documents listed in Section 5.2.

**Table 5-1 – Environmental value (sensitivity) and descriptions**

Value (sensitivity) of receptor / resource	Typical Description
High	High importance and rarity, national scale, and limited potential for substitution. For example: <ul style="list-style-type: none"> <li>- Global/European/National designation</li> <li>- Large volumes of nationally or locally important peat</li> <li>- Well drained and highly fertile soils</li> <li>- Proven economically extractable mineral resource</li> <li>- Human health.</li> </ul>

Medium	Medium or high importance and rarity, regional scale, limited potential for substitution. For example: <ul style="list-style-type: none"> <li>– Regionally important sites</li> <li>– Moderately drained and/or moderate fertility soils.</li> </ul>
Low	Low or medium importance and rarity, local scale. For example: <ul style="list-style-type: none"> <li>– Locally designated sites</li> <li>– Poorly drained and/or low fertility soils.</li> </ul>
Negligible	Very low importance and rarity, local scale.

**Table 5-2 – Magnitude of impact and descriptions**

Magnitude of impact (change)		Typical description
High	Adverse	<ul style="list-style-type: none"> <li>– Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements.</li> <li>– Significant harm to human health - death, disease, serious injury, genetic mutation, birth defects or the impairment of reproductive functions.</li> <li>– Significant harm to buildings/infrastructure/plant - Structural failure, substantial damage or substantial interference with any right of occupation.</li> </ul>
	Beneficial	<ul style="list-style-type: none"> <li>– Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality.</li> </ul>
Medium	Adverse	<ul style="list-style-type: none"> <li>– Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements.</li> </ul>
	Beneficial	<ul style="list-style-type: none"> <li>– Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.</li> </ul>
Low	Adverse	<ul style="list-style-type: none"> <li>– Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements.</li> </ul>
	Beneficial	<ul style="list-style-type: none"> <li>– Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring.</li> </ul>
Negligible	Adverse	<ul style="list-style-type: none"> <li>– Very minor loss or alteration to one or more characteristics, features or elements.</li> </ul>
	Beneficial	<ul style="list-style-type: none"> <li>– Very minor benefit to or positive addition of one or more characteristics, features or elements.</li> </ul>



The assessment of magnitude of impact considers whether the change that causes the impact is positive or negative, and whether the impact is direct or indirect, short, medium or long-term, temporary or permanent, and if it is reversible.

For the purposes of this assessment, a direct impact is one that occurs as a direct result of the Proposed Development and is likely to occur at or near the Proposed Development itself. Indirect impacts (or secondary/tertiary impacts) are those where a direct impact on one receptor has another knock-on impact on one or more other related receptor(s) (e.g. the Proposed Development results in a change in land quality, which then has an indirect impact on human health). Indirect impacts can occur within the study area or away from the Proposed Development.

For the purposes of this assessment, the following definitions of duration have been used:

- Temporary – effect likely to last less than 1 year without intervention (i.e. less than the construction phase);
- Short term – effect likely to last 1 to 7 years without intervention;
- Medium term – effect likely to last 7 to 15 years without intervention;
- Long term – effect likely to last 15 to 60 years without intervention; and
- Permanent – effect likely to last over 60 years without intervention.

An irreversible impact is defined as a change to the baseline that would not reverse itself naturally. Such impacts will usually be long-term and irreversible, such as the removal of the best and most versatile agricultural soils. A reversible impact is defined as a change to the baseline conditions that would reverse naturally once the source of the impact is exhausted or has stopped.

### 5.3.2 SIGNIFICANCE CRITERIA

The approach followed to derive effects significance from receptor value and magnitude of impacts (Stage 4) is shown in Table 5-3. Where Table 5-3 includes two significance categories, reasoning is provided in the topic chapter if a single significance category is reported. A description of the significance categories used is provided in Table 5-4.

**Table 5-3 – Significance Matrix**

Environmental Value (Sensitivity)	Magnitude of Impact (Degree of Change)			
	Negligible	Low	Medium	High
High	Slight	Slight or moderate	Moderate or large	Profound
Medium	Imperceptible or slight	Slight or moderate	Moderate	Large or profound
Low	Imperceptible	Slight	Slight	Slight or moderate
Negligible	Imperceptible	Imperceptible or slight	Imperceptible or slight	Slight

**Table 5-4 – Significance categories and typical descriptions**

Significance Category	Typical Description
Profound	An effect which obliterates sensitive characteristics.
Large	An effect which, by its character, magnitude, duration or intensity alters a significant proportion of a sensitive aspect of the environment.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Imperceptible	An effect capable of measurement but without significant consequences.

Residual adverse effects of ‘large’ or ‘profound’ significance are considered to be ‘significant’ for the purposes of this assessment.

If required following the assessment of the level of effect significance, additional mitigation measures will be presented that will be used to avoid, prevent, or reduce the magnitude of the potential impact (Stage 5). The significance of the effect considering the additional mitigation is then assessed (Stage 6) to give the residual effect significance. Any monitoring that will be required to measure the success of the mitigation is included (Stage 7) (see Section 5.11).

## 5.4 BASELINE CONDITIONS

This Section presents baseline information on soils, land use, land quality and geology. Information about the water environment (including hydrogeology) is included in Chapter 6.0.

### 5.4.1 LAND

The Site area is ca. 95.8 ha. and comprises lands which are currently used for quarrying activities (including extraction, plant and ancillary areas ca. 38.8 ha (0.388 km<sup>2</sup>)) and the proposed extension areas.

The S.37L Boundary covers ca. 64.0 ha. with lateral extent of the proposed voids of ca. 10.2 ha in the proposed western extraction area and ca. 21.2 ha. in the proposed northern extraction area. It is estimated that total of ca. 31.4 ha. of additional land will be disturbed in the course of this Proposed Development (combination of lateral void and formation of screening bunds). The majority of the Proposed Development relates to northern and western extension areas.

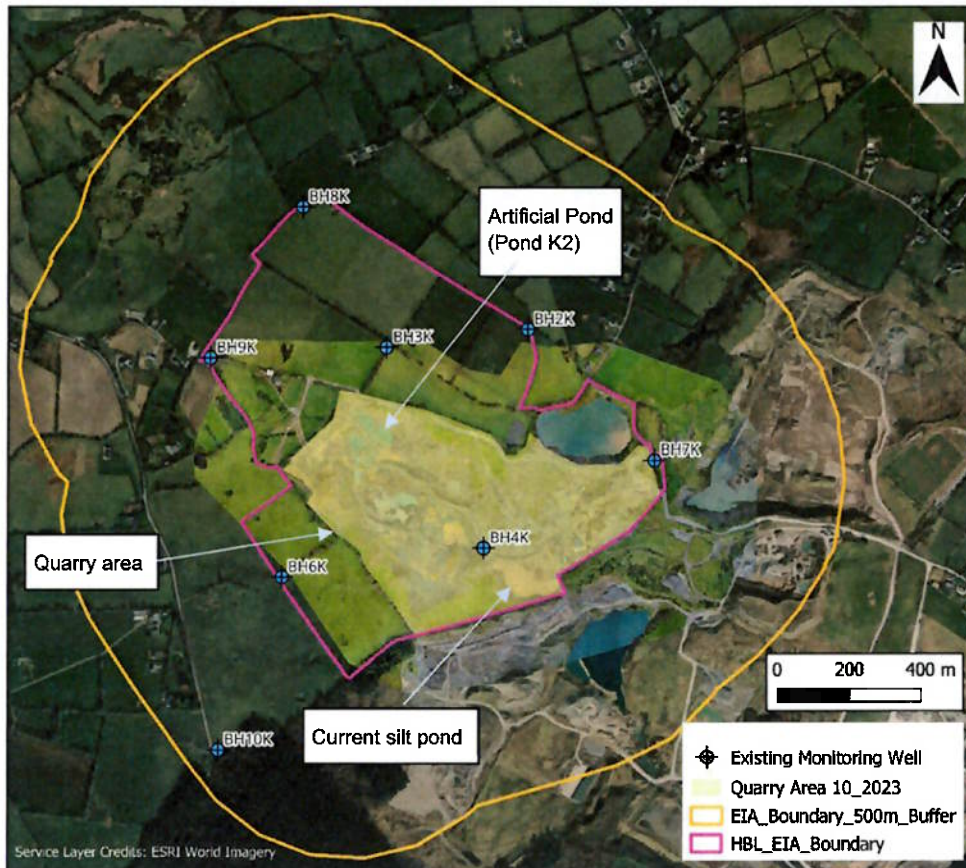
### 5.4.2 LAND USE

The current land usage is identified from March 2022 aerial photography for the lands surrounding the quarry and from the October 2023 survey for the quarry area. The merged aerial images are presented in Figure 5-2 below.

Three main land uses have been identified within the Site and the study area (500 m from the Site boundary). These are the agricultural and single-house residential lands, the R410 road and other quarry operations. The lands to the north and west can be characterised as rural in nature, with land

uses in the area being agricultural and single-house residential. Sheep rearing and grazing of cattle are the main activities in the area. The R410 road passes through the 500 m buffer to the southwest of the Site and the lands immediately to the east and south of the Site are largely taken up by quarrying activities operated by unrelated parties.

The Site consists of the agricultural lands within the boundary and the quarry area (including the processing plant, welfare facilities, artificial ponds for water use and the silt pond). The silt pond is constructed in an area where shallow sands and gravels had been extracted down to the competent bedrock.



