

**Lagan Materials Ltd., trading as Breedon Ireland
Aughnaccliffe Quarry, Co. Longford**



ENVIRONMENTAL IMPACT ASSESSMENT REPORT

to accompany a Planning Application for the extraction of rock over c.14.2ha comprising a lateral southerly extension to, and deepening of the existing quarry, with restoration to biodiverse habitats

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1.0 INTRODUCTION

This Environmental Impact Assessment Report (EIAR) accompanies a planning application submitted to Longford County Council (Longford CoCo) on behalf of Lagan Materials Ltd. (trading as Breedon Ireland) for a proposed lateral southerly extension to, and deepening of, the existing permitted quarry in the townlands of Aghamore Upper and Derreenavoggy, Aughnacliffe, Co. Longford.

The quarry is located approximately 3km to the southwest of the village of Aughnacliffe, Co. Longford. The site consists of an existing, permitted greywacke quarry and lands directly adjacent, currently used for agricultural grazing.

Under the requirements of Section 261 of the Planning and Development Act 2000, the Planning Authority required the submission of a planning application and Environmental Impact Statement (EIS). The application was submitted and granted by Longford CoCo under the Permission Reference 07/831.

This EIAR considers the environmental aspects within and around the proposed development project, which potentially could experience impacts as a result of the proposal.

The proposals will see the quarry worked on a phased basis. Following the completion of extraction, the entire site will be fully restored to a waterbody and other biodiverse habitats.

The proposed lateral extension and deepening will be worked in phases and production volumes are proposed to mirror the site's permitted output levels. The quarry will continue to be worked in the same, approved manner as is currently practiced at the site.

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1.1 Legislative Context

The legislative context for the planning application accompanied by an EIAR is derived from the European Communities Directive 85/337/EEC as amended by Directive 97/11/EC on the assessment of the effects of certain public and private projects on the environment.

The reporting system has developed as a result of the European Union adopting a new Directive (2014/52/EU) ('The Directive') in relation to Environmental Impact Assessment (EIA). The Directive was published in the Official Journal of the EU on 25th April 2014.

The Directive sets out a wide range of changes to the previous EIA Directive (2011/92/EU). The changes have been transposed into Irish law via Statutory Instrument No. 296 of 2018- European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 that provides for amendments to the planning and Development Act 2000 (as amended) and the Planning and Development Regulations 2001 (as amended) ('the Regulations'). This EIAR has been prepared in accordance with the amended Act and Regulations.

Schedule 5 Part 2 of the Regulations implements Annexes I and II of the EIA Directive into Irish law and provides the following "thresholds" in respect of the extractive industry and infrastructure projects, so that an EIA is required in respect of, or against which an EIA determination is required:

"2. Extractive Industry

(b) Extraction of stone, gravel, sand or clay, where the area of extraction would be greater than 5 hectares"

The Planning Application area is c.36.8ha and consists of the existing quarry, stockpiling areas, overburden storage areas and agricultural fields. The existing quarry itself comprises an area of c.22ha. The site area is therefore greater than 5ha and the proposed development is for the extraction of greywacke stone. The planning application is required to be accompanied by an EIAR.

1.2 EIAR Format and Structure

Although certain headings within this EIAR may be altered from the standard headings outlined in the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018, the overall structuring and scope of the report has regard to the informational requirements of the EC Directives and Irish Statutory Regulations.

This EIAR is produced in the Grouped Format Structure and is compiled and presented in as transparent and as open a manner as possible. The various authors involved in its compilation have attempted to present their findings and recommendations in a clear and unambiguous fashion. The EIAR comprises three separate parts:

- The Non-Technical Summary;
- Volume I- the Main EIA Report; and
- Volume II- the Appendices.

Volume I of the EIAR is presented in the following format:

VOLUME I – The Main Report

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- Section 1 The preamble outlines the background and terms of reference for the EIAR and outlines then format and the assumptions that underpin the statement.
- Section 2 Review of the reasonable alternatives and the alternative designs considered by the applicant and the scope of the assessment with respect to the site's particular characteristics.
- Section 3 defines the planning and development context in which the planning application is assessed
- Section 4 describes the features of existing quarry and outlines the proposed development
- Sections 5-18 incorporates the main body of the EIAR and outlines the aspects of the environment likely to be significantly affected by the proposed development, as identified in the Regulations:

population and human health, biodiversity, land, soil, water, air, climate, material assets, cultural heritage and the landscape.

As the EIAR is produced in the Grouped Format Structure, this approach can lead to certain topics, such as human health, being covered to varying degrees in most of the individual Sections, whereas other specific areas required under legislation fall almost exclusively into one Section. For those aspects of the environment likely to be significantly affected by the proposed development, that fall neatly into one or two sections the sections within which they are covered are shown overleaf.

Section	Heading	Aspects Required to be covered under the Regulations
5	Geological Assessment	Soil – Material Assets
6	Water Environment	Land-Water-Population and Human Health- Climate Change, Accidents and Disasters
7	Noise and Vibration	Population and Human health – Material Assets
8	Biodiversity	Biodiversity
9	Landscape	Landscape
10	Air Quality and Dust	Air – Biodiversity- Population and Human Health-Climate
11	Traffic Impacts	Noise-Air
12	Cultural Heritage	Cultural Heritage
13	Waste Management	Landscape – Material Assets Population and Human Health Climate Change, Accidents and Disasters
14	Soil and Natural Resources	Soil
15	Socio-Economic Impacts	Population and Human Health
16	Climate Change, Accidents and Disasters	Climate, Major Accidents and Disasters
17	Human Health	Human Health
18	Intra and Inter Cumulative Impacts	Inter-relationship of above factors

Table 1.1 Sections within EIAR that cover the Aspects Required to be covered under the Regulations

1.3 Pre-Application Consultation

A Pre-Planning meeting was held between the Applicant, its Agent, and Longford CoCo Executive Planner Ian Lacey on 13th October 2022. The development proposals were discussed and a number of recommendations for the scope and content of the planning application provided. The development proposals and EIAR has been prepared with cognisance to the advice provided by Longford CoCo during the meeting.

1.4 Competency and Expertise

The coordination of the competent experts and the production of this EIAR has been managed by Chris Tinsley BA (Hons), DipTP, MRTPI of Quarryplan Limited, who has a proven track record of delivering planning and environmental projects, development plan representations and planning appeals. Chris has a proven record of managing EIA development projects, project managing, producing EIAR's and providing supporting environmental information to accompany regular planning applications, with specialist additional expertise in the area of minerals and renewable energy projects.

All external consultants have been appointed and project managed by Quarryplan. The specialist reports, held within Appendices in Volume II of this EIAR, have been reviewed and summarised by the authors in Volume I for ease of reading.

Provided below is the contributor to each Section of the EIAR in accordance with one of the main features of the EIA Regulations, that an EIA must be carried out by persons with appropriate expertise. In this regard it is confirmed that the EIAR has been prepared by competent specialist experts, whom all have in excess of 20 years' experience in their chosen area of expertise.

No significant difficulties were encountered while compiling the necessary information for the EIAR.

The specialist reports include assessments of baseline conditions; existing and potential impacts; the magnitude and significance of those impacts and proposed mitigation measures, where necessary. This approach is considered to be compliant with the national legislation with respect to EIA.

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Section	Heading	Specialist Contributor
1	Introduction	Chris Tinsley, Quarryplan BA (Hons), DipTP, MRTPI
2	Scope of the Environmental Impact Assessment	Chris Tinsley, Quarryplan BA (Hons), DipTP, MRTPI
3	Planning Policy Framework	Chris Tinsley, Quarryplan BA (Hons), DipTP, MRTPI
4	Project Summary and Objectives	Whole Project Team to include: <ul style="list-style-type: none"> • Chris Tinsley, Quarryplan BA (Hons), DipTP, MRTPI • Mike Williams, Quarry Design MGeol(Hons), MSc, MCSM, CGeol, Eur.Geol, FGS, MIQ • Henry Lister, BCL Hydro B.Sc. M.Sc. • Mervyn Keegan, AONA B.Sc., M.Sc. • Pete Mullin, Mullin Design Associates, BA (Hons) CMLI • Will Woodrow, Woodrow Sustainable Solutions, MSc MSc(Arch) CEcol MCIEEM • Chris Farrimond, Farrimond MacManus Ltd, BA (Hons)
5	Geological Assessment	Mike Williams, Quarry Design MGeol(Hons), MSc, MCSM, CGeol, Eur.Geol, FGS, MIQ
6	Water Environment	Henry Lister, BCL Hydrogeologists Limited B.Sc. (Hons.) M.Sc.
7	Noise and Vibration	Mervyn Keegan, AONA B.Sc., M.Sc.
8	Biodiversity	Will Woodrow, Woodrow Sustainable Solutions, MSc MSc(Arch) CEcol MCIEEM
9	Landscape	Pete Mullin, Mullin Design Associates BA (Hons) CMLI
10	Air Quality and Dust	Mervyn Keegan, AONA

		B.Sc., M.Sc.
11	Traffic Impacts	Chris Tinsley, Quarryplan BA (Hons), DipTP, MRTPI
12	Cultural Heritage	Chris Farrimond, Farrimond MacManus Ltd, BA (Hons)
13	Waste Management	Chris Tinsley, Quarryplan BA (Hons), DipTP, MRTPI Mike Williams, Quarry Design MGeol(Hons), MSc, MCSM, CGeol, Eur.Geol, FGS, MIQ
14	Soil and Natural Resources	Chris Tinsley, Quarryplan BA (Hons), DipTP, MRTPI
15	Socio-Economic Impacts	Chris Tinsley, Quarryplan BA (Hons), DipTP, MRTPI
16	Climate Change, Accidents and Disasters	Chris Tinsley, Quarryplan BA (Hons), DipTP, MRTPI
17	Human Health	Chris Tinsley, Quarryplan BA (Hons), DipTP, MRTPI
18	Intra and Inter Cumulative Impacts	Chris Tinsley, Quarryplan BA (Hons), DipTP, MRTPI

Table 1.2 Specialist Contributors to EIA

1.5 Trans-boundary Issues

The Application site is located over 30km away from the national boundary between Northern Ireland and the Republic of Ireland. Given the separation distance and lack of any other pathway between the site and Northern Ireland (e.g. hydrological) it has been concluded that it is unlikely that there will be areas where there is a potential for trans-boundary effects.

If any such areas should arise within the individual assessments they have been dealt with, where they occur, in the relevant sections of the EIA.

2.0 SCOPE OF THE ENVIRONMENTAL IMPACT ASSESSMENT

The establishment of the extent of the scope of an environmental impact assessment forms an integral part of the overall process. The aim of the scoping study is to consider at the earliest opportunity all elements that the proposed development may impact upon. In addition, it is incumbent upon the assessment to consider alternative locations for the development.

Annex IV(2) of the amended EIA Directive requires an EIAR to contain:

*“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”* [own emphasis added].

The Environmental Protection Agency (EPA) Guidelines¹ describe how the objective is for the developer to present a representative range of the practicable alternatives considered.

Guidance is also taken from the ‘Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment’ Document published by the Department of Housing, Planning and Local Government in August 2018. The Guidelines, at Paragraph 4.13 states:

“The type of alternatives will depend on the nature of the project proposed and the characteristics of the receiving environment. For example, some projects may be site specific so the consideration of alternative sites may not be relevant”.

¹ Guidelines on the information to be contained in Environmental Impact Assessment Reports, EPA, May 2022

Alternatives must be reasonable. They should not include ideas that are not technically possible, unfeasible, or illegal. The types of alternatives that can be realistically considered by a developer will also vary. This is true of mineral planning; where the mineral can only be extracted from where it is found.