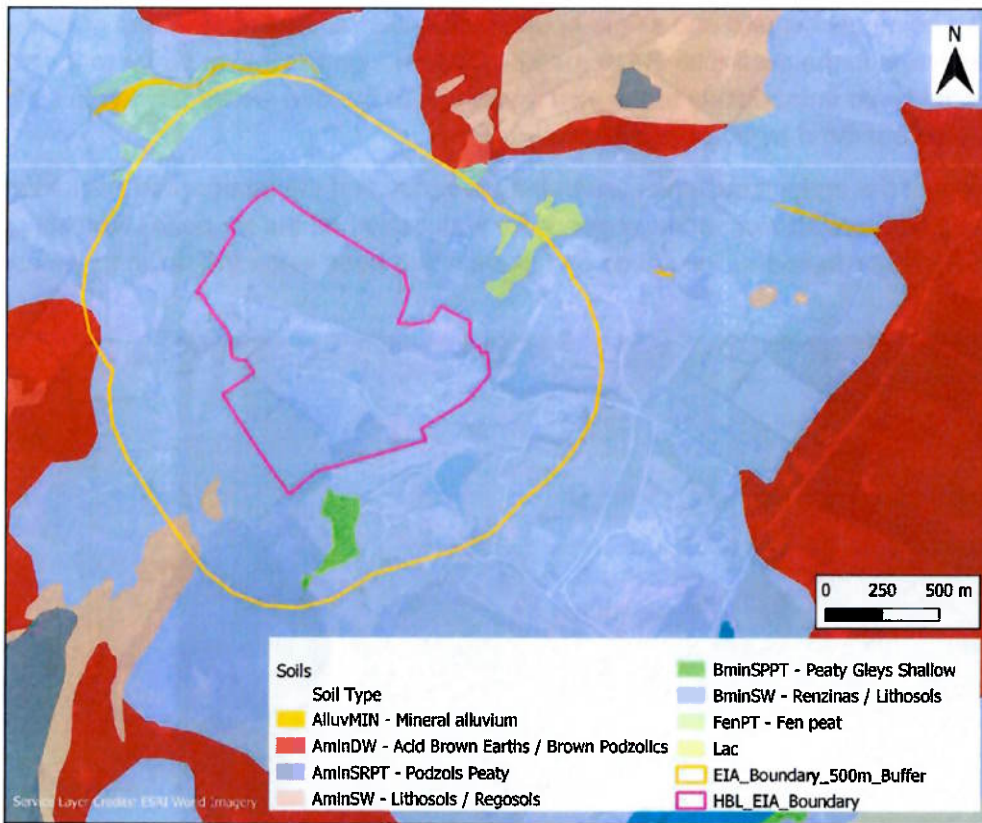
**Figure 5-2 - Land Use in March 2022 and October 2023 with 500 m Site Buffer**

### 5.4.3 SUPERFICIAL GEOLOGY (SOILS AND QUATERNARY SEDIMENTS)

There are limited soils remaining in-situ in the existing extraction area due to the ongoing extraction activities onsite. The process plant is composed of made ground (e.g. concrete pads, hard standing and concrete foundation areas for the plant area) overlying natural ground (soils). The areas north and west of the Site containing agricultural fields are underlain by natural ground.

A review of the EPA's online map viewer (EPA, 2023) maps soil cover over the entire Site area (Figure 5-3), however, as stated previously this soil map is more representative of the original baseline soils prior to activities within the extraction area.

Teagasc have designated the dominant soils underlying the Site as being shallow well drained mineral soils derived from mainly basic parent materials (BminSW).



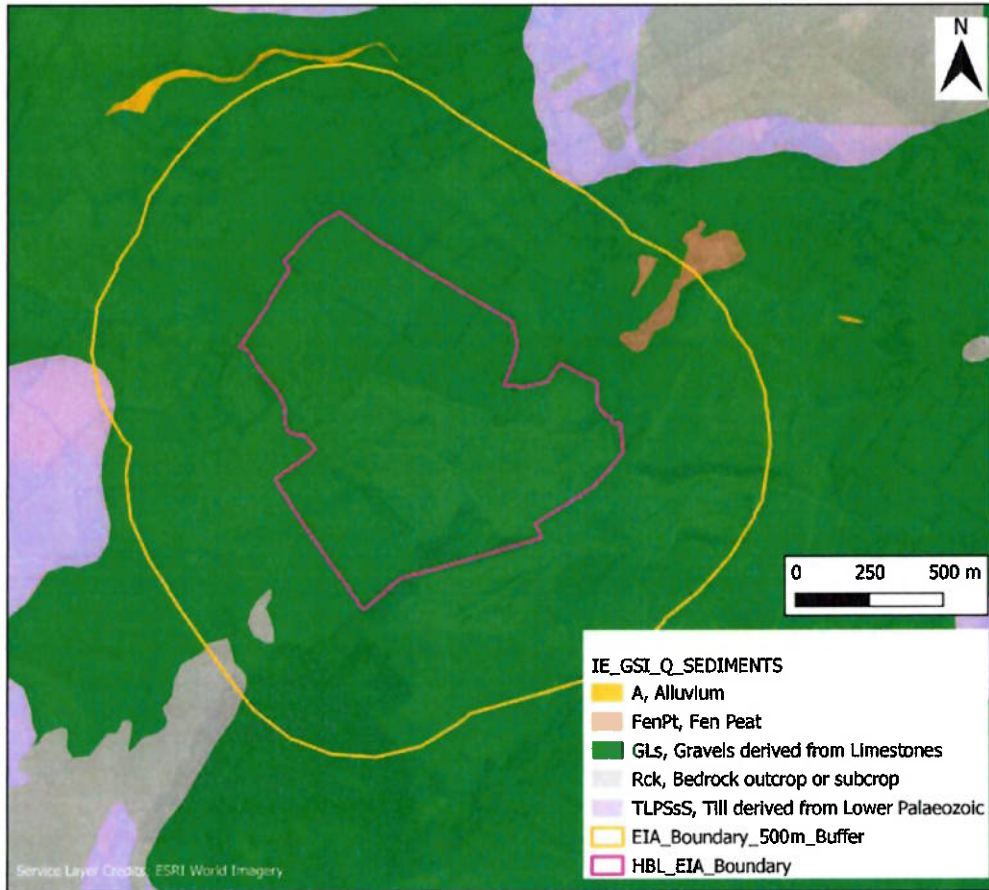
**Figure 5-3 - Soil Mapping (EPA, 2023) overlain on the March 2022 Aerial**

The Site and surrounding region are covered in glacial deposits (Figure 5-4) ranging from tills to glaciofluvial sands and gravels with glaciolacustrine deposits near the Poulaphouca Reservoir (GSI, 2003). The drift deposits across the Site were laid down during the Quaternary Period. The Quaternary Period is the final or upper period of the Cenozoic and marks the period of the Ice Age which began about 1.6 million years ago, and the postglacial period which extends to the present day. Most of the drift material was laid down directly from the margin of the ice sheets as they moved across the land or by glacial melt waters from the retreating ice sheets. Regionally there appears to be no pattern or trend to drift thickness.

The dominant sediment in the area is gravel; the largest accumulation of gravel occupies an area of ca. 7.5 km<sup>2</sup> on both sides of the Wicklow/Kildare county boundary, just north and west of Blessington (GSI, 2003). Glacial and fluvial deposits are generally thick in the area; deposits are commonly greater than 30 m in thickness and reach thicknesses of greater than 70 m in the Blessington and Curragh areas. North of Blessington a small area is covered by a chert-rich till, which is characterised by a clayey and silty matrix containing limestone and shale clasts. The glaciofluvial sand and gravel deposits to the north and west of the Poulaphouca Reservoir have thicknesses of up to 14 m and locally overlie gravely deposits. To the west, south and east of Blessington there are lower Palaeozoic tills characterised by a generally silty to silty sandy texture (GSI, 2003).

Locally, the Quaternary deposits across the Site increase in thickness to the southwest. Borehole logs from the Site indicate the drift thickness ranges from ca. 5 to 6 m (BH8K and BH2K

respectively) to the north of the Site to ca. 41 to 43.5 m (BH9K and BH6K) to the southwest of the Site. The borehole logs indicate that the Quaternary deposits consist of unsorted materials, comprising sand, gravel, clay and siltstone with some limestone clasts encountered to the northeast of the Site.



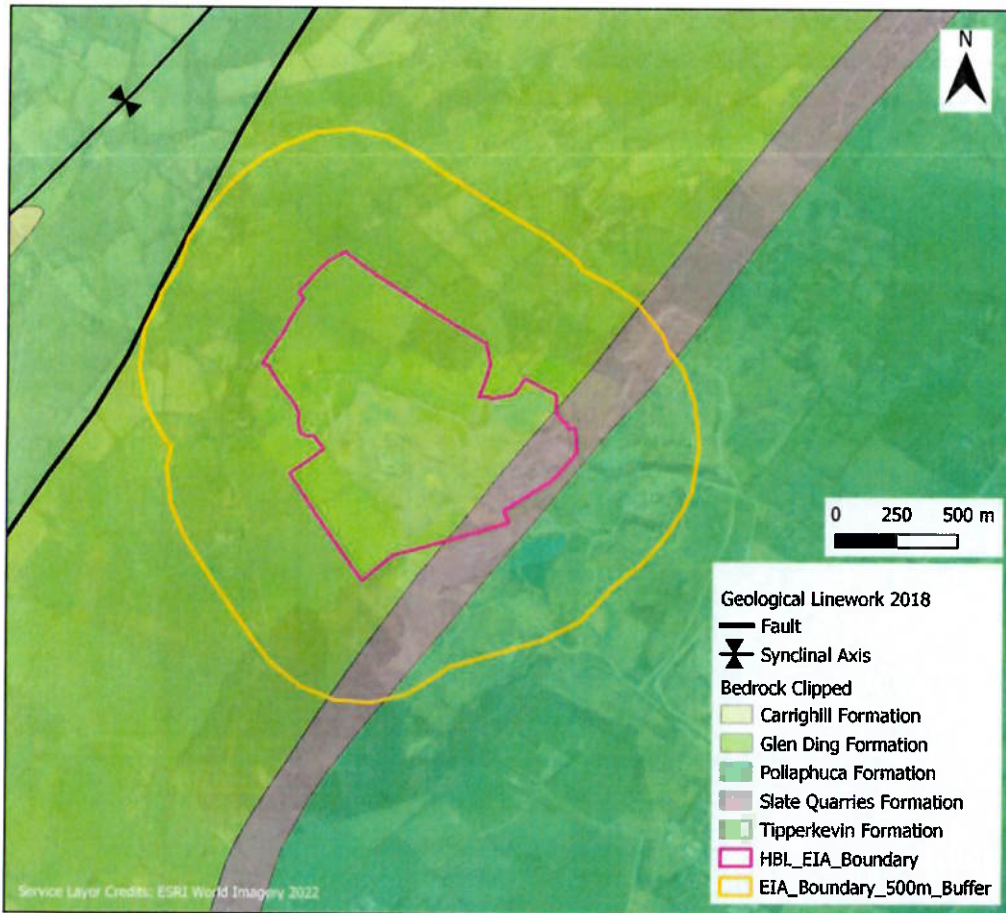
**Figure 5-4 - Underlying Quaternary Sediments (subsoil) (GSI, 2022) overlain on the March 2022 Aerial**

#### 5.4.4 BEDROCK GEOLOGY

The underlying bedrock geology in the region comprises of sedimentary rocks and low-grade metamorphic rocks of the Kilcullen Group. The Kilcullen Group rocks are Silurian in age and are divided into five formations, two of which are present underlying the Site (the Glen Ding Formation to the west and Slate Quarries Formation to the east) (Figure 5-5).