It is reasonable, in this case, to consider the extraction of the greywacke resource from other sites where it is found; if the mineral is appropriate to the Applicant's needs; if the scale of the operation and processes are feasible and commercially viable; and if other mineral operators/landowners are willing to sell/lease their reserves or land holdings to the Applicant.

Essentially, alternatives should indicate to the competent authority why this project, and not some other, is being proposed in this location and not in some other².

2.1 'Do-Nothing' Alternative

The existing quarry benefits from planning permission granted by Longford CoCo under permission reference 07/831. The quarry has been extensively worked and benefits from permission for a range of value added plants and other associated infrastructure required for quarrying operations.

The 'Do Nothing' alternative would mean that all quarrying operations and ancillary activities at the site would cease in due course, and the site would be restored in accordance with the provisions of the extant planning permission for the site.

2.2 Alternative Sources of Aggregates

Indigenous, land-won mineral resources constitute the primary component of aggregates in Ireland. The use of secondary aggregates (i.e. recycled

² Glasson, Therivel & Chadwick, Introduction to Environmental Impact Assessment, 4th Edition, 2012 Routledge at page 90

construction and demolition waste) is not considered suitable for the manufacturing of the final products that the mineral at Aughnaclyffe Quarry is used for. The physical properties of the mineral are critical to determining its suitability for the production of some products supplied by the applicant, for example surface dressing chips and asphalt products. In order to manufacture these products to relevant standards, the mineralogical composition and physical properties are key and secondary aggregates are unsuitable for such uses. This, coupled with issues in terms of the reliability and consistency of supply, means that secondary aggregates are largely unsuitable in meeting the demand for aggregate in Ireland.

In the absence of significant volumes of aggregates from recycled/ secondary sources, primary, indigenous deposits, such as the greywacke resource at Aughnaclyffe Quarry, are required to be the main source of construction aggregates in Ireland.

2.3 Alternative Locations

It is recognised within local and national planning policy that minerals are unusual in development terms, in that, that they can only be worked where they naturally occur, so the usual criteria applied in site searching exercises, which is predominantly development plan led, cannot be wholly adopted.

Geological mapping produced by Geological Survey Ireland (GSI) shows the extents of geological formations across Ireland. As demonstrated at **Figure 2.1** held as Appendix 2.1, the Carrickatean Greywacke Formation, which is the economic mineral worked at Aughnaclyffe Quarry, is limited in its extents. The figure shows that there are no other active or dormant extraction quarries from which the formation is worked.

The mineral extracted at the quarry has the necessary properties to allow it to be suitable for a variety of construction and infrastructure related uses including

in the production of coated roadstone; ready-mix concrete; concrete batching; block manufacture; and as a construction aggregate.

The location of minerals developments is not only governed by geological constraints, but as haulage comprises such a large percentage of the production cost, geographical location is also a key component.

The effective limitation when it comes to the viability of mineral operations is the transport cost. Transport is by heavy goods vehicles (HGV) with loads typically being of the order of 20 tonnes. Transport costs are high for such vehicles, and this affects the commercial viability of the mineral operation. With respect to transport and haulage costs, the Inter Trade Ireland: Report on a Competitive Analysis of the Construction Materials Sector in Ireland estimates that transport costs limit the effective range of operations 20 miles (32km) from the relevant quarry.

No alternative sites have been identified within the range of operations and a number of considerations have been taken into account when selecting the proposed development site, as outlined in the following sections.

2.3.1 The availability of mineral

Mineral development is unique in that the mineral resource can only be worked where it is found. The application site has been the subject of geological site investigation works which confirms the presence of commercially viable volumes of the greywacke resource at the site.

2.3.2 Mineral Sterilisation

The mineral resource has not been sterilised by existing or previous built development which would preclude the winning and working of the same.

2.3.3 Access and Highways

The application site offers the opportunity to provide a safe access on to the local highway network via the existing quarry entrance.

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2.3.4 Resource Size

In order to achieve a commercially viable business and offset the business operations against the significant initial capital investment, a site is required which is of a sufficient size (mineral volume) to deliver a quantity of mineral which will allow the business to operate viably, that is to say provide a payback upon the significant upfront capital investment associated with mineral extraction and haulage. In this instance, a site which will be of a sufficient size to allow the working of the mineral resource to be commercially viable has been acquired by the applicant. Existing infrastructure is located within the existing quarry to allow for the processing of the mineral and for its use in 'value added' processes.

2.3.5 Land Ownership

Perhaps the most important aspect is the availability of land which is within the ownership of a party who has made the mineral available to be worked. In this instance the land is under the ownership of the applicant, which wishes to see the mineral resource worked and the site restored.

As a result of the land being under the ownership of the applicant, the Planning Authority can be satisfied that if permission is granted that the development can be delivered and that the site will actively contribute towards the steady and adequate supply of mineral in the county and will support operations at the Applicant's existing business.

2.3.6 Planning Policy

The site is not located within or adjacent to any designation for the protection of natural or cultural heritage. The extractive policies of the Longford County Development Plan ('LCDP') aim to ensure adequate supplies of aggregate resources to meet future growth needs within County Longford without adversely affecting the environment or adjoining existing land uses. The proposed development is therefore considered compliant with relevant planning policies.

2.3.7 Surrounding land uses

There are few sensitive receptors in the area surrounding the development site with sufficient separation distances achievable between the proposed operations and the nearest residential properties, thereby minimising any potential impacts associated with nuisance or loss of amenity. This avoids the need for development elsewhere which may be in a more sensitive location in terms of proximity to residential properties.

2.4 Alternative Design Elements Considered

Throughout the production of the planning application and EIAR several alternative approaches and designs have been considered regarding the proposed extension areas.

2.4.1 Alternative Design Option 1 - Extraction to a maximum depth of 70mAOD

As shown in Figure 2.2 overleaf, one of the alternative design options considered was to extend extraction to a maximum depth of 70mAOD. Following geological investigation, including a review of the existing quarry bench widths and face heights, the proposed maximum extraction depth was revised in to 114mAOD. The project was refined to proposed extraction to this

depth to allow for the most efficient continuation of workings from the existing quarry, to allow for sufficient ramping, face heights and angles to be achieved from the existing quarry, across an additional 2 no. benches.



Figure 2.2 Alternative Option 1- Proposed Extraction to 70mAOD

2.4.2 Alternative Design Option 2 - Maximum Lateral Extension followed by Deepening

Another alternative design option considered was to see extraction extend to its full maximum lateral extents, prior to deepening (see Figure 2.3 overleaf). The project was further refined in order to allow for the incremental lateral extension of the quarry and progressive deepening. The approach as proposed within the planning application allows for overburden and lower value material to be managed in a more efficient manner, avoiding double handling of materials and associated unnecessary fuel consumption and vehicles emissions. The selected approach also allows for a more gradual change to the

landscape, thereby further reducing the landscape and visual impact of the proposed development.

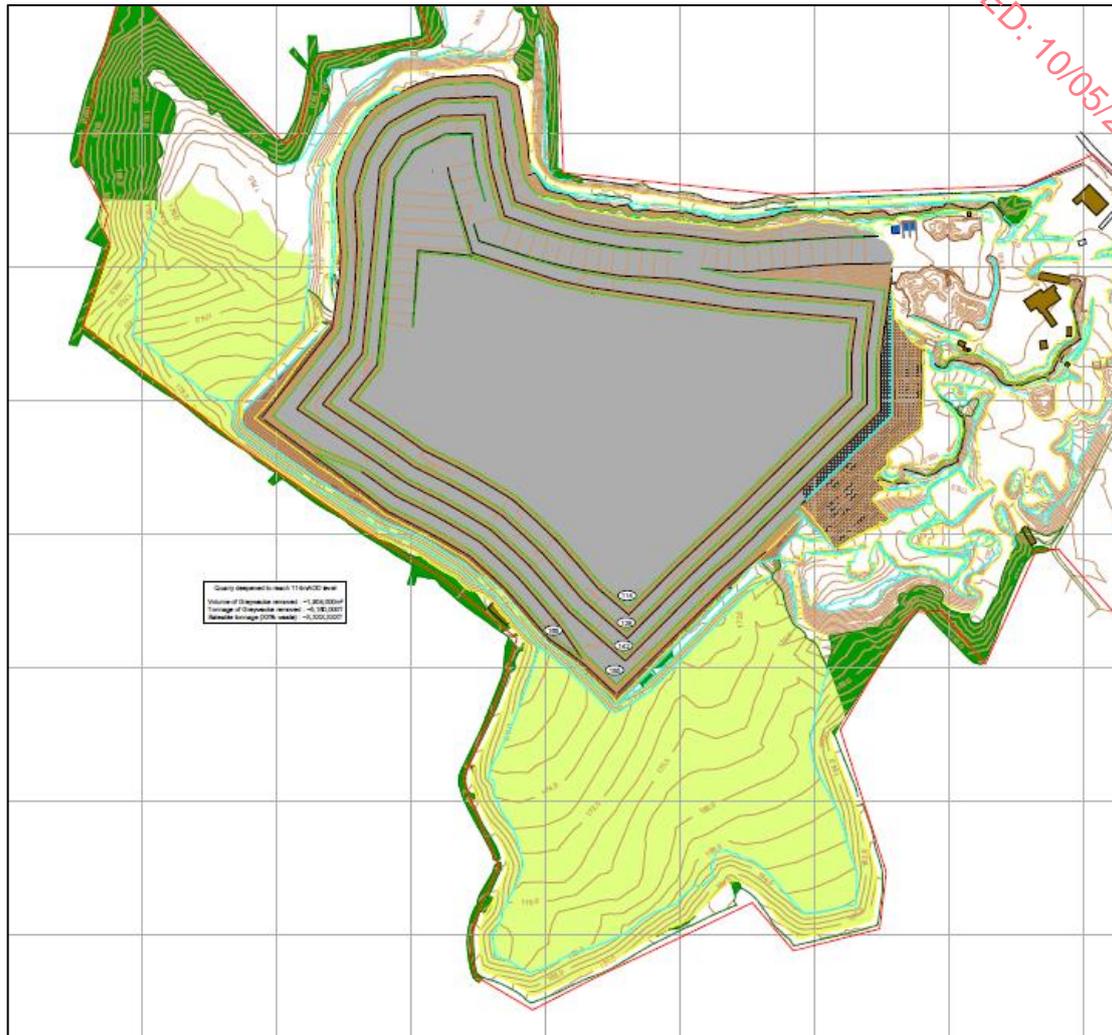


Figure 2.3 Alternative Option 2- full lateral extension prior to deepening

2.4.3 Alternative Design Option 3 - Retention of Farm Buildings

A further alternative design option considered was the demolition of the former farm dwelling and stone agricultural shed located along the southern boundary of the site. Following the completion of bat surveys in this part of the site in Summer 2022 it was identified that the buildings had the potential to be in use as maternity bat roosts, including for rarer bat species. As such, following consultation with the project ecologist, an alternative project design was advanced in order to avoid the removal of these potential roosting sites. The buildings will therefore remain in-situ along with the existing vegetation

surrounding them, therefore allowing for continued connectivity with the surrounding hedgerow network which the bat population utilise for foraging. Following consideration of the above alternative design options, the proposed development plans were finalised and are included as part of the planning application package.

2.5 Alternative Processes

The Applicant's business has significant expertise and experience in quarrying and in associated value added manufacturing processes. The business is ISO14001 accredited and use industry standard and best practice blasting techniques to extract and process the greywacke resource at Aughnaclyffe Quarry. The proposed development seeks no alteration to the existing practices at the site and therefore alternative processes are not considered relevant in this instance.

2.6 Scope of the Environmental Impact Assessment Report (EIAR)

Legislation and guidelines outline that the scope of an EIAR needs to be determined by evaluating the aspects of the environment likely to be significantly affected by the development with reference to the following categories and their inter relationship.

- **Human Health**
- **Biodiversity**
- **Population**
- **Soil**
- **Water**
- **Air**
- **Climate**
- **Material Assets**
- **Cultural Heritage**

- **Landscape**

This EIAR considers the potential significant effects and consequences on the environment of the development and assesses whether such effects are:

- **direct or indirect;**
- **short, medium or long-term;**
- **reversible or irreversible;**
- **beneficial or adverse.**

Where significant adverse effects are identified, a description of the measures necessary to avoid, reduce or remedy these effects is provided (mitigation measures).

To determine the environmental aspects that should be addressed within this EIAR, each of the main activities within the development were examined and potential impacts arising from those activities were identified, together with receptors of any such impacts. The main site activities, impacts and receptors are all identified within Table 2.1 overleaf.

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Proposed Activity	Potential Source of Impact (Alphabetical order)	Potential Receptors (Alphabetical Order)
Overburden stripping, pre-emptive screening.	Land Use Dust Noise Visual	Agriculture Humans Archaeology Landscape
Mineral extraction, soil removal, internal transportation of mineral	Land use Dust Visual Noise	Agriculture Air Quality Archaeology Ecology Humans Landscape Water Environment
Transport to and from site	Traffic	Humans
Restoration and afteruse	Land use Visual	Landscape Ecology Humans Agriculture Water Environment

Table 2.1 Site Activities, Impacts and Receptors

From the identification of potential impacts and receptors, a scoping matrix has been compiled which gives a clear indication of the main impacts to be assessed within this EIAR. The scoping matrix is set out overleaf in **Table 2.2** and has been prepared taking cognisance of pre-planning discussions with Longford CoCo.

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Potential Source of Impact	Potential Receptor						
	Agriculture	Archaeology	Humans	Landscape	Water Environment	Ecology	Air Quality
Landtake	✓	✓		✓	✓	✓	
Visual			✓	✓			
Noise			✓			✓	
Dust	✓		✓	✓	✓	✓	✓
Traffic			✓				✓
After-use	✓		✓	✓	✓	✓	

Table 2.2: EIA Scoping Matrix

The EPA Guidelines state that:

“Clear, concise, unambiguous information is essential throughout an EIAR. A systematic approach, standard descriptive methods and the use of replicable assessment techniques and standardised impact descriptions contribute to ensuring that all likely significant effects are adequately considered and clearly communicated”.

Paragraph 4.5 of the guidelines describe how:

“Excessive length [of an EIAR] can be a considerable barrier to effective public participation”

This approach can be achieved by avoidance of duplication of optimised assessments and by focusing upon the “likely and significant” effects of a proposed development. These elements need to be discussed in detail whereas other issues, with little or no significance, may require only brief investigation. This will indicate that an area has been given due consideration but has been rejected from requiring a full investigation, in the interests of

achieving a clear, concise and unambiguous EIAR which also allows for more effective public participation.

2.7 EIA Scoping Opinion

Whilst no formal EIA scoping opinion was sought from Longford CoCo, pre-planning discussions with planning officers were held (See Section 1.3). The scope of the EIAR has been determined by the project team, who all have significant experience in environmental assessment within the minerals sector, as outlined at Section 1.4.

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3.0 PLANNING POLICY FRAMEWORK

This section considers the development in the context of the following contemporary planning policy sources:

- Longford County Development Plan (2021-2027);
- Regional Planning Guidelines (2010-2022);
- Sustainable Development- A Strategy for Ireland (1997); and
- National Planning Framework (2018).

The level of compliance with the policies and objectives outlined in these documents indicates the suitability of the development from a planning and sustainable development perspective.

3.1 Longford County Development Plan (2021-2027)

The subject site is within the County Longford Administrative Area. The Longford County Development Plan (LCDP) came in to effect in November 2021.

The Development Plan sets out an overall strategy for the proper planning and sustainable development of Longford County.

Section 1.2 of the LCDP describes how the vision of the plan is:

“to set out a framework for the sustainable physical development of the County, ensuring the conservation and protection of the built and natural environment, while providing in an equitable manner for all our people within the County.”

As such the LCDP provides for an overall strategy for the social, economic, cultural and physical development of the County.

County Policy Objective (CPO) 9.39 states that it is the County Policy Objective to:

“Recognise the role and facilitate the exploitation of County Longford’s natural aggregate resources in a manner which does not unduly impinge on the environmental quality and the visual and residential amenity of an area, while continuing to regulate the extraction of aggregates and to seek the delivery of environmental benefits in the form of sustainable habitat creation in conjunction with the restoration phases of development”.

As detailed throughout this EIAR, the proposed development would facilitate the extraction of the greywacke resource identified at the site without resulting in any significant effects upon the environment in terms of landscape and visual impacts or residential amenity. Following the completion of extraction, the site will be restored to provide a range of biodiverse habitats including a waterbody. Given the same, the proposed development is considered to accord with CPO 9.39.

CPO 9.40 states that it is the County Policy Objective to:

“Facilitate the sourcing of aggregates for and the operation of the extractive industry in suitable locations, subject to the protection of landscape environment, road network, heritage, visual quality and amenity of the area”.

The planning application seeks to extend an existing, approved quarry laterally and vertically. The quarry benefits from a range of on-site infrastructure for the quarry operations and down stream value-added infrastructure. As such, the proposed development is considered a suitable location and the BPEO, as detailed in Section 2.0 of this EIAR.

As detailed throughout this EIAR, the proposed development is not considered likely to result in any significant effects upon the environment in terms of landscape environment, road network, heritage, visual quality and the amenity

of the area. Given the same, the proposed development is considered to accord with CPO 9.40.

CPO 9.41 states that it is the County Policy Objective to:

“Ensure that development for aggregate extraction, processing and associated concrete production does not significantly impact the following:

- *Existing and Candidate European Sites (Special Areas of Conservation (SACs) and/or Special Protection Areas (SPAs))*
- *Existing and proposed Natural Heritage Areas (pNHAs)*
- *Other areas of importance for the conservation of flora and fauna and biodiversity value*
- *Zones of archaeological potential*
- *Important aquifers and sensitive groundwater resources*
- *The vicinity of a recorded monument*
- *Sensitive landscape areas*
- *Established rights of way and walking routes”*

As detailed in Sections 6, 8 and 9 of this EIAR, the proposed development is not considered to result in any significant effects in terms of the water environment, biodiversity or landscape. As detailed in the Appropriate Assessment Screening Report submitted as part of the planning application package, there is no potential for significant effects upon any European Sites. Given the same, the proposed development is considered to accord with CPO 9.41.

CPO 9.42 states that the Planning Authority should consult with the Geological Survey of Ireland (GSI), with regard to any developments likely to have an impact on Sites of Geological Importance. The proposed development is not anticipated to result in any impacts upon any Sites of Geological Importance.

CPO 9.43 states that it is the County Policy Objective to ensure that extraction activities address key environmental, amenity, traffic and social impacts and details of rehabilitation. All of these impacts are considered to have been adequately addressed in this EIAR and therefore the proposed development is considered to accord with CPO 9.43.

CPO 9.44 states that it is the County Policy Objective to ensure that all extractions shall be subjected to landscaping requirements and that worked out quarries should be rehabilitated to a use agreed with the Planning Authority which could include recreational, biodiversity, amenity or other end-of-life uses. Restoration proposals have been provided which will see the site restored to provide a range of biodiversity afteruses, including the provision of a waterbody. Given the same, the proposed development is considered to accord with CPO 9.44.

The remaining objectives of the LCDP cover a wide range of topics including:

- Transport;
- Economic Development;
- Tourism;
- Built and Cultural Heritage;
- Natural Heritage and Environment; and
- Landscape Character.

The proposed development is considered to be compliant with the aims of the all the above policy objectives with the proposed development being demonstrated to not result in any significant effects upon the environment. As such, these objectives are not considered in any further detail.

Given the above, the proposed development is considered to accord with the relevant policies of the LCDP.

3.2 Regional Planning Guidelines (2010-2022)

Regional Planning Guidelines (RPG) have been prepared for the Midland Region, covering the period 2010 – 2022. The guidelines were published in 2010 by the Midland Regional Authority. The main objective of the RPG is to provide a long-term strategic planning framework for the development of the Midland Region.

Chapter 3 of the RPG states that:

“The rural economy should be supported and developed in the interests of the many communities that inhabit these areas as well as in the interests of the wider society and managed in a way that is sustainable into the future”.

In Chapter 3, it also states that:

“It is paramount in the economic development of the region that it strives to increase its productivity and improve its competitiveness in the current challenging global economic climate”.

It is considered that the proposed development will support the development of the rural economy of rural Longford, making best use of a finite resource, providing direct and indirect employment and maintaining a supply of construction products and downstream value-added products.

The proposed development is therefore considered to accord with the provisions of the RPG.

3.3 Sustainable Development - A Strategy for Ireland (1997)

The principle of sustainable development is now a fundamental tenet of land use planning policy in Ireland. The document ‘Sustainable Development – A Strategy for Ireland’, published by the Department of the Environment in 1997

contains a framework for applying the principles of sustainable development to different sectors of the economy.

The general principle of sustainable development has also been enshrined in the Planning and Development Act 2000 (as amended) and in County Development Plans, including the LCDP.

In this context, the development has been influenced by these policies and has sought to provide an appropriate methodology to maximise the exploitation of local resources.

There are several sections and policy recommendations outlined in the Sustainable Development Plan which are reviewed in the context of the proposal, as set out below.

The 'Strategic Framework' section outlined in the plan attempts to put in context perceived incongruities whereby on the one hand, there is a fundamental requirement to meet the present day needs in a sustainable way while on the other hand equally ensuring equity in access to, and use of resources, as well as equitable opportunities to participate in decision-making processes all with an overriding goal to achieve economic and social progress.

Within the priorities for action identified within the Strategic Framework are:

- a balance between the conservation and utilisation of resources;
- concrete action on the basis of practical programmes and clear targets and;
- an ability to measure and monitor sustainable development performance.

Accordingly, the Government's priorities within the framework of the Strategy are to:

- undertake a high level of environmental protection so that renewable resources are conserved and not depleted beyond their renewable rates;
- ensure that non-renewable resources are used prudently and efficiently with a strong emphasis on the use of substitute resources, where practicable
- and the concentration of critical natural capital on the needs of the future;

The Environment and Economic Development Chapter of the strategy quotes:

“Ireland should replace the traditional adversarial approach that presents industrial development and environmental protection as opposites. The new approach should simultaneously maintain high environmental quality and promote a competitive enterprise sector” - Forfas, Shaping our Future.

The Extractive Industries section accepts that quarrying for stone, gravel, sand, crushed rock etc is based on an ultimately finite resource. The greywacke extracted at Aughnaclyffe Quarry is considered relevant in this context, with the prudent and efficient use of the proven mineral resource at the site considered to be of significant importance in the region.

The strategy goes on to state that whilst in principle raw materials for the quarrying industry are not in short supply, the environmental impacts, require greater consideration. In certain cases, demand for aggregates for use by the construction industry could be met in some degree by recycling and reuse of construction/demolition waste.

The use of secondary aggregates is not considered suitable for much of the final products that the mineral at Aughnaclyffe Quarry is used for. The physical properties of the mineral are critical to determining its suitability for the production of some construction products manufactured by the applicant, for example concrete products. In order to manufacture these products to relevant standards, the mineralogical composition and physical properties are key and secondary aggregates are unsuitable for such uses.

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Given the above, the development is considered to accord with the provisions of the Sustainable Development Strategy for Ireland.