The Glen Ding Formation consists of dark green to grey greywackes and shales making up Bouma 'a' and 'b' turbidite units that are distinctly more chloritic and feldspathic than the other formations, probably accounting for a regional lithogeochemical contrast across the Slate Quarries Formation-Glen Ding Formation contact.

The Slate Quarries Formation consists of predominantly dark grey slate, with minor interbedded greywackes. The greywackes consist of Bouma "ae" turbidite units, with "a" intervals generally finer-grained than in the Pollaphuca Formation which occurs further to the east.

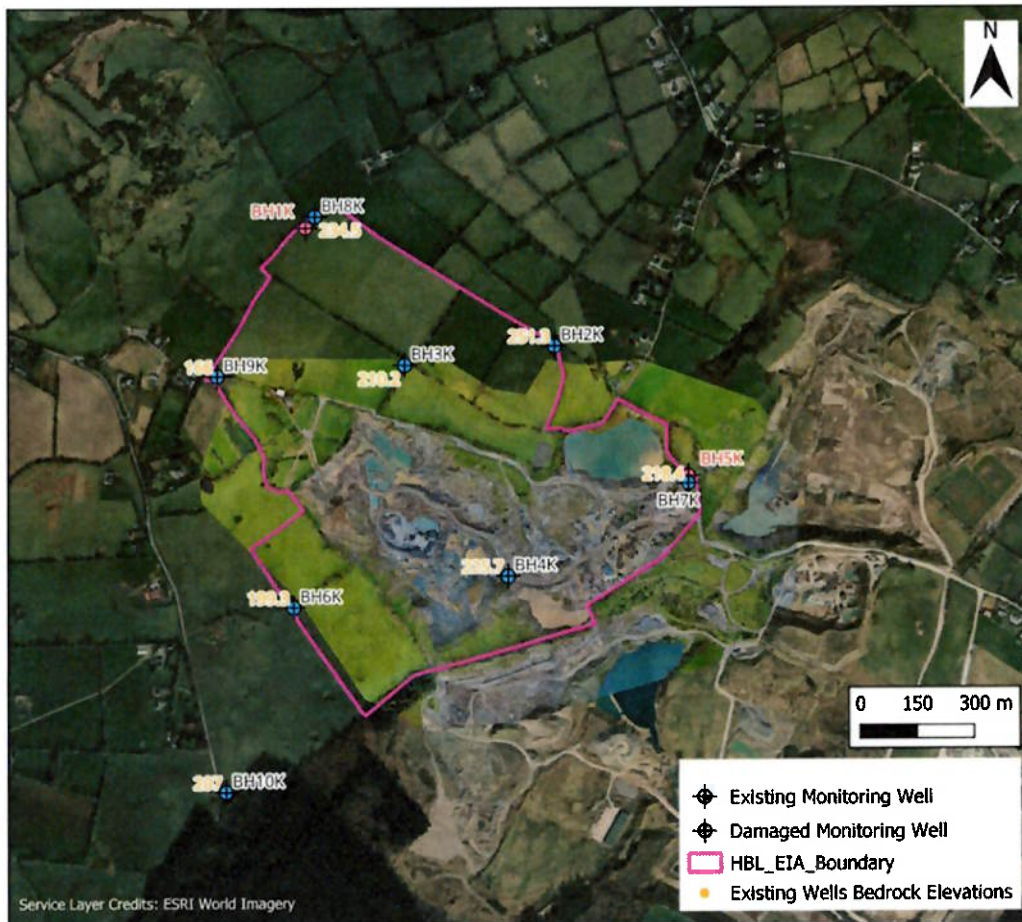


**Figure 5-5 - Underlying Bedrock Geology (GSI, 2022) overlain on the March 2022 Aerial**

#### 5.4.5 SITE INVESTIGATIONS

The locations of the existing and damaged monitoring wells are presented in Figure 5-6, alongside bedrock elevations (mAOD) for each existing well. The survey details of the monitoring wells are presented in Table 5-5 and a summary of the monitoring well findings is presented in Table 5-6, with individual borehole logs provided in Appendix 5A.

Two monitoring wells (BH9K and BH10K) were installed by HBL in early September 2023. BH9K encountered a 41 m thick sand and gravel unit, indicating that the Quaternary deposits are deeper than previously understood to the west of the Site. BH10K encountered 18 m of sands and gravels above bedrock, which indicates that the thickness of the Quaternary deposits is highly variable over short distances, as they are 43.5 m thick in BH6K, 510 m to the northeast. The previous EIAR assessment (Golder, 2020), stated that the bedrock interface appears to be relatively flat, possibly dipping gently eastwards. With the addition of BH9K and BH10K, the bedrock is shown to dip in a more westerly to south-westerly direction (from BH2K and BH4K), with an elevation change of 52 m over 885 m from BH2K to BH9K. The elevation of bedrock in BH7K (218.4 mAOD) confirms that the bedrock also dips to the east (as in the previous assessment), with BH4K forming the bedrock high within the centre of the Site. The overlying quaternary deposits thicken into neighbouring developments and towards the Poulaphouca Reservoir to the southeast.



**Figure 5-6 - HBL Monitoring Wells and Bedrock Elevations, (orange text, mAOD)**

**Table 5-5 – Monitoring Well Locations**

Monitoring Well ID	Easting (ITM)	Northing (ITM)	Ground Elevation (m AOD)
BH1K (damaged)	696604	717378	236.61
BH2K	697261	717082	257.27
BH3K	696870	717024	229.24
BH4K	697151	716476	229.19
BH5K (damaged)	697620	716749	263.48
BH6K	696591	716385	242.82
BH7K - replaces BH5K	697620	716729	263.38
BH8K - replaces BH1K	696629	717408	239.48
BH9K	696381	716986	205.53
BH10K	696424	715902	224.90

**Table 5-6 – Monitoring Well Construction and Lithology**

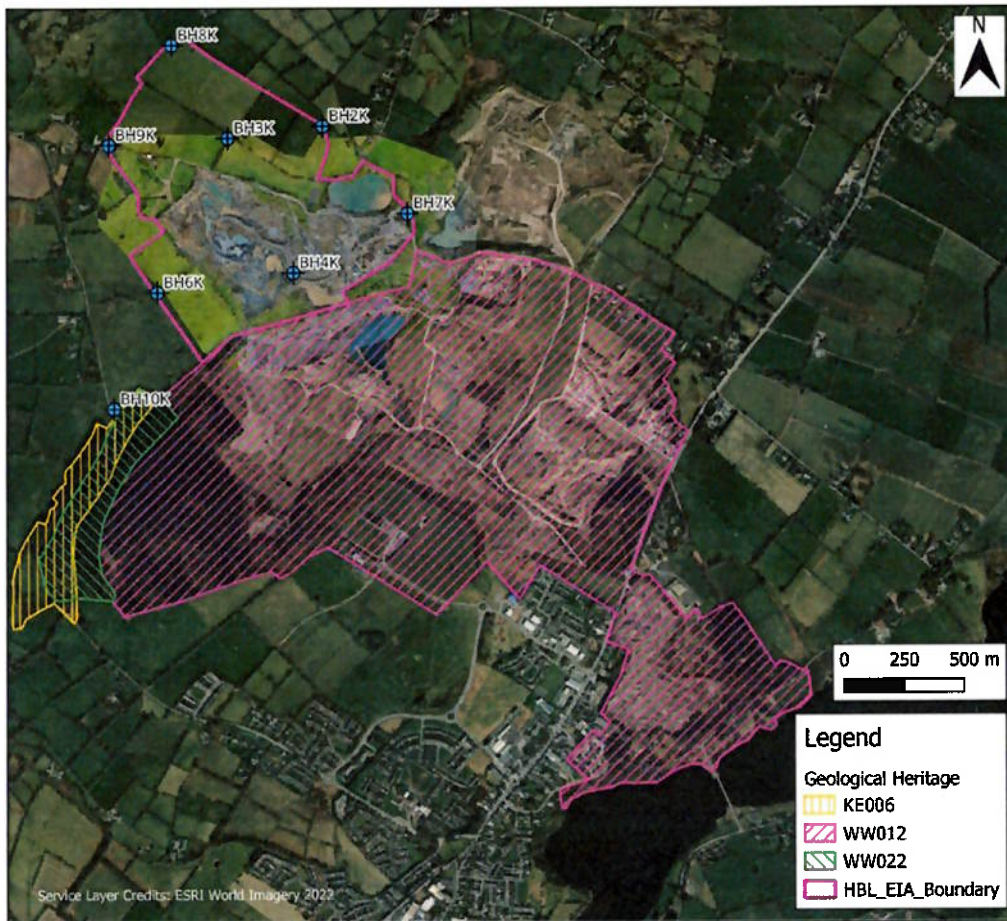
Monitoring Well ID	Monitoring Well Depth (m)	Depth to Base of Overburden (m)	First Water Strike Depth (m)	Lithology Interval Summary (m)
BH1K (damaged)	19.0	< 0.3	16.0	< 0.3 Overburden < 0.3 – 3.0 Sands & Gravels 3.0 – 19.0 Siltstone
BH2K	34.0	2.0	26.0	0.0 - 2.0 Overburden 2.0 - 6.0 Sands & Gravels 6.0 - 34.0 Greywacke
BH3K	19.0	3.0	12.6	0.0 - 3.0 Overburden 3.0 - 19.0 Sands & Gravels
BH4K	>100	3.5	20.6	0.0 - 3.5 Sands & Gravels 3.5 - 100.0 Greywacke
BH5K (damaged)	34.0	2.0	N/A	0.0 - 2.0 Overburden 2.0 - 32.8 Sands & Gravels 32.8 - 34.0 Greywacke
BH6K	59.0	2.0	51.0	0 - 2.0 Overburden 2.0 - 43.5 Sands & Gravels 43.50 - 59.0 Greywacke
BH7K	63.0	2.0	48.0	0 - 2.0 Overburden 2.0 - 45.0 Sands & Gravels 45.0 - 63.0 Greywacke
BH8K	25.5	< 0.3	18.5	< 0.3 Overburden < 0.3 - 5 Sands & Gravels 5.0 - 25.5 Siltstone
BH9K	61	0.5	52	0 - 0.5 Overburden 0.5 – 41 Sands & Gravels 41 – 61 Siltstone
BH10K	36	1.0	31	0 - 1.0 Overburden 1.0 - 18.0 Sands & Gravels 18.0 - 36.0 Greywacke