3.4 National Planning Framework (2018)

The National Planning Framework (NPF) is the Government's high-level strategic plan for shaping the future growth and development of the country to the year 2040.

The NPF describes how 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.

The NPF goes on to state that 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.

National Policy Objective 23 seeks to:

“Facilitate the development of the rural economy through supporting a sustainable and economically efficient agricultural and food sector, together with forestry, fishing and aquaculture, energy and extractive industries, the bio-economy 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 which are vital to rural tourism”.

In terms of rural development, the NPF describes how the spatial, social and economic disparities between rural areas are a reflection of the fact that

stronger rural areas tend to be located in a geographically advantageous place, and also have the human and social capital to address their needs and respond effectively to emerging opportunities and strategies.

The application site is considered to be strategically well placed in order to serve a variety of markets across the Midlands of Ireland.

National Policy Objective 15 is to:

“Support the sustainable development of rural areas by encouraging growth and arresting decline in areas that have experienced low population growth or decline in recent decades and by managing the growth of areas that are under strong urban influence to avoid over-development, while sustaining vibrant rural communities”.

The existing development has contributed towards achieving sustainable growth in a rural location and sustaining vibrant local communities within Longford. The proposed development will allow for the continued sustainable growth of these communities. Given the above, the development is considered to accord with the provisions of the NPF.

4.0 **PROJECT SUMMARY AND OBJECTIVES**

This EIAR considers the environmental aspects within and around the proposed mineral extraction site at Aughnacliffe Quarry and lands directly to the south of the existing quarry, in the Townlands of Aghamore Upper and Derreenavoggy, County Longford.

The proposed development seeks to win and work the greywacke mineral resource which has been identified at the site, in a phased manner which includes extending workings at the existing quarry southwards, with a deepening of the existing quarry floor levels. Following the completion of extraction, the site will be restored to create a waterbody and biodiverse habitats.

4.1 **The Applicant**

The Applicant is Lagan Materials Ltd, trading as Breedon Ireland. The applicant owns and operates the existing quarry at Aughnacliffe. Breedon is a construction materials group which delivers essential products to the construction sector throughout the UK and Ireland. The business employs approximately 3,500 people and provides a wide range of construction aggregates and value-added products including speciality materials; surfacing and highway maintenance products; cement; and concrete to a broad range of customers. These essential products are provided through Breedon's extensive local network of quarries, concrete and asphalt plants.

The Breedon group is fully committed to sustainability and social responsibility with its stated purpose to "*Make a material difference to the lives of our colleagues, customers and communities*". This means the business has a duty of care to the people it serves, the places it helps to create and to the planet, with a specific focus on the smarter use of natural resources.

4.2 Site Location and Extent

The site is located at Aughnaclyffe Quarry. The quarry is located in the townland of Aghamore Upper, with the lateral extension area comprising lands in the townland of Derreenavoggy, which lie c. 12km to the north-east of Longford town. The village of Aughnaclyffe is located c. 3km to the north-east of the site, with the village of Ballinalee located c. 6km to the south.

The Application site is c. 36.8ha in size, with c.22ha of the site comprised of the existing quarry and associated overburden storage and landscaping areas. The remainder of the site (c.15ha), located to the south of the existing quarry void, is comprised of lands in agricultural use. A cluster of farm buildings, under the ownership of the applicant is located along the southern boundary of the site.

The site is located in an undulating rural setting characterised by agricultural fields interspersed with blocks of forestry. There are a small number of residential properties located sporadically throughout the surrounding area. The Application site itself is surrounded by agricultural fields on all sides, with boundaries comprised of hedgerows.

The topography across the northern part of the site is dictated by quarry workings to date, with ground levels ranging from c.162mAOD at the quarry entrance to c.141mAOD in the quarry floor. Previous overburden landforms are located at the eastern and western ends of the quarry void and have become vegetated and greened up over time. The eastern end of the quarry is used for the stockpiling of processed materials, with extraction works currently focussed in the western part of the quarry.

Levels across the southern part of the Application site (the undeveloped agricultural lands) range from 159mAOD along the eastern boundary and 165mAOD along the western boundary, rising to c.178mAOD in the central part of the extension lands.

The Application site is accessed via the existing and approved quarry entrance, located along the north-eastern boundary of the site, which provides access to a local road network, which ultimately connects to the R198 to the north and R194 to the south.

Access to the farm buildings in the southern part of the site is afforded via an un-named single lane road to the southeast of the buildings.

4.3 Planning History

Under the requirements of Section 261 of the Planning and Development Act 2000, the Planning Authority required the submission of a planning application and EIS. The application was submitted with the following description of development:

“Retention for development consequent to the provisions of Section 261 of the Planning and Development Act 2000. The Section 261 Registration Number of the subject site is Longford County Council QY/02. The development consists of the continuation of quarrying activities over an area of 11.8ha. The development also consists of the retention and continuation of quarrying activities over an area of 10.9ha at Aughamore Upper, Aughnaclyffe, Co. Longford”.

Planning permission was granted by Longford CoCo under the Permission Reference 07/831. A copy of the planning permission notice and approved final void design and restoration concept are appended at Appendix 4.1.

The planning permission details how the site will be worked across 4 phases, with overburden removed and stored in identified locations around the edge of the quarry void, with the quarry extended laterally to the northwest and deepened.

As shown on the approved final void design drawing appended at Appendix 4.1, the extant planning permission permits extraction to a maximum depth of c. 108mAOD in the western part of the quarry void.

It is to be noted that the proposed development does not seek to extract to the maximum permitted depth currently consented at the quarry. Workings will be extended laterally and limited to a maximum depth of 114mAOD, instead of the c.108mAOD as consented at the quarry. The consented development allows for the de-watering of the site and the approved method of extraction is via drill and blasting. Both approved practices are proposed to continue.

The approved restoration scheme for the site, also held at Appendix 4.1 is to allow for the creation of a waterbody with a proposed water level of 154mAOD, which would be created following the cessation of pumping.

The site benefits from a number of other planning permissions for development ancillary to the quarrying operations, namely:

- **Ref 11384-** permission granted for workshop, offices, crushing and screening plant on 10/09/1990;
- **Ref 11962-** permission granted for concrete batching plant and tar batching plant on 07/08/1992; and
- **Ref 22/79-** permission granted for installation and operation of a readymix concrete batching plant on 30/05/2022.

A planning application is also currently pending with Longford CoCo under the Application Reference 22/195 for the installation of an aggregate storage shed (area 902 m²) and partial realignment of existing private laneway.

The planning history above demonstrates that the principle of mineral extraction at the site is one which has been considered on a number of occasions and deemed to be acceptable at this location. The planning history also demonstrates that mineral extraction to depths greater than that proposed

within this application have been considered acceptable, as has the concept of overburden storage landforms being created around the edge of the quarry void. Finally, the concept of the site being restored to form a waterbody has also been considered and found acceptable.

4.4 Site Access

The site will be accessed via the existing approved quarry entrance which is utilised by quarry traffic including HGV's. No intensification of operations is proposed as a result of the proposed operations and therefore no alteration to the existing quarry entrance is necessary. The existing access to the southern part of the Application site, via farm buildings located along the southern boundary of the site will be 'stopped up' and all access to the site will be via the existing quarry entrance. Full details of the highway arrangements are detailed at Section 11 of this EIAR.

4.5 Site Operations

The proposed development will be undertaken across three main stages:

- Stage 1- Establishment
- Stage 2- Phased Extraction
- Stage 3- Final Restoration

4.5.1 Site Establishment

The Site Establishment Stage of the development will see the demolition of the existing farm outbuildings located in the southern part of the site. The former dwelling building and adjacent stone shed will be retained, along with surrounding existing woodland and vegetation, in order to avoid any significant effects upon protected species of bat and allow for continued connectivity with the surrounding foraging habitat. This phase of development will also see the

erection of the earthen screening bund along the southern perimeter of the Application site.

The demolition of the existing structures will be undertaken by approved contractors and in accordance with best practice methods and guidance. All material resultant from the demolition works will be appropriately disposed of and recycled.

Following the demolition of the structures, the earthen screening bund will be erected along the southern boundary of the site. Overburden from the 'initial strip' of the proposed lateral extension area will be utilised in the construction of the earthen bund along the southern boundary of the site.

Rather than stripping overburden from all of the lateral extension area at the outset, the extension area will be stripped in phases, on a campaign basis, in advance of extraction as it progresses from north to south.

Following the construction of the screening bunds they will be finished with topsoil and seeded/planted with species to be specified and agreed with Longford CoCo. The bund will screen any potential views of the extension area from properties to the south and longer range views from the surrounding area. It will also act as a barrier, containing noise and dust associated with the proposed development within the quarry void.

4.5.2 Stage 2- Phased Extraction

Following the Site Establishment stage, the site will be worked in a phased manner with extraction progressing southwards and then eastwards from the existing quarry void.

The phased extraction will see the gradual extension of the quarry void southwards and then eastwards. As the quarry gradually extends laterally, the disturbed footprint will be periodically deepened so as to make best use of the

mineral resource within the disturbed quarry footprint. The proposed phasing of the works is detailed in the accompanying drawings held at Appendix 4.2.

The overlaying overburden and topsoils will be extracted with the use of a 12m-reach 360° excavator and loaded in to dump truck, where it will be deposited to create the overburden landforms to the north and south of the lateral extension area. Following construction, the overburden landforms will be topped with topsoils and planted with an appropriate woodland mix.

The topsoils and overburden will be removed on a campaign basis, across areas sufficient in size to facilitate 1-2 years' worth of extraction of the underlying bedrock at a time. As such, the change in the surface will be gradual with overburden and underlying bedrock removed in increments. This process of incremental overburden removal followed by bedrock extraction will continue until the quarry has reached its maximum lateral extents, following which the void will be deepened.

The underlying bedrock will be extracted via drill and blast methodology as is the current, approved practice at the quarry. The mineral won will be processed at the quarry face via the use of mobile crushing and screening plant to produce a range of aggregates. The aggregate products will be stockpiled on the quarry floor, prior to being sold and transported off-site via HGV or used in the manufacturing plants on site.

Water at the site will continue to be managed via the established water management practices which are currently employed at the quarry. This process involves the accumulation of surface water in the quarry sump. The water is then to be pumped to a settlement pond prior to being discharged off-site into the local drainage network. This process is licenced by Longford CoCo under Effluent Discharge Licence Ref WP 02/20.

The location and dimensions of the sump will depend on the configuration of specific working at any one time; however, it is anticipated that it will be c. 2-3m below the depth of quarry floor at any time.

4.5.3 Final Restoration

Following the completion of extraction, the site will be restored in accordance with the submitted restoration concept to create a waterbody and a range of biodiverse habitats. A copy of the proposed restoration concept is held at Appendix 4.3. Details of the proposed planting ratios are detailed on the restoration scheme, with the aim of allowing the site to assimilate back into the local landscape as well as delivering biodiversity improvements.

Over the course of the lifetime of the development, the overburden landforms will have been planted and will have become well established prior to the completion of extraction.

Following the cessation of operations at the site, all vehicles, plant and equipment related to the proposed development will be removed.

Following the cessation of mineral extraction at the site and the associated management of water via de-watering, groundwater levels will rebound to see a water body (lake) formed within the quarry void following the exhaustion of permitted reserves.

The Site will top out and drain naturally to the existing low point at the northeast corner of the landholding, adjacent to the Site entrance, where the water will be released at the consented discharge point and follow the same route as is currently employed *i.e.* into a field ditch, which flows in a north-easterly direction to join Aghamore Stream.

The level of the water within the void will reside at approximately 160mAOD but will fluctuate with the seasonal variations of the water table, providing new margins at the lake's edge all year round.

4.6 Operating Hours

The site's hours of operation will typically be in accordance with those specified in the extant permission for the site:

- 0700-1800 Monday to Friday
- 0700-1300 Saturdays

There will be no working on Sundays or public holidays. From time to time, working may need to occur outside of these hours- for example in the event of an emergency or plant and machinery breakdown. The Planning Authority's permission is sought for temporary periods when working outside of these hours would be permitted. It is proposed that this be secured via an appropriately worded condition attached to any planning permission, which requires the Planning Authority to authorise such periods by way of advanced written approval.

4.7 Ancillary Buildings

No ancillary buildings are proposed as part of the proposed development.

4.8 Proposed Development

Planning permission is sought for the winning and working of minerals (greywacke) at lands to Aughnaclyffe Quarry, in the townlands of Aghamore Upper and Derreenavoggy, County Longford.

The development will be undertaken in phases. Each of the phases outlined below should be read in conjunction with the proposed development plans

(Drawing Refs 220912Dwg01 to 220919Dwg06) which shows the extent of development at the end of each phase, appended at **Appendix 4.2**.

The proposed development plans have been prepared by geotechnical engineering specialists, Quarrydesign Ltd with input from various of the other specialist contributors to the EIA expert project team.

The designs have been prepared following geological site investigation works in the form of a programme of borehole drilling. The results of the drilling have been used to determine the depth, quality and extent of the greywacke mineral resource. Full details of the site investigation works are provided at Section 5.

A number of groundwater monitoring boreholes (piezometers) have also been installed at the site. These have been installed with electronic data loggers which regularly monitor and record existing ground water levels. Data from the piezometers has been used to predict and model the water table within the existing strata (see Section 6 for further information). This data has also been utilised in the preparation of the quarry designs.

4.8.1 Existing Development- Drawing Ref 220912Dwg01

As detailed on drawing ref 220912Dwg01, mineral extraction at the quarry to date has extended to a depth c.141mAOD and the quarry sump in the eastern part of the quarry void has a water level of c.140mAOD. Mineral Extraction at the site is ongoing in the western part of the void in accordance with the extant planning permission for the site. Workings to date have resulted in 2 faces, split by a bench at c.155mAOD. The quarry floor is accessed via a ramp located to the south of the quarry sump.

4.8.2 Phase 1- Drawing Ref 220912Dwg02

Phase 1 will firstly see the site establishment works as described above completed. This includes the demolition of the previously identified existing farm

outbuildings and the construction of the earthen screening bund along the southern boundary of the site. The bund has been designed to a maximum height of c.3-4m above current ground levels.

This phase of extraction will also see the northwestern part of the quarry deepened by an additional bench, to a depth of c.128mAOD. The quarry benches will be accessed via ramps excavated from the bedrock along the northern faces of the quarry void.

Mineral extraction will then progress southwards, with the eastern part of the extension area extended southwards to approximately align with the current extent of permitted workings in the western part of the quarry void. This lateral extension of works will see void extended southwards to a depth matching that of the current quarry floor (c.141mAOD).

Non-commercially viable and out of specification material resultant from the processing of the mineral will be placed in lands to the west and south of the quarry void. The material will be graded to create a shallow outer slope. The material will then be topped with stripped topsoil / overburden and planted with the prescribed woodland mix.

4.8.3 Phase 2- Drawing Ref 220912Dwg03

The second phase of the quarry development will see the quarry extend laterally to the south. The various quarry benches will continue to be accessed via the ramps along the northern faces and additional ramping along the western faces.

Non-commercially viable and out of specification material will continue to be placed and graded in the southern eastern part of the site with area where the material will be deposited, gradually extending closer to the quarry void. Overburden will be stripped on a campaign basis and will be placed on top of the previously placed material. By this phase, the outer slopes of the landforms

and screening bund along the southern boundary will have 'greened up' and planting will have begun to grow.

4.8.4 Phase 3- Drawing Ref 220912Dwg04

The third phase of the quarry development will see the quarry extend laterally to the south and the quarry floor deepened to result in a maximum quarry floor depth of 114mAOD in the southwestern part of the quarry void. As detailed on the drawing, there will be a stand off from the buildings and vegetation being retained along the southern boundary of the site in order that potential bat roosting site and foraging/ commuting habitat can be retained. The various quarry benches will continue to be accessed via the ramps along the northern faces and additional ramping along the western faces.

Non-commercially viable and out of specification material will continue to be placed and graded in the southeastern part of the site with the area where the material deposition gradually extending closer to the quarry void. As per the previous phase, overburden will be stripped on a campaign basis and will be placed on top of the previously placed material. Previously placed material in the western part of the site will have 'greened up' by this phase and will be integrating back into the local landscape.

4.8.5 Phase 4- Drawing Ref 220912Dwg05

Phase 4 will see the quarry extension area extend to its maximum eastern lateral extents. The faces developed in Phases 2 and 3 will be extended eastwards and the deepest sinking at 114mAOD created in Phase 3 will also be extended eastwards. Overburden stripping in this phase will be limited to only a small remaining area with this material used to finalise the landform to the southeast of the void. By the end of this phase the quarry extension will have reached its full proposed lateral extents and the surrounding landform will be completely 'greened up' and planting well established.

4.8.6 Phase 5-Drawing Ref 220912Dwg06

Phase 5 will see the deepest sinking of the quarry floor extended eastwards. All development within this phase of the development will be within the disturbed footprint and no overburden removal is required. The development will result in a final quarry floor at 114mAOD which will be accessed via the ramping system established in the previous phases of the development.

4.9 Restoration

A restoration scheme has been produced by Mullin Design Associates in consultation with the Applicant's Ecologist (Woodrow); Hydrologist (BCL Hydro); and Geo-technical Engineers (Quarrydesign Ltd.). A copy of the Final Restoration Plan is appended at **Appendix 4.3**.

Following the completion of mineral extraction, the site will be restored in accordance with the submitted restoration concept which includes details on the proposed planting mixes for the site. All vehicles, plant and equipment related to the proposed development will be removed. Following the cessation of the dewatering operation, groundwater levels will rebound to see a water body (lake) formed with a water level of c.160mAOD.

5.0 GEOLOGICAL ASSESSMENT

The proposed development will by its very nature result in geological and geotechnical impacts. This section of the EIAR examines the existing geological and geotechnical baseline position and assesses the impacts of the proposed development upon the same. Recommendations for mitigation are provided where necessary.

5.1 Author of the report

The production of the quarry design and the geological review has been prepared by Mike Williams (Principal Engineering Geologist) MGeol (Hons), MSc, MCSM, Eur.Geol, CGeol, FGS, MIQ.

As a Principal Engineering Geologist with QuarryDesign, Mike has an Integrated Master's Degree in Geology from the University of Leicester awarded in 2010 and a Master of Science in Mining Engineering from Camborne School of Mines (University of Exeter) awarded in 2015.

Mike is a Chartered Geologist, Fellow of The Geological Society of London, a Member of the Institute of Quarrying and is also certified to commercially fly Small Unmanned Aerial Systems. Mike was previously employed by Aggregate Industries on the Graduate Management Program where he learnt quarrying processes from drilling and blasting through to crushing and screening. Following this he spent three years as an Exploration Geologist working in the Afar Desert in Ethiopia before returning to the UK to study his MSc at CSM.

Mike meets the requirements of both a Quarries Regulations Geotechnical Specialist and a PERC reporting aggregates geologist and has experience of over 200 sites across the UK and Europe in a variety of mineral deposits including sand and gravel, clay, chalk, limestone, sandstone, mudstone, marl, greywacke, china clay (weathered granite), granite, basalt, dolerite and diorite. Mike has significant experience of undertaking engineering geology in hard rock

and engineering soils and is competent in kinematic analysis, limit equilibrium analysis, finite element analysis, rockfall appraisal / assessment, blast vibration analysis and the design of tips, lagoons and stockpiles in accordance with the Quarries Regulations.

5.2 Assessment of Baseline Conditions

5.2.1 Geological setting

Aughnaclyffe Quarry is covered by the Geological Survey Ireland (GSI) 1:100,000 scale map number 12 “Longford Roscommon”, an extract of which is shown in 5.1 and 5.2.

The GSI “Solid” map for the site (5.1) indicates that the site is working Ordovician (485.4 to 443.8Ma) aged rocks comprising Greywacke with argillite and black shale of the Carrickateane Formation (shaded light green on Figure 5.1). The deposit is described by the GSI website as, “*Greywacke with minor shale and carbonate nodules. The greywackes are grey/greyish green, massive or thick bedded arenite which may contain black argillites/chert clasts that often have brown calcareous-weathering haloes*”.

Neither the underlying Glen Lodge Formation (shaded light purple on Figure 5.1) or the overlying Corn Hill Formation (shaded dark green on Figure 5.1) are exposed within the existing quarry excavation.

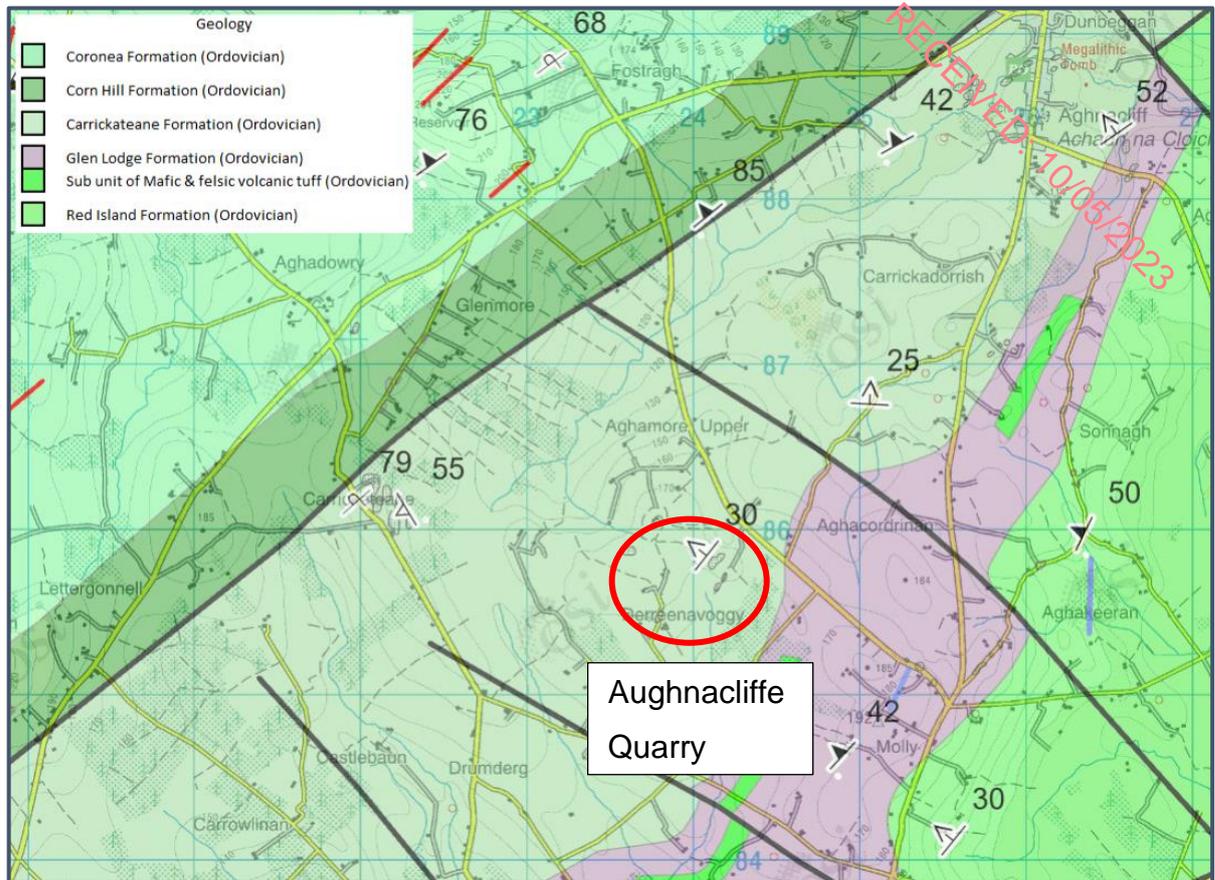


Figure 5.1 : Geological Survey Ireland - Extract of Geology from Map Viewer (Not to Scale). Creative Commons Attribution 4.0 International license

The GSI “Quaternary Sediments” map indicates that the majority of the superficial deposits around Aughnaclyffe (Quarry highlighted with red line on Figure 5.2) consist of Pleistocene age (0.01 – 18 Ma) Glacial Till (shaded pale purple on Figure 5.2) with areas of Blanket Peat (shaded pale Brown on 5.2) to the south and east of the site.