#### 5.4.6 GEOLOGICAL ASSETS AND HERITAGE

The GSI have published a list of Geological Heritage Sites in Co. Kildare, these sites are also reflected in the Kildare County Development Plan. The Site lies adjacent to 3 Geological Heritage Sites (1 in Kildare and 2 in Wicklow):

- KE006 Glen Ding: Dry Glacial Channel: A heavily wooded glacial spillway displaying a pronounced curved channel running approximately northeast-southwest along the R410 road for about 1.5 km,
- WW022 Glen Ding: Deep Channel formed by Meltwater Erosion: Glen Ding is up to 50 m deep and has a U-shaped profile, typical of meltwater channels,
- WW012 Blessington Delta: A large accumulation of sands and gravels which has been quarried extensively. A high, striking example of a dry sand and gravel ridge, standing proud of the surrounding landscape.

Further consideration has been given to the Blessington Delta as it is immediately adjacent to the Site along its southern boundary. The Blessington Delta, as defined by the GSI (2014) is approximately 5 km long and up to 1.5 km wide. It is described as a “large accumulation of sands and gravels, which has been quarried extensively”. It is noted by the GSI as a Geological Heritage site (site code WW012) and is proposed to be a Natural Heritage Area. However, a review of the National Parks and Wildlife Service (NPWS) data notes it is not yet formally classed as either a Natural Heritage Area or a proposed Natural Heritage Area. Figure 5-7 below shows the Blessington Delta in relation to the Site. The delta lies largely within neighbouring quarries and Glen Ding Woods to the south and does not extend within the Site boundary. Glen Ding is also noted as a Geological Heritage area, however, there is little exposure of this ‘dry glacial channel’ due to high levels of vegetation and the abundance of glacial sediment (GSI 2014).



**Figure 5-7 - Geological Heritage Sites (GSI 2023)**

### 5.4.7 GEOHAZARDS

A review of the GSI’s landslide susceptibility classification layer (GSI, 2023) indicates that the Site is in an area of low seismic activity and the importance of this attribute is considered to be Low.

The risk of instability of soils and/or bedrock which would result in a partial collapse of material can occur in a quarry environment.



Toe protection (catch-berms) is required to be put in place along the bottoms of non-active/production faces. Non-active/production faces should have their access blocked off with berms/bunds and relevant warning signage.

Silt from the water treatment plant is deposited in a silt pond located in the southern part of the quarry. The silt pond is located where the competent greywacke bedrock is at its shallowest (3.5 m deep at BH4K). The silt pond has been previously excavated down to the depth of the competent bedrock. The pond is allowed to overflow to the base of the quarry to help prevent against over-filling. The silt naturally lines the pond, preventing water from seeping into the surrounding superficial deposits or bedrock, which has the potential to lead to instability issues. The silt pond overflow is set within competent bedrock and the bedrock dips gently to the southeast, away from the quarry edge, helping to negate any instability risks.

**5.4.8 RADON**

The Radon Map for Ireland (EPA, 2023) indicates that the Site and study area are located in an area where 1 in 10 homes are estimated to be above the radon reference level. A High Radon Area is classified by the EPA as any area where it is predicted that 10% or more of homes will exceed the Reference Level of 200 becquerel per cubic metre (Bq/m3). As radon is a naturally occurring gas derived from the decay of uranium in rocks and soils which is geologically controlled, the radon reference level is unlikely to change as a result of the Proposed Development.

**5.5 SELECTION OF SENSITIVE RECEPTORS**

The Proposed Development involves extraction activities in northern and western extension areas. This will result in agricultural land loss in these areas, as these lands are currently used for agriculture, with grazing of sheep and cattle. However, the soils are thin so there is limited potential for farming in the areas.

The superficial deposits and bedrock geology beneath the Site are of medium/high economic value, both locally and regionally. The area is designated by Aggregate Potential Mapping (GSI, 2016) as being of 'Very High' crushed rock aggregate potential and therefore provides a valuable economic resource. Superficial and bedrock geology is removed with quarrying. However, the bedrock had no special designation and is common in the area.

Human receptors within the area (including workers onsite) have the potential to be impacted by the activities, which occur onsite and will be considered in the context of the human health receptor.

Geological heritage areas are mapped adjacent to the Site boundary. There is potential for the units associated with these sites to extend beyond the mapped boundary. There are both positive and negative impacts in exposing geologically important sequences. A positive indirect impact is that the sequence could be recorded and studied further, bolstering existing knowledge for a site deemed to be one of the most glacially important sites in Ireland. Uncovering the sequences could also be considered a negative indirect impact, as part of the sequence would be removed and lost during extraction activities. With further extraction of sands and gravels to the south, along the edge of the heritage area, there is potential for associated sequences to be exposed or removed.

**Table 5-7 – Soil, Land and Geology Receptors**

Receptor	Importance and Reasoning
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Land (agricultural land) including quality and use	Low (no designation, low potential and value for agricultural uses)
Topsoil at the Site and within the study area	Negligible (no designation, no rarity, local importance)
Superficial deposits (sands and gravels) at the Site and within the study area	Medium (no designation, no rarity, medium/high economic importance)
Bedrock Geology at the Site and within the study area	Medium (no designation, no rarity, medium/high economic importance)
Human health at the Site and within the study area	High (human health receptor). Related to effects on land quality and stability.
Geological Heritage	Low (Associated with sands and gravels in designated area outside of the Site)

## 5.6 CHARACTERISTICS OF THE DEVELOPMENT

The current plans for the Proposed Development involve two further stages of work:

- Operational Phase - extension of the northern and western extraction areas,
- Restoration Phase - restoration of the Site in-line with the proposed restoration plan.

The Proposed Development consists of further development of the quarry over additional extension areas that will progress laterally into the sands and gravels in the northern and western extraction areas. The proposed areas for extraction are presented in Chapter 2.0 (Project Description) and summarised in Figure 5-8.

It is proposed to extend the quarry void to the north by ca. 21.2 ha. (0.212 km<sup>2</sup>), with the base of the excavated area rising from 215 mAOD in the vicinity of BH3K to 252 mAOD in the vicinity of BH2K (which is 1 m above the highest measured groundwater level). This is consistent with the anticipated bedrock elevation and orientation. Only sand and gravel is proposed to be extracted in this area.

The proposed extraction will not extend all the way to the S.37L boundary and will stop at the topographical high with Safety/screening berms being constructed along the perimeter. This will screen the quarry visually and also screen operational noise from the residential properties to the east of this area. With the working face progressing in an easterly direction there will be reduced noise impact for the residential areas. This is discussed further in Chapter 9.0 Noise and Vibration.

It is proposed to extend the quarry void to the south by ca. 10.2 ha. (0.102 km<sup>2</sup>) at a final average depth of approximately 200 mAOD. The 200 mAOD is interpreted as the level below which there is increased risk of intercepting the confined aquifer within the greywacke bedrock in this area. Geophysics surveys in the proposed western extension area indicate that the bedrock is faulted, with the bedrock at a higher elevation to the south (ca. 220 mAOD) in comparison to that in the north (ca. 200 mAOD). The geophysics survey lines are presented in Appendix 5B. Sand and gravel and rock will be extracted from this area.



**Figure 5-8 - Proposed Extraction Areas**

Where extraction of greywacke in the centre of the quarry is already at 188 mAOD, there is to be some small lateral extension to level the area and continue extraction of the valuable rock to this depth. Extraction in this area to 188 mAOD has proven that there has been no interception of the confined aquifer.

The restoration proposal includes restoration to agricultural and amenity use upon completion of the proposed extraction. The proposal duration is 15-18 years to reflect the anticipated extraction of remaining reserve over 13 - 15 years, dependent on market conditions and a further 2 - 3 years for restoration.

Plant, ancillary storage tanks, infrastructure and buildings in the eastern area will be removed as part of the restoration works.

### 5.6.1 EMBEDDED MITIGATION

This initial assessment of the significance of potential effects resulting from the Proposed Development takes into consideration any embedded design and commonly undertaken good practice mitigation. The elements of the Proposed Development design and good working practices that reduce the potential for impacts to soils and geology include the following:

- Site operations are managed with relevant health and Safety legislation (Safety, Health & Welfare at Work Act (2005, as amended); and the Mines and Quarries Act (1965, as amended)) and

subsequent Quarries Regulations relating to safety health and safety, training, appropriate site management;

- Wheel wash for all vehicles exiting the quarry and sweeper cleaning the roads;
- Generators are maintained regularly, and any leakages are repaired;
- Refuelling and the addition of hydraulic oils or lubricants to vehicles or generators takes place on-site in designated areas. All plant and machinery are serviced regularly;
- Fencing is actively maintained at the Site to ensure that the risk of injury to civilians and livestock is minimised. The entrance gate is locked and controlled by management to prevent unauthorised access;
- Exposed edges in the quarry are protected with safety berms, which also act to screen the Proposed Development;
- Extraction to remain above the water table to avoid the requirement for dewatering; and
- Monitoring of groundwater and surface water quality. Groundwater and surface water quality monitoring will provide assessment of the effectiveness of the mitigation measures.

## 5.7 POTENTIAL EFFECTS

The main potential impacts and associated effects that will be considered and assessed in the following sections relate to:

- Activities or events that might have impacted land quality (e.g. leaks and spills from machinery or stored substances, or discharges),
- Change of land use/land take (i.e. loss of agricultural lands),
- Loss of superficial deposits and bedrock,
- Destabilisation and/or subsidence of unconsolidated soils, sub-soils or rock faces,
- Activities that have led to loss or exposure of geological sequences associated with heritage sites.

### 5.7.1 LAND QUALITY

Fuel and other substance leaks or spills from stored substances or from machinery/equipment used during the Proposed Development could affect the chemistry of the soil (where it is still in-situ) or could infiltrate to the groundwater through the sands and gravels or bedrock.

A review of the current water quality, (refer to Chapter 6.0 Water), indicates that groundwater quality is generally good. In this Chapter, the magnitudes associated with the potential impacts at the Site on land quality are assigned as *Negligible (adverse)* due to:

- Undetected concentrations of hydrocarbons in groundwater and surface water and presence of embedded mitigation to prevent contaminant migration,
- No off-site connectivity of surface water due to it being captured in Pond K2 for recycling and use on Site in processing and at the maintenance shed. Surface water is only lost to evaporation or infiltration into the sands and gravels / bedrock aquifers and not removed from the Site.
- Limited off-site connectivity of groundwater as quarrying has not encountered the significant water strikes associated with the water table within the bedrock. Isolated pockets of perched groundwater are likely to have been intercepted in the sands and gravels and bedrock.
- River Waterbody WFD Status for 2016-2021 ranging from Poor to Good for the River Morell. However, there were no exceedances of surface water EQS threshold values for inland waters and generally good quality of water in the River Morell observed.



As a result, the predicted potential impact on human health is also considered *Negligible*.

### 5.7.2 CHANGE OF LAND USE / LAND TAKE

Land in the immediate vicinity of the Site is either agricultural (pastoral) or used for quarrying. The Proposed Development within the Site boundary will see a void and associated disturbance (with bunding) to a total area of ca. 64.0 ha.

The Kildare County Development Plan 2023-2029 indicates that 113,765 ha of land is farmed in Kildare with a significant fall off in agricultural employment over the past number of years (Kildare County Council, 2023). The importance of this attribute is therefore considered to be *Low*.

The land that will be lost to the Proposed Development has low productivity and value as an agricultural resource. The resource potential of the underlying sands and gravels and rock for use in the extractive industry is high (beneficial). The magnitude of the impact on agricultural land use is therefore considered to be *Low (adverse)*.

### 5.7.3 LOSS OF SUPERFICIAL DEPOSITS AND BEDROCK

Topsoil within the Site boundary is used in the creation of screening berms and will be stored and reused during the restoration process to create biologically diverse habitats. The impact on the topsoil can therefore be considered temporary in nature and is *Low (adverse)*.

By the nature of quarrying, the sub-soil as sands and gravels and greywacke bedrock are removed, which results in a direct and irreversible impact on the Site. However, the removed material has a medium to high resource potential and will be used in future construction projects. The Proposed Development will remove ca. 13.2 Mt of sands and gravels and bedrock. The magnitude of the impact of the loss of sands and gravels and bedrock at the Site is considered to be *Medium (adverse)*.

The Site is in an area of high economic geology and the importance of this attribute is considered to be high (beneficial), in terms of provision of jobs to the local workforce and boost to the economy.

### 5.7.4 GEOTECHNICAL INSTABILITY

The Site is in an area of low seismic activity, however, the extraction activities will create new quarry faces within the sands and gravels and bedrock. Stability issues may arise during the excavation of the quarry faces and the construction and management of the silt ponds. Extraction activities have the potential to affect the health of workers if the ground were to become unstable. The importance of this attribute therefore is considered to be *Low* in terms of a land, soils and geology receptor and *High* in terms of human health.

The proposed extraction plan has incorporated industry standard for slope design, thus mitigating any potential geotechnical / geohazard risks and the existing quarry is well maintained and managed.

The management of the existing quarry faces, and silt pond will be carried out in accordance with the Health and Safety Authority's 'Guidelines to the Safety, Health and Welfare at Work (Quarries) Regulations 2020' (amended), and the recommendations of geotechnical appraisals carried out on site.

The stability of excavations and stockpiles will be monitored and managed, so the potential impact is predicated to be *Negligible (adverse)*.



### 5.7.5 GEOLOGICAL HERITAGE

The heritage sites to the south of the Site are associated with the Glen Ding Channels and Blessington Delta, comprised of deep sequences of Quaternary deposits. The Proposed Development will not extend into the Blessington Delta or Glen Ding Channels designated areas.

There have not been any indirect impacts on the heritage sites with uncovering of associated sequences within the Site boundary to date. The western extraction area will expose geological units over ca. 205 m along the edge of the Blessington Delta heritage area. The anticipated thickness of quaternary deposits in this area is <15 m, so the potential impact is predicated to be *Negligible (adverse)*.

With future progression of quarrying activities, exposed faces are to be assessed for potential heritage site sequences.

### 5.7.6 EVALUATION OF EFFECTS

The evaluation of effects takes into account the predicted impact magnitude combined with receptor sensitivity. The evaluation of effect significance for each of the receptors (taking account of embedded mitigation) discussed above is presented in Table 5-8. Table 5-8 only includes those sources of impact that may result in a low to high initial impact magnitude. Land quality, human health, geohazards and geological heritage are therefore not included in the table.

**Table 5-8 – Evaluation of Impacts and their Effect Significance taking into account embedded mitigation**

Receptor	Sensitivity	Source of Impact / Description of Change	Impact Magnitude	Level of Effect
Land (agricultural) use	Low	Change in land use by the advancement of the extraction area	Low	Imperceptible
Superficial deposits (sub-soils) at the Site and within the Study Area	Medium	Removal of superficial deposits at the Site	Medium	Moderate
Bedrock Geology at the Site and within the study area	Medium	Removal of bedrock at the Site	Medium	Moderate

### 5.8 MITIGATION MEASURES

Additional mitigation and/or management is intended to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment. The initial assessment of potential effects (considering embedded mitigation) has not identified any significant adverse effects. However, to further mitigate the initial effects associated with land, soils and geology, the following additional mitigation will take place:



- Future extraction is to remain above the 200 mAOD elevation or above the anticipated depth of the bedrock aquifer, for areas where borehole records confirm this depth. Note that this will require drilling additional boreholes to reduce uncertainties;
- Geotechnical appraisals to be carried out on site to assess the stability of the worked faces and silt pond;
- Future design include moving the silt pond into the base of the quarry. This will prevent the need to have controlled overflow of the silt pond over the quarry walls. There is also a larger area available for the silt pond to be constructed within the base of the quarry; and
- Soils will be reinstated on the Site during restoration works, and where possible, bedrock will be dressed with soil cover. Restored areas will be planted with native grassland species for grazing.

## 5.9 RESIDUAL EFFECTS

A summary of the sources of impact, predicted magnitudes of residual impact (accounting for embedded mitigation and additional mitigation) and subsequent residual effect significance is presented in Table 5-9.

In all cases the residual level of effect is no greater than *Slight*.

**Table 5-9 – Evaluation of Impacts and their Effect Significance**

Receptor	Source of Impact - Description of Change	Duration	Impact Magnitude / Level of Effect	Summary of Mitigation (embedded and additional)	Residual Impact Magnitude / Level of Effect
Land (agricultural) use	Change in land use by the advancement of the extraction area	Permanent, Irreversible	Low / Imperceptible	Soils will be reinstated on the Site during restoration works with native grassland for grazing.	Low / Imperceptible
Superficial deposits (sub-soils) at the Site and within the Study Area	Removal of superficial deposits at the Site	Permanent, Irreversible	Medium / Moderate	Soils will be reinstated on the Site during restoration works.	Low / Slight
Bedrock Geology at the Site and within the study area	Removal of bedrock at the Site	Permanent, Irreversible	Medium / Moderate	Soils will be reinstated on the Site during restoration works. Bedrock will be dressed with soil cover.	Low / Slight

## 5.10 CUMULATIVE EFFECTS

As a result of the embedded and additional mitigation measures at the Site, it is considered that any impacts on soils and geology will not contribute to cumulative impacts associated with the various quarrying activities located in the vicinity of the Site. Such local activities include sites directly adjacent to the east and southeast of the Site, and others located over a number of kilometres to the north of the Site, which follow the large glacial deposits laid down during the Quaternary Period.



The Proposed Development will extend activities into agricultural lands to the north and the south. However, given the size and direction of this extension, it is considered that there will be no cumulative land take issues with other developments that may extend their sites into the agricultural lands.

## **5.11 MONITORING**

The ongoing monitoring programme at the Site will include regular geotechnical stability surveys of the quarry faces and the silt pond. Monitoring of the groundwater quality in monitoring wells and surface water quality within artificial ponds will be conducted in line with the requirements of the Site's environmental programme. Drone surveys will be conducted when necessary to determine whether quarried depths and extents are consistent with those planned and approved.



## 5.12 REFERENCES

Blessington Gravel Aquifer, Groundwater Source Protection Report, Geological Survey of Ireland, March 2003.