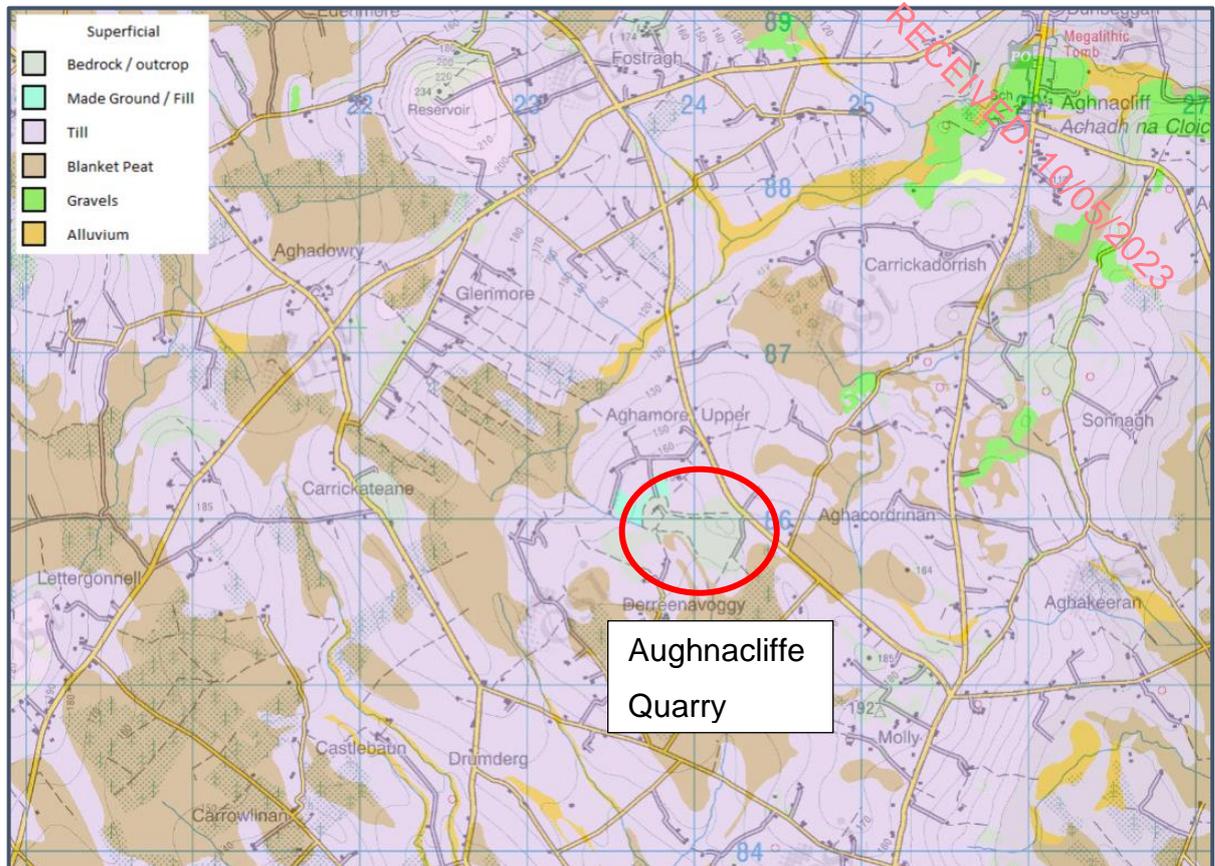


Figure 5.2: Geological Survey Ireland - Extract of Superficial Geology from Map Viewer (Not to Scale). Creative Commons Attribution 4.0 International license

5.2.2 2022 Site Investigation

Site investigation work was undertaken in Summer 2022 in lands to the Southwest of the existing quarry void. The aims of the investigation were:

- i. To determine the nature and thickness of the overburden;
- ii. To determine the nature and thickness of the workable Greywacke resource;
- iii. To obtain samples for quality assessment of the mineral; and
- iv. To enable an accurate calculation of the overburden volumes and potential mineral reserves.

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5.2.3 Locations of Boreholes

All of the boreholes drilled as part of this investigation were located in fields to the southwest of the existing extraction at Aughnaclyffe (Figure 5.3). The positions were chosen to give an accurate spread across the proposed extension area and provide coverage through the dipping strata and within the material that is proposed for extraction within the planning application.



Figure 5.3 Overview of Aughnaclyffe Quarry and area of site investigation to the southwest (red line indicates extent of extraction proposed within planning application)

The bedding of the rocks at Aughnaclyffe have a dip of 30° / 300° . The boreholes were positioned such that each will start within a different bed and end in the

same bed as the next one starts in. Figure 1.4 is a sketch to show how the inclined boreholes intersect beds that will also be present in adjacent boreholes.

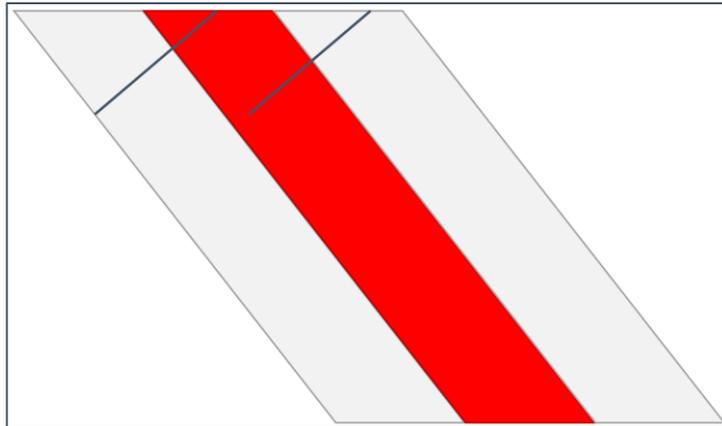


Figure 1.4 Boreholes inclined in opposite direction to dip of beds

5.2.4 Borehole Inclination

All 6 No. Boreholes completed during this investigation have been drilled in an inclined position, this methodology was selected to intersect the Greywacke and Mudstone beds roughly perpendicular to the bedding planes. The boreholes were drilled with a dip angle of 60° towards an azimuth (direction) of 120°.

Using information from BH2022/01, Figure 5.5 shows how the ‘as drilled’ depths have been converted to “true” depths for the boreholes. The borehole was drilled with an inclination of 60° from a starting elevation of 172.70mAOD. The ‘as drilled’ end of hole depth was 79.5m.

Trigonometry is used to calculate the true depth (Black dashed line), as below formula.

$$A = \sin(\text{Inclination of Drill String}) * (\text{As Drilled Length})$$

Using the known information, this becomes:

$$A = \sin 50 * 79.5$$

The true depth below ground level is therefore 68.96m. When subtracted from the starting level of the borehole (172.70mAOD) this produces a bottom level of the borehole of 103.74mAOD.

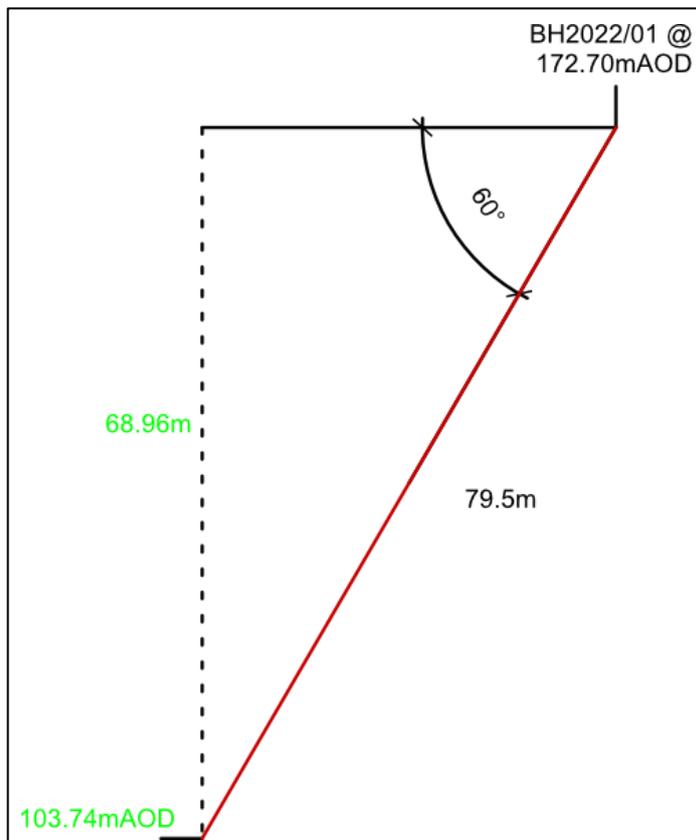


Figure 5.5 Correction of drilled depth for Inclined Boreholes

In this Section of the EIAR, unless otherwise stated, depths refer to the corrected depth in mAOD. In the borehole logs and previously issued data, depths were in 'as drilled metres' from the ground level at the start of the borehole. As the boreholes were drilled in an inclined orientation using drilled metres will exaggerate the thickness of beds and artificially increase the depth of features.

5.2.5 Drilling Method

The boreholes were drilled using Downhole Rotary Coring as the method. This method was chosen to allow intact core to be recovered for description and

laboratory testing. All completed boreholes have been logged in accordance with BS5930:2018 and BS EN ISO 14689.

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5.2.6 Geological Summary of Investigated Locations

Figure 5.6 below provides a summary of the encountered geology from each Borehole of the Site Investigation. The figure provides a simplified overview of the geology and does not include smaller scale features such as interbedding of thin beds of greywacke/mudstone within an overall layer of mudstone/greywacke. Depths in the below graph refer to vertical metres from the ground surface and not the 'as drilled'; depths.