Geological Survey of Ireland website, [www.gsi.ie](http://www.gsi.ie); online mapping services. Accessed October 2023.

Golder 2020. Revised EIAR and NTS

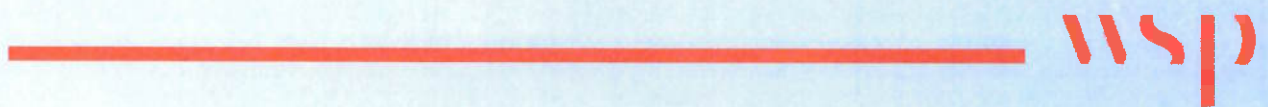
Guidelines to the Safety, Health and Welfare at Work (Quarries) Regulations 2020. Health and Safety Authority.

Kildare County Development Plan 2023-2029, 2023.

Teagasc Soils website, <http://gis.teagasc.ie/soils/downloads.php>. Accessed November 2023.

# Appendix 5A

## **BORELOGS**





Client :  
**Hudson Brothers Ltd**

Hole No.  
**BH1K**

Site : Hudson Quarry, Philipstown and Redbog, Co. Kildare

Project : Hudson Bros. Planning and EIAR

Project No : 19115799

Equipment & Methods : Unknown

Contractor :  
Date Started : 18/01/2006      Completed : 18/01/2006  
Logged by : GB

Ground Level (mAOD) :  
Co-ordinates : E 696604.2 N 717377.9

WATER/ PROGRESS	INSTALLATION /BACKFILL	SPT Results		SAMPLES		STRATA RECORD			
		SPT 'N'	Sample Type	PID	Level (mAOD)	Legend	Depth (Thickness) m	Description	
							3.00	Dark brown slightly moist sandy gravelly TOPSOIL	
							3.00	Grey argillaceous SILTSTONE	
							6.00	Very weathered dark grey argillaceous SILTSTONE	
							10.00	Weathered dark grey SILTSTONE	
							19.00	Groundwater encountered at 16m bgl.	
								End of Hole at 19.00m	

Remarks :  
Bedrock at 3m bgl.  
Groundwater encountered at 16m bgl.  
End of hole at 19m bgl.  
Installation: 0 - 11m bgl plain, 11 - 19m bgl slots.

Checked By:  
BB

Scale 1:100



**GOLDER**

Client :

Hudson Brothers Ltd

Hole No.

**BH2K**

Site : Hudson Quarry, Philipstown and Redbog, Co. Kildare

Project : Hudson Bros. Planning and EIAR

Project No : 19115799

Equipment & Methods : Unknown

Contractor :

Date Started : 16/01/2006

Completed : 16/01/2006

Logged by : GB

Ground Level (mAOD) : 257.27

Co-ordinates : E 697261.3 N 717081.8

WATER/ PROGRESS	INSTALLATION /BACKFILL	SPT Results		SAMPLES		STRATA RECORD			
		SPT 'N'	Sample Type	PID	Level (mAOD)	Legend	Depth (Thickness) m	Description	
					255.27		(2.00) 2.00	Light brown damp sandy CLAY	
					251.27		(4.00) 6.00	Grey mottled brown sandy gravelly CLAY	
							(28.00)	Light grey shattered GREYWACKE. Angular to sub-angular clasts, more rounded with depth.	

Remarks :  
 Bedrock at 6m bgl.  
 Groundwater encountered at 26m bgl.  
 End of hole at 34m bgl.  
 Installation: 0 - 24m bgl plain, 24 - 34m bgl slots.

Checked By:  
BB

Scale 1:100

GOLDER  
Apr 2006



**GOLDER**

Client :

Hudson Brothers Ltd

Hole No.

**BH2K**

Site : Hudson Quarry, Philipstown and Redbog, Co. Kildare

Project : Hudson Bros. Planning and EIAR

Project No : 19115799

Equipment & Methods : Unknown

Contractor :

Date Started : 16/01/2006

Completed : 16/01/2006

Ground Level (mAOD) : 257.27

Co-ordinates : E 697261.3 N 717081.8

Logged by : GB

WATER/ PROGRESS	INSTALLATION /BACKFILL	SPT Results		SAMPLES		STRATA RECORD			
		SPT 'N'	Sample Type	PID	Level (mAOD)	Legend	Depth (Thickness) m	Description	
									Light grey shattered GREYWACKE. Angular to sub-angular clasts, more rounded with depth.
					223.27		34.00	Groundwater encountered at 26m bgl.	
								End of Hole at 34.00m	

Remarks :  
 Bedrock at 6m bgl.  
 Groundwater encountered at 26m bgl.  
 End of hole at 34m bgl.  
 Installation: 0 - 24m bgl plain, 24 - 34m bgl slots.

Checked By:  
BB

Scale 1:100

ONWEN-02010  
April 2006



**GOLDER**

Client :

Hudson Brothers Ltd

Hole No.

**BH3K**

Site : Hudson Quarry, Philipstown and Redbog, Co. Kildare

Project : Hudson Bros. Planning and EIAR

Project No : 19115799

Equipment & Methods : Unknown

Contractor :

Date Started : 19/01/2006

Completed : 19/01/2006

Ground Level (mAOD) : 229.24

Co-ordinates : E 696870.1 N 717023.9

Logged by : GB

WATER/ PROGRESS	INSTALLATION /BACKFILL	SPT Results		SAMPLES		STRATA RECORD			
		SPT 'N'	Sample Type	PID	Level (mAOD)	Legend	Depth (Thickness) m	Description	
							(3.00)	Light to dark brown sandy CLAY	
					226.24		3.00		
							(3.00)	Brown and grey SAND & GRAVEL	
					223.24		6.00		
							(13.00)	Light to dark brown SAND & GRAVEL with angular to sub-angular clasts	
							19.00		
					210.24			Groundwater encountered at 12.6m bgl.	
								End of Hole at 19.00m	

Remarks :  
 Bedrock not encountered.  
 Groundwater encountered at 12.6m bgl.  
 End of hole at 19m bgl.  
 Installation: 0 - 11m bgl plain, 11 - 19m bgl slots.

Checked By:  
BB

Scale 1:100

04/05/2006  
April 2006



**GOLDER**

Client :

Hudson Brothers Ltd

Hole No.

**BH4K**

Site : Hudson Quarry, Philipstown and Redbog, Co. Kildare

Project : Hudson Bros. Planning and EIAR

Project No : 19115799

Equipment & Methods : Unknown

Contractor :

Date Started :

Completed :

Logged by : Unknown

Ground Level (mAOD) : 229.19

Co-ordinates : E 697151.1 N 716476.2

WATER/ PROGRESS	INSTALLATION /BACKFILL	SPT Results		SAMPLES		STRATA RECORD		
		SPT 'N'	Sample Type	PID	Level (mAOD)	Legend	Depth (Thickness) m	Description
					225.69		(3.50)  3.50	Brown silty sandy Gravel
								Light grey GREYWACKE

**Remarks :**

Borehole drilled prior to Golder involvement. Log created from visual inspection of location and adjacent quarry pit geology.  
Bedrock encountered at approx. 3.5m bgl.  
Groundwater encountered at 20.6m bgl.  
End of hole at an unknown depth >100m bgl.  
Installation unknown.

Checked By:  
BB

Scale 1:100

GNM-BH-0201  
April 2001



**GOLDER**

Client :

Hudson Brothers Ltd

Hole No.

**BH4K**

Site : Hudson Quarry, Philipstown and Redbog, Co. Kildare

Project : Hudson Bros. Planning and EIAR

Project No : 19115799

Equipment & Methods : Unknown

Contractor :

Date Started :

Completed :

Logged by : Unknown

Ground Level (mAOD) : 229.19

Co-ordinates : E 697151.1 N 716476.2

WATER/ PROGRESS	INSTALLATION /BACKFILL	SPT Results		SAMPLES		STRATA RECORD			
		SPT 'N'	Sample Type	PID	Level (mAOD)	Legend	Depth (Thickness) m	Description	
↓									Light grey GREYWACKE Groundwater encountered at 20.6m bgl.

**Remarks :**

Borehole drilled prior to Golder involvement. Log created from visual inspection of location and adjacent quarry pit geology.  
 Bedrock encountered at approx. 3.5m bgl.  
 Groundwater encountered at 20.6m bgl.  
 End of hole at an unknown depth >100m bgl.  
 Installation unknown.

Checked By:  
BSE

Scale 1:100

CHANGES  
APR 2008



**GOLDER**

Client :

Hudson Brothers Ltd

Hole No.

**BH4K**

Site : Hudson Quarry, Philipstown and Redbog, Co. Kildare

Project : Hudson Bros. Planning and EIAR

Project No : 19115799

Equipment & Methods : Unknown

Contractor :

Date Started :

Completed :

Logged by : Unknown

Ground Level (mAOD) : 229.19

Co-ordinates : E 697151.1 N 716476.2

WATER/ PROGRESS	INSTALLATION /BACKFILL	SPT Results		SAMPLES		STRATA RECORD		
		SPT "N"	Sample Type	PID	Level (mAOD)	Legend	Depth (Thickness) m	Description
							(96.50)	Light grey GREYWACKE

**Remarks :**  
 Borehole drilled prior to Golder involvement. Log created from visual inspection of location and adjacent quarry pit geology.  
 Bedrock encountered at approx. 3.5m bgl.  
 Groundwater encountered at 20.6m bgl.  
 End of hole at an unknown depth >100m bgl.  
 Installation unknown.

Checked By:  
BB

Scale 1:100

GOLDER  
April 2005



**GOLDER**

Client :

Hudson Brothers Ltd

Hole No.