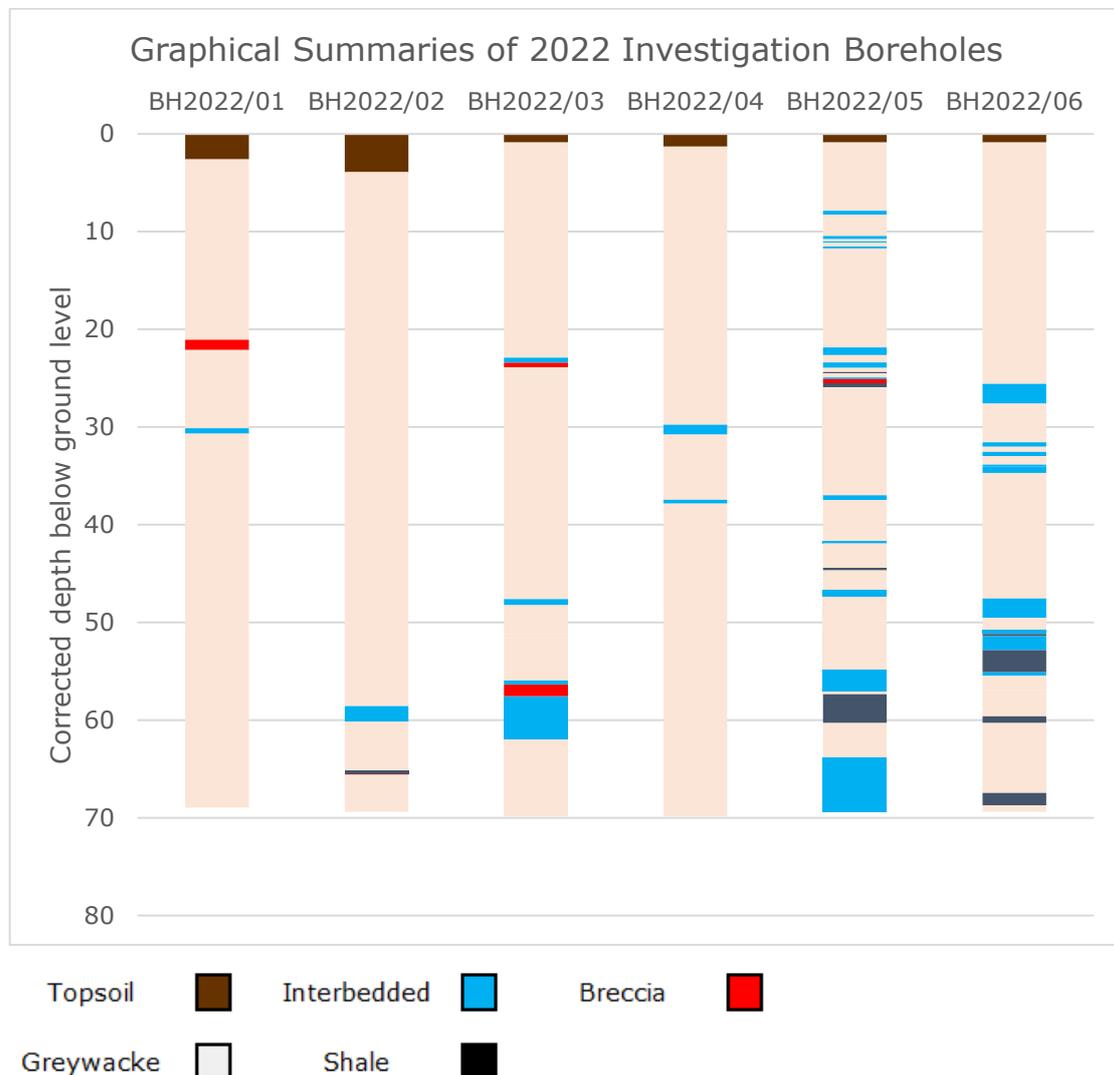


Figure 5.6: Graphical Summaries of 2022 Investigation Boreholes

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5.2.7 Geotechnical Setting

Quarry faces / excavations

Structural Geological information from the existing quarry has been collected by QuarryDesign. The collection of discontinuity data identified bedding and 5 separate joint sets (plus random values) for the site. Of the joint sets located on site three Joint Sets were also observed to be overturned.

Table 5.1 below provides a summary of the discontinuity dip and dip directions collected. This data is also graphically presented on a stereonet in Figure 5.7.

Discontinuity Group	Dip	Dip Direction
	Average (°)	Average (°)
Bedding	40	313
JS1	77	148
JS1' OT	86	330
JS2	65	231
JS3	81	211
JS3' OT	86	32
JS4	81	270
JS4' OT	86	91
JS5	67	17

Table 5.1: Discontinuity readings for Aughnacliffe Quarry

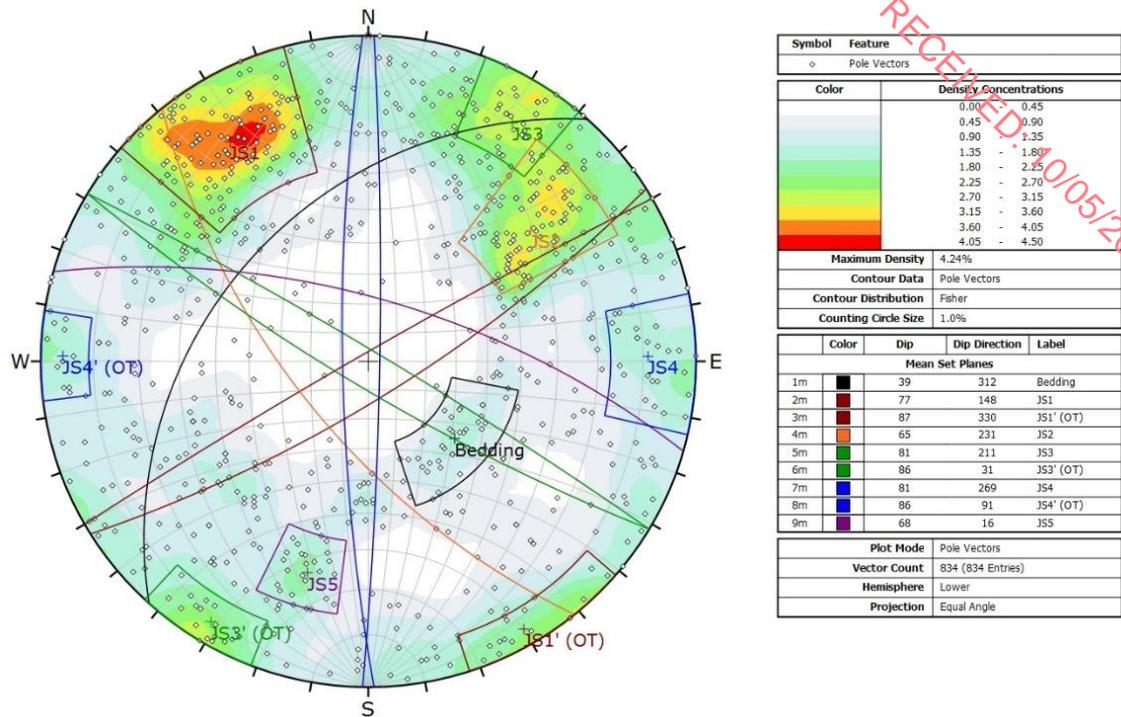


Figure 5.7 Joint Set Data at Aughnaclyffe Quarry

In addition to data collection, a Limit State Equilibrium Analysis of Aughnaclyffe Quarry has been undertaken which has informed the design parameters of the quarry. Face design criteria are set out in Table 5.2 below:

Face Orientation	Face height (m)	Face Angle (°)	Bench Width (m)
All Faces - Top bench	NA	NA	3.0
North Wall (towards 190°) and West Wall (towards 135°)	15	75	10.5
	14	75	10.0
	13	75	9.5
West Wall (towards 100°), Eastern Wall (towards 310°) and Eastern Wall (towards 270°)	5	75	5.5
	15	75	8.5
	14	75	8.0
	13	75	7.5
	10	75	5.5
	6	75	4.0
	5	75	3.5

Southern Wall (towards 040°), Southern Wall (towards 000°) and Eastern Wall (towards 250°)	15	75	11.0
	14	75	10.5
	13	75	10.0
	5	75	6.0
	10	75	8.5

Table 5.2: Aughnaclyffe face design criteria

External Bunds

Stability analysis has been undertaken on the bunds placed around the quarry landholding. These have been analysed using Rocscience's slide software.

General assumptions made are as follows:

- Material placed in external bunds will be a combination of overburden and out of specification material created during the processing of the greywacke.
- Material will be placed in horizontal layers, no thicker than 0.5m in depth which will then be compacted through a minimum of five passes with a dozer.
- Suitable drainage will be installed at the base of tips to ensure they are adequately drained.
- The following material properties have been used as part of this analysis:

Material	Unit Weight (kg/m ³)	Friction Angle (°)	Cohesion (kPa)
Overburden	19	35	40
Greywacke	24	35	500
Bunds formed mostly of overburden	19	23	5

Table 5.3 Stability Analysis Data

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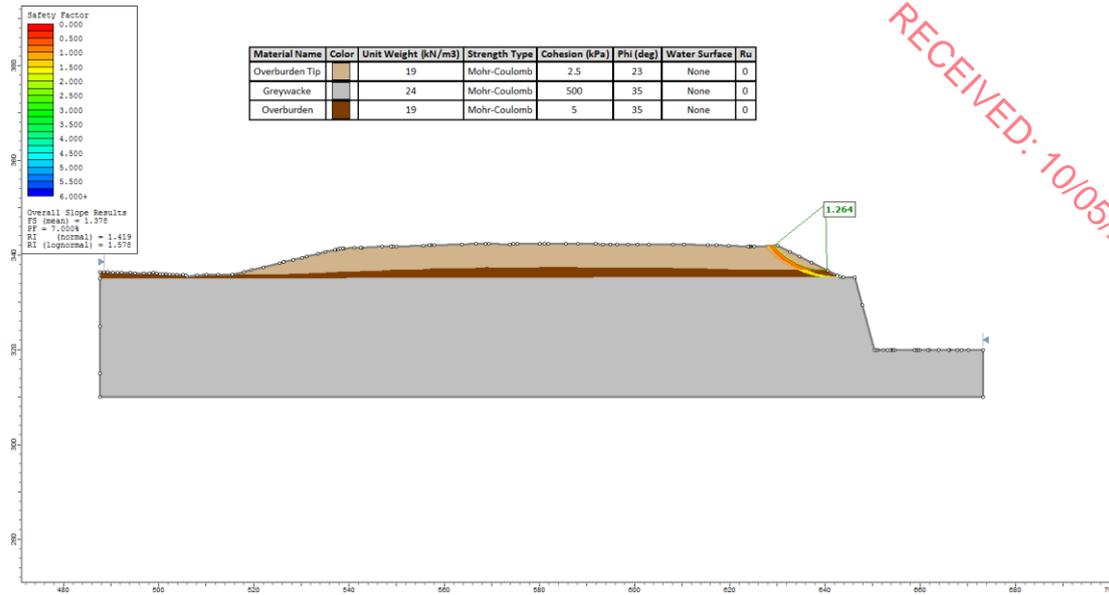


Figure 5.8: Stability analysis for external bunds showing steeper slopes indicating a minimum Factor of Safety of 1.26

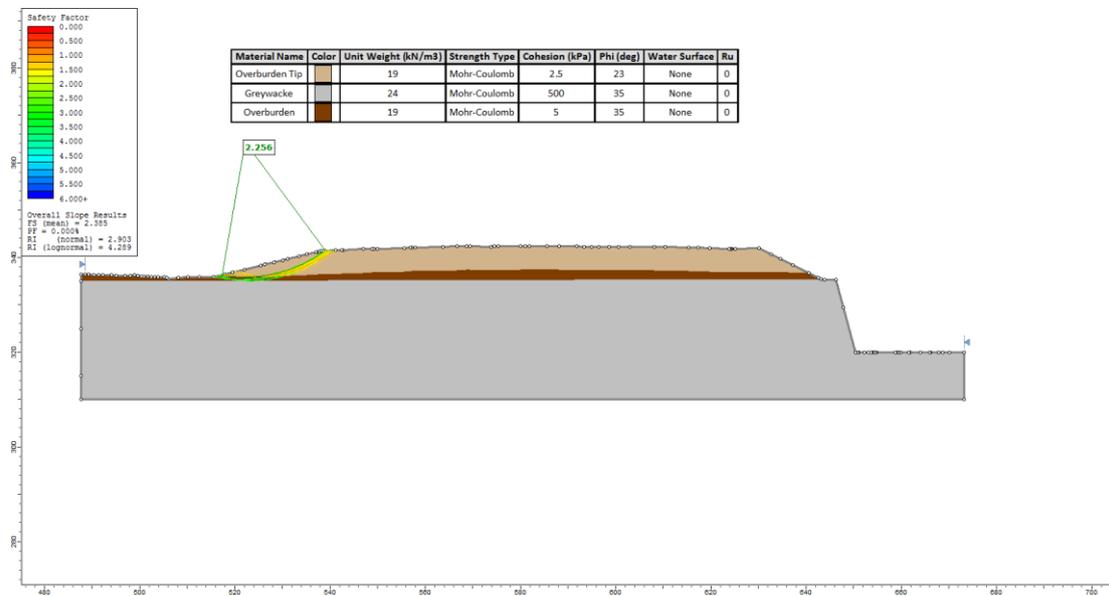


Figure 5.9: Stability analysis for external bunds showing steeper slopes indicating a minimum Factor of Safety of 2.26

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5.3 Assessment of Impacts

5.3.1 Geological Impacts

Quarrying, by definition, requires the excavation and removal of the mineral deposit, thereby producing a permanent impact on the local bedrock environment.