**BH4K**

Site : Hudson Quarry, Philipstown and Redbog, Co. Kildare

Project : Hudson Bros. Planning and EIAR

Project No : 19115799

Equipment & Methods : Unknown

Contractor :

Date Started :

Completed :

Logged by : Unknown

Ground Level (mAOD) : 229.19

Co-ordinates : E 697151.1 N 716476.2

WATER/ PROGRESS	INSTALLATION /BACKFILL	SPT Results		SAMPLES		STRATA RECORD		
		SPT 'N'	Sample Type	PID	Level (mAOD)	Legend	Depth (Thickness) m	Description
								Light grey GREYWACKE

**Remarks :**

Borehole drilled prior to Golder involvement. Log created from visual inspection of location and adjacent quarry pit geology.  
Bedrock encountered at approx. 3.5m bgl.  
Groundwater encountered at 20.6m bgl.  
End of hole at an unknown depth >100m bgl.  
Installation unknown.

Checked By:  
BB

Scale 1:100

04/05/2010  
April 2010



**GOLDER**

Client :

Hudson Brothers Ltd

Hole No.

**BH4K**

Site : Hudson Quarry, Philipstown and Redbog, Co. Kildare

Project : Hudson Bros. Planning and EIAR

Project No : 19115799

Equipment & Methods : Unknown

Contractor :

Date Started :

Completed :

Logged by : Unknown

Ground Level (mAOD) : 229.19

Co-ordinates : E 697151.1 N 716476.2

WATER/ PROGRESS	INSTALLATION /BACKFILL	SPT Results		SAMPLES		STRATA RECORD		
		SPT 'N'	Sample Type	PID	Level (mAOD)	Legend	Depth (Thickness) m	Description
								Light grey GREYWACKE
					129.19		100.00	End of borehole at an unknown depth >100m bgl.

**Remarks :**

Borehole drilled prior to Golder involvement. Log created from visual inspection of location and adjacent quarry pit geology.  
Bedrock encountered at approx. 3.5m bgl.  
Groundwater encountered at 20.6m bgl.  
End of hole at an unknown depth >100m bgl.  
Installation unknown.

Checked By:  
BB

Scale 1:100

CHAMBERLAIN  
April 2000



**GOLDER**

Client :

Hudson Brothers Ltd

Hole No.

**BH5K**

Site : Hudson Quarry, Philipstown and Redbog, Co. Kildare

Project : Hudson Bros. Planning and EIAR

Project No : 19115799

Equipment & Methods : Unknown

Contractor :

Date Started : 16/01/2006

Completed : 16/01/2006

Logged by : GB

Ground Level (mAOD) : 263.40

Co-ordinates : E 697619.6 N 716749.2

WATER/ PROGRESS	INSTALLATION /BACKFILL	SPT Results		SAMPLES		STRATA RECORD			
		SPT 'N'		Sample Type	PID	Level (mAOD)	Legend	Depth (Thickness) m	Description
						261.40		(2.00) 2.00	Dark brown sandy gravelly CLAY
								(8.00) 10.00	Light to dark brown dry SAND & GRAVEL. Gravel is between 10mm and 15mm in size.
						253.40			Light to dark brown dry SAND & GRAVEL. Large gravel being returned.

Remarks :  
 Bedrock at 32.8m bgl.  
 Groundwater not encountered.  
 End of hole at 34m bgl.  
 Installation 0 - 31m bgl plain, 31 - 34m bgl slots.

Checked By:  
BB

Scale 1:100

GOLDER  
April 2006



GOLDER

Client :

Hudson Brothers Ltd

Hole No.

BH5K

Site : Hudson Quarry, Philipstown and Redbog, Co. Kildare

Project : Hudson Bros. Planning and EIAR

Project No : 19115799

Equipment & Methods : Unknown

Contractor :

Date Started : 16/01/2006

Completed : 16/01/2006

Ground Level (mAOD) : 263.40

Co-ordinates : E 697619.6 N 716749.2

Logged by : GB

WATER/ PROGRESS	INSTALLATION /BACKFILL	SPT Results		SAMPLES		STRATA RECORD		
		SPT N'	Sample Type	PID	Level (mAOD)	Legend	Depth (Thickness) m	Description
							(22.80)	Light to dark brown dry SAND & GRAVEL. Large gravel being returned.
					230.60		32.80	Dark to light grey fine grained GREYWACKE
					229.40		34.00	End of Hole at 34.00m

Remarks :  
 Bedrock at 32.8m bgl.  
 Groundwater not encountered.  
 End of hole at 34m bgl.  
 Installation 0 - 31m bgl plain, 31 - 34m bgl slots.

Checked By:  
BB

Scale 1:100

04/05/2006  
April 2006



**GOLDER**

Client :

Hudson Brothers Ltd

Hole No.

**BH6K**

Site : Hudson Quarry, Philipstown and Redbog, Co. Kildare

Project : Hudson Bros. Planning and EIAR

Project No : 19115799

Equipment & Methods : Rotary Drill Rig

Contractor : JS Drilling

Ground Level (mAOD) : 242.82

Date Started : 22/07/2019

Completed : 22/07/2019

Co-ordinates : E 696590.6 N 716384.7

Logged by : MBD

WATER/ PROGRESS	INSTALLATION /BACKFILL	SPT Results		SAMPLES		STRATA RECORD			
		SPT 'N'	Sample Type	PID	Level (mAOD)	Legend	Depth (Thickness) m	Description	
					240.82		(2.00) 2.00	Overburden comprising CLAY	
								Interlayered SAND & GRAVEL	

Remarks :  
 Bedrock at 43.5m bgl.  
 Groundwater encountered at 51m bgl.  
 End of hole at 59m bgl.  
 Installation: 0 - 38m bgl plain, 38 - 59m bgl slots.

Checked By:  
BB

Scale 1:100

04/2014-02/11  
April 2011



**GOLDER**

Client :

Hudson Brothers Ltd

Hole No.

**BH6K**

Site : Hudson Quarry, Philipstown and Redbog, Co. Kildare

Project : Hudson Bros. Planning and EIAR

Project No : 19115799

Equipment & Methods : Rotary Drill Rig

Contractor : JS Drilling

Ground Level (mAOD) : 242.82

Date Started : 22/07/2019

Completed : 22/07/2019

Co-ordinates : E 696590.6 N 716384.7

Logged by : MBD

WATER/ PROGRESS	INSTALLATION /BACKFILL	SPT Results		SAMPLES		STRATA RECORD			
		SPT 'N'	Sample Type	PID	Level (mAOD)	Legend	Depth (Thickness) m	Description	
							(41.50)	Interlayered SAND & GRAVEL	

Remarks :  
 Bedrock at 43.5m bgl.  
 Groundwater encountered at 51m bgl.  
 End of hole at 59m bgl.  
 Installation: 0 - 38m bgl plain, 38 - 59m bgl slots.

Checked By:  
BB

Scale 1:100

GNMBA-02/10  
April 2008



**GOLDER**

Client :

Hudson Brothers Ltd

Hole No.

**BH6K**

Site : Hudson Quarry, Philipstown and Redbog, Co. Kildare

Project : Hudson Bros. Planning and EIAR

Project No : 19115799

Equipment & Methods : Rotary Drill Rig

Contractor : JS Drilling

Ground Level (mAOD) : 242.82

Date Started : 22/07/2019

Completed : 22/07/2019

Co-ordinates : E 696590.6 N 716384.7

Logged by : MBD

WATER/ PROGRESS	INSTALLATION /BACKFILL	SPT Results		SAMPLES		STRATA RECORD			
		SPT 'N'	Sample Type	PID	Level (mAOD)	Legend	Depth (Thickness) m	Description	
					199.32		43.50	Interlayered SAND & GRAVEL	
								GREYWACKE - reddish brown arisings	
							(15.50)	Groundwater encountered at 51m bgl.	
					183.82		59.00	End of Hole at 59.00m	

Remarks :  
 Bedrock at 43.5m bgl.  
 Groundwater encountered at 51m bgl.  
 End of hole at 59m bgl.  
 Installation: 0 - 38m bgl plain, 38 - 59m bgl slots.

Checked By:  
BB

Scale 1:100

GOLDER  
Apr 2006



**GOLDER**

Client :

Hudson Brothers Ltd

Hole No.

**BH7K**

Site : Hudson Quarry, Philipstown and Redbog, Co. Kildare

Project : Hudson Bros. Planning and EIAR

Project No : 19115799

Equipment & Methods : Rotary Drill Rig

Contractor : JS Drilling

Ground Level (mAOD) : 263.38

Date Started : 18/07/2019

Completed : 18/07/2019

Co-ordinates : E 697620.1 N 716729.3

Logged by : MBD

WATER/ PROGRESS	INSTALLATION /BACKFILL	SPT Results		SAMPLES		STRATA RECORD			
		SPT 'N'		Sample Type	PID	Level (mAOD)	Legend	Depth (Thickness) m	Description
						261.38		2.00	Overburden comprising CLAY
									Interlayered SAND & GRAVEL

Remarks :  
 Bedrock at 45m bgl.  
 Groundwater encountered at 48m bgl.  
 End of hole at 63m bgl.  
 Installation: 0 - 43m bgl plain, 43 - 63m bgl slots.

Checked By:  
BB

Scale 1:100

GOLDER  
April 2009



**GOLDER**

Client :

Hudson Brothers Ltd

Hole No.

**BH7K**

Site : Hudson Quarry, Philipstown and Redbog, Co. Kildare

Project : Hudson Bros. Planning and EIAR

Project No : 19115799

Equipment & Methods : Rotary Drill Rig

Contractor : JS Drilling

Ground Level (mAOD) : 263.38

Date Started : 18/07/2019

Completed : 18/07/2019

Co-ordinates : E 697620.1 N 716729.3

Logged by : MBD

WATER/ PROGRESS	INSTALLATION /BACKFILL	SPT Results		SAMPLES		STRATA RECORD			
		SPT 'N'	Sample Type	PID	Level (mAOD)	Legend	Depth (Thickness) m	Description	
							(43.00)	Interlayered SAND & GRAVEL	

Remarks :  
 Bedrock at 45m bgl.  
 Groundwater encountered at 48m bgl.  
 End of hole at 63m bgl.  
 Installation: 0 - 43m bgl plain, 43 - 63m bgl slots.

Checked By:  
BB

Scale 1:100

GOLDER  
April 2019



**GOLDER**

Client :

Hudson Brothers Ltd

Hole No.

**BH7K**

Site : Hudson Quarry, Philipstown and Redbog, Co. Kildare

Project : Hudson Bros. Planning and EIAR

Project No : 19115799

Equipment & Methods : Rotary Drill Rig

Contractor : JS Drilling

Ground Level (mAOD) : 263.38

Date Started : 18/07/2019

Completed : 18/07/2019

Co-ordinates : E 697620.1 N 716729.3

Logged by : MBD

WATER/ PROGRESS	INSTALLATION /BACKFILL	SPT Results		SAMPLES		STRATA RECORD			
		SPT 'N'	Sample Type	PID	Level (mAOD)	Legend	Depth (Thickness) m	Description	
↓									
					218.38		45.00	Interlayered SAND & GRAVEL	
							(18.00)	GREYWACKE	
								Groundwater encountered at 48m bgl.	

Remarks :  
 Bedrock at 45m bgl.  
 Groundwater encountered at 48m bgl.  
 End of hole at 63m bgl.  
 Installation: 0 - 43m bgl plain, 43 - 63m bgl slots.

Checked By:  
BB

Scale 1:100

GOLDER  
April 2011



**GOLDER**

Client :

Hudson Brothers Ltd

Hole No.

**BH7K**

Site : Hudson Quarry, Philipstown and Redbog, Co. Kildare

Project : Hudson Bros. Planning and EIAR

Project No : 19115799

Equipment & Methods : Rotary Drill Rig

Contractor : JS Drilling

Ground Level (mAOD) : 263.38

Date Started : 18/07/2019

Completed : 18/07/2019

Co-ordinates : E 697620.1 N 716729.3

Logged by : MBD

WATER/ PROGRESS	INSTALLATION /BACKFILL	SPT Results		SAMPLES		STRATA RECORD		
		SPT 'N'	Sample Type	PID	Level (mAOD)	Legend	Depth (Thickness) m	Description
					200.38		63.00	GREYWACKE
								End of Hole at 63.00m

Remarks :  
 Bedrock at 45m bgl.  
 Groundwater encountered at 48m bgl.  
 End of hole at 63m bgl.  
 Installation: 0 - 43m bgl plain, 43 - 63m bgl slots.

Checked By:  
BB

Scale 1:100

04/05/2011  
April 2011



**GOLDER**

Client :

Hudson Brothers Ltd

Hole No.

**BH8K**

Site : Hudson Quarry, Philipstown and Redbog, Co. Kildare

Project : Hudson Bros. Planning and EIAR

Project No : 19115799

Equipment & Methods : Rotary Drill Rig

Contractor : Aidan Dempsey Drilling

Ground Level (mAOD) : 239.48

Date Started : 23/03/2020 Completed : 24/03/2020

Co-ordinates : E 696628.7 N 717407.9

Logged by : JM

WATER/ PROGRESS	INSTALLATION /BACKFILL	SPT Results		SAMPLES		STRATA RECORD			
		SPT 'N'	Sample Type	PID	Level (mAOD)	Legend	Depth (Thickness) m	Description	
					235.48		(4.00)	Slightly clayey SAND & GRAVEL. Sand is fine to coarse. Gravel is fine to medium subrounded to subangular	
					234.48		(1.00)	Very sandy very gravelly CLAY	
					233.98		5.50	Weathered SILTSTONE	
					231.48		(2.50)	Brown SILTSTONE	
							(17.50)	Brown to bluey grey SILTSTONE	
								Groundwater encountered at 18.5m bgl.	

**Remarks :**  
 Bedrock at 5.5m bgl.  
 Groundwater encountered at 18.5m bgl and rose to 12.25m bgl (drill bit still in hole).  
 End of hole at 25.5m bgl.  
 Installation: 0 - 16.5m bgl plain, 16.5 - 25.5m bgl slots.

Checked By:  
BB

Scale 1:100

D:\P\B\BH8K\16  
April 2020





Client :  
**Hudson Brothers Limited**

Hole No.  
**BH09K**

Site : Old Paddocks, Kildare

Project : Hudson Env Support

Project No : 41000087

Equipment & Methods : Reich Drill 650W

Contractor : Aiden Dempsey  
Date Started : 22/08/2023      Completed : 29/08/2023  
Logged by : EG

Ground Level (mAOD) : 205.53  
Co-ordinates : E 296439.0 N 216988.0

WATER/ PROGRESS	INSTALLATION /BACKFILL	SAMPLES				STRATA RECORD			
		Sample Top (m)	SPT 'N' Value	Sample Type	PID	Level (mAOD)	Legend	Depth (Thickness) m	Description
						205.03		0.50	Orange brown slightly gravelly slightly sandy clay. Gravel was fine to coarse, mostly subrounded. Sand was medium to coarse.
						201.53		4.00	Grey-brown slightly clayey very sandy GRAVELS. Gravels are fine to coarse subrounded. Sand is medium to fine.
						194.53		7.00	Light brown silty SAND AND GRAVELS. Gravels are fine to medium subrounded. Sands are fine to coarse
						190.53		11.00	Slightly clayey gravelly SAND. Sands are fine to coarse. Gravels are fine to medium subrounded.
						181.53		15.00	Brown sandy gravelly CLAY. Gravels are medium subrounded to subangular. Sands are fine to coarse.
						164.53		24.00	Brown clayey SAND and GRAVEL. Gravels are fine to medium subrounded. Sands are fine to medium.
						161.53		41.00	Brown MUDSTONE
						145.53		44.00	Greyish blue SILTSTONE.
								60.00	Waterstrike at 54m
									End of Hole at 60.00m

Remarks :  
Bedrock at 60m bgl.  
Groundwater encountered at 54m bgl.  
End of hole at 60m bgl.  
Installation: 1-50m bgl plain, 50-59m bgl slots

Checked By:  
GF  
Scale 1:301  
BAIKERN-GEOTECH  
April 2024



Client :  
**Hudson Brothers Limited**

Hole No.  
**BH10K**

Site : Old Paddocks, Kildare

Project : Hudson Env Support

Project No : 41000087

Equipment & Methods : Reich Drill 650W

Contractor : Aiden Dempsey

Ground Level (mAOD) : 224.90

Date Started : 29/08/2023      Completed : 31/08/2023

Co-ordinates : E 296474.0 N 215897.0

Logged by : EG

WATER/ PROGRESS	INSTALLATION /BACKFILL	SAMPLES				STRATA RECORD			
		Sample Top (m)	SPT 'N' Value	Sample Type	PID	Level (mAOD)	Legend	Depth (Thickness) m	Description
						223.90		1.00	Grass over TOPSOIL comprising light orangey brown slightly gravelly slightly sandy clay.
						222.90		2.00	Slightly sandy very gravelly CLAY. Gravels are coarse subrounded. Sand is fine to coarse.
								(5.00)	Brown clayey gravelly SAND. Sand is fine to coarse. Gravels are fine to coarse subrounded.
						217.90		7.00	Grey clayey SAND AND GRAVELS. Gravels are fine to medium subrounded. Sands are fine to coarse.
						212.90		12.00	Light brown silty GRAVELS. Gravels are medium subrounded.
						206.90		18.00	Mottled greyish black GREYWACKE.
								(18.00)	Waterstrike at 31m
						186.90		36.00	End of Hole at 36.00m

Remarks :  
Bedrock at 36m bgl.  
Groundwater encountered at 31m bgl.  
End of hole at 36m bgl.  
Installation: 1-29m bgl plain, 29-36m bgl slots

Checked By:  
GF  
Scale 1:301  
S&B ENVIRONMENTAL  
April 2020

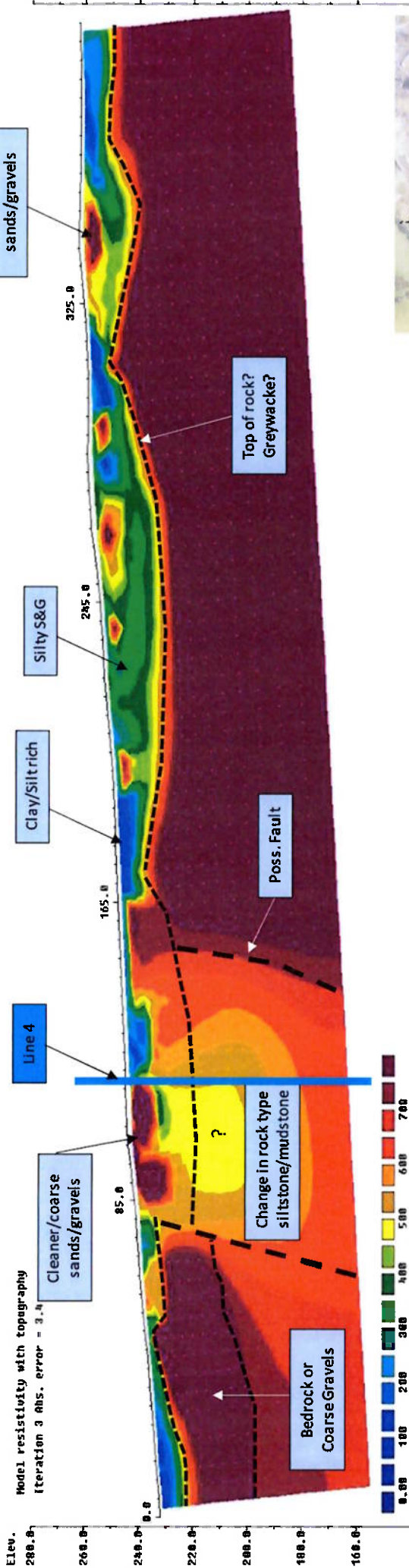
# Appendix 5B

## **GEOPHYSICS LINES**

WSP

# Line 1: Looking East

North



Horizontal scale is 22.00 pixels per unit spacing  
Vertical exaggeration in model section display = 0.72  
First electrode is located at 0.0 m.  
Last electrode is located at 400.0 m. Unit Electrode Spacing = 5.00 m.