During extraction, material will be extracted through drilling and blasting methods and will then be processed into a series of single and mixed sized aggregates for sale.

Whilst the material removed from the site cannot be replaced, when taking into account the wider geological landscape, the scale of the proposed extraction means that the impact upon the geological succession of both the surrounding superficial deposits and the Carrickateane Formation will be minimal.

5.3.2 Geotechnical Impacts

Given the very nature of the development, the method and manner of quarrying could pose an impact in terms of health and safety upon staff working within the quarry void. The proposed development also has the potential to affect those beyond the quarry boundary by virtue of the potential for land instability.

In the preparation of the proposed development plans a detailed investigation of the existing quarry has been undertaken to determine the failure mechanisms that could occur during extraction. A detailed analysis of face orientations has been undertaken to ensure that the configuration of the design proposed will remain stable. Subject to the development being undertaken in accordance with the proposed development plans and with the implementation of mitigation measures listed in the following section, the geotechnical impact of the proposed development will be minimised.

5.4 Proposed Mitigation Measures

Quarry Design have completed a set of development plans for Aughnaclyffe Quarry. These plans indicate that the following Quarry Design parameters should be followed:

- Overburden slopes have been retained at a gradient of 1v:2h. The distance between the toe of the overburden slope and the crest of the first quarry face is indicated in Table 5.2 “All Faces - Top bench”;
- Face angles and bench widths are indicated in Table 5.2. The height of the quarry faces is based on an excavator with a minimum reach of 13m which will work from a working pad which is at least 2m in height. This will allow the excavator to scale the quarry faces safely.
- A minimum production bench width of 20m must be maintained when working multiple benches;
- Haul ramps are to be formed at a gradient of 1v:10h or shallower;
- The initial haul ramp, located in the north-western margin of the excavation has been shown as a fill ramp with lower slopes formed at 1v:1.5h (this is suitable for a blasted ramp). All other ramps have been designed as insitu ramps where blasting contractors will blast to the required depth of the ramp to form its gradient.
- All ramps designed to a minimum width of 20m;
- Adequate edge protection to be provided at the top of all faces and along all quarry ramps and haul roads;
- Adequate Rock Traps are to be installed at the toe of all accessible quarry faces;
- Overburden is to be stripped and placed in bunds in the west, south and south-eastern margin of the site. Additional out of specification quarry material may also be placed in these bunds if required;
 - On the western margin, the bund has been developed with outward facing slopes at a gradient of ~1v:5h and slopes into the quarry void at a gradient of 1v:2h. The bund is approximately 3m higher than the current topography;

- On the southern margin, the bund has been developed with outward and inward facing slopes at a gradient of 1v:2h. The bund is approximately 3m higher than the current topography;
- On the south-eastern margin, the bund has been developed with outward facing slopes at a gradient of ~1v:4h and slopes into the quarry void at a gradient of 1v:2h. The bund is approximately 5m higher than the current topography.

5.5 Residual Impacts

The development proposes to develop the existing excavation in a southerly direction and to a depth of 114mAOD. Quarry development plans have been prepared in accordance with relevant legislation. The designs have been prepared following a geotechnical investigation of the site and are supported by specific site investigation data. A number of measures have been incorporated within the designs in order to ensure that the development can be undertaken safely and that the proposed development would not result in any adverse impacts in the surrounding area.

5.6 Conclusions

Quarrying, by definition, requires the excavation and removal of the mineral deposit, thereby producing a permanent impact on the local bedrock environment. It is considered that the scale of the proposed development will result in the site continuing to have a limited impact at a local level on the geological environment.

Furthermore, by the nature of quarrying activities, geotechnical impacts will always be possible. Any likely impacts have been minimised by the preparation of quarry development plans which are compliant with the relevant legislation. Additional mitigation measures in the form of reduced face heights will further reduce any potential impacts arising. Due to the overall height of the quarry faces exceeding 30m, the quarry will be subject to a bi-annual Geo-Technical

Assessment as required by the Safety, Health and Welfare at Work (Quarries) Regulations 2008 to monitor geotechnical aspects of the quarry and ensure compliance with the regulations and continued best practice.

Given the above, the proposed development is not considered likely to result in any significant geological or geotechnical effects upon the environment.

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6.0 WATER ENVIRONMENT

6.1 Author of the Report

A Hydrological and Hydrogeological Impact Assessment (H&HIA) is held at Appendix 6.1.

The H&HIA has been prepared by BCL Consultant Hydrogeologists Limited, a specialist consultancy with extensive experience within the aggregates, cement, building products and landfill sectors. BCL has provided specialist services and advice to the extractive industry since 2000. During this time, experience has been gained from involvement in the study of hydrogeological and hydrological systems in connection with planning matters at over 100 quarries throughout Ireland and the United Kingdom.

Henry Lister, the author of the H&HIA, is a Director of the Company and has over 25 years' experience in completing Hydrogeological and Hydrological Assessments. This has included the assessment of numerous mineral extraction planning applications, the review of mineral permissions (ROMPs) and substitute consents and associated remedial assessments.

6.2 Introduction

BCL has been appointed to undertake an assessment of the potential hydrological and hydrogeological impacts from the proposed development at the site and in the surrounding area. The assessment gives an account of the potential impacts of the proposed development upon the hydrological/hydrogeological regimes and outlines the requirements for mitigation, where necessary, needed to minimise those impacts to an acceptable level.

The H&HIA includes an appraisal of the hydrology and hydrogeological information submitted in support of previous planning applications at the site and considers the current baseline conditions. An assessment of the potential

impacts of the proposed development is undertaken with mitigation measures proposed where necessary.

6.3 Assessment of Baseline Conditions

The Application Area straddles a broad topographic ridge, which also forms a surface water divide.

The topography across the northern part of the Site is dictated by quarry workings to date, with ground levels ranging from c.162 metres above Ordnance Datum (maOD) at the quarry entrance to c.141 maOD on the quarry floor.

Levels across the southern part of the Application Site (the undeveloped agricultural lands) range from 159 maOD along the eastern boundary and 165 maOD along the western boundary, rising to c.178 maOD in the central part of the extension lands.

To the north northeast of the Site, the Aghnaclyffe Stream and its tributaries flow to Lough Gowna (61 maOD). The source of Aghnaclyffe Stream is at the northwest boundary of the landholding. One of its tributaries, which arises close to the northeast corner of the quarry, is hereafter referred to as Aghamore Stream.

To the south southwest, the slopes are drained in a southerly direction by unnamed tributaries that join the Camlin River (c.50 maOD). The main river flows from east to west, passing to the north of Ballinalee. The stream that descends from the southern end of the Application Area is hereafter referred to as Derreenavoggy Stream.

No part of the proposed development footprint lies within lands designated to be at risk of fluvial flooding.

The closest Designated Site is Lough Gowna pNHA, which is circa 3.25 km to the east northeast of the Site. It is a medium-sized lake, important for wintering waterfowl and the presence of interesting oligotrophic plant communities.

The economic reserve at the Application Site belongs to two main lithological units, the Glen Lodge Formation and the Carrickateane Formation, both of which are of Ordovician age; comprising greywacke and shale.

Beyond the exposed bedrock in the quarry, the surrounding lands have an extensive cover of Till; together with large areas of Blanket Peat and Cut Over Raised Peat.

Prior to the quarry development (and the associated dewatering operation), it is postulated that the groundwater flow direction would have been from south southwest (peaking at 164-167 maOD); and declining towards the north northeast (equating to 158-160 maOD).

At present day, the water level in the quarry sump is suppressed at 140 maOD by means of pumped dewatering and a very steep-sided cone of depression has been imposed upon groundwater levels.

Beyond the cone of depression, seasonal variations in groundwater level are typically in the range of 2.5m.

The dewatering operation is conducted under Discharge Licence WP 02/20. The licence specifies that the maximum volume of effluent discharged shall not exceed 1,350 m³/day. The quality of the effluent must comply with the following limits: Suspended solids shall not exceed 25 mg/l; pH shall be within the range 6-9 pH units; Temperature shall be consistent with ambient conditions; and no film of Hydrocarbons shall be visible on the final effluent.

The Discharge Point is at the northeast corner of the landholding, adjacent to the Site entrance. The water is released into a field ditch, which flows in a northeasterly direction to join Aghamore Stream.

The hydraulic conductivity of the bedrock has been estimated using falling-head test data collected from 5-no. piezometers. The results range from 0.002 m/day to 0.125 m/day.

The Site is not located within any EPA/GSI-delineated Source Protection Areas for Public Water Supplies or for Group Schemes.

The closest mapped Group Scheme Preliminary Source Protection Area is at Fostragh, which is some 2.3 km to the north of the Site.

The closest mapped third-party supply (Well 4) is some 185m to the north of the deepest proposed sinking at the Application Site. This is situated next to a football pitch; there is no residential property at this location.

Well W2 is a private well used for domestic water supply. It is some 205m to the southwest of the deepest proposed sinking at the Application Site. It is noteworthy that there is mains water supply coming to the neighbouring house (130m to the south).

Spring D is about 310m to the west of the deepest proposed sinking. The adjacent property is an abandoned cottage.

4 rounds of sampling have been conducted at the Site piezometers and Quarry Sump. Groundwater quality is generally good. Occasional spikes in Orthophosphate and Ammonia could be attributed to agricultural practices. E. Coli and Faecal Streptococci are commonly detected in the water samples and would be caused by livestock and landspreading. Sporadic detection of hydrocarbons could be sourced from quarry vehicles, but equally could be drawn into the sump from 3rd-party land (e.g. from agricultural machinery) or the

public highway. No hydrocarbons were detected in the Quarry Sump in Rounds 3 and 4.

6.4 Assessment of Impacts

The total volume of water pumped from the quarry void in the year from 19th January 2022 to 18th January 2023 (*i.e.* the most recent data) was 168,256 m³/yr, averaging 461 m³/d.

Subtracting rainfall input from the overall pumped volume, it is calculated that the groundwater ingress rate within the quarry void in its current configuration equates to 65,670 m³/yr, equivalent to 180 m³/d.

The radius of influence of dewatering drawdown (R_0) at the current void is estimated to equate to some 60 m. The final radius of influence is likely to be in the region of 140 m.

The overall dewatering requirement in the final phase of the proposed development (to deal with the combined input from rainfall and groundwater ingress) equates to an estimated 446,645 m³/yr, equivalent to 1,223 m³/d.

The Proposed Development will remove the uppermost section (0.017 km²) of the catchment area for the Derreenavoggy Stream, which drains southwards to the Camlin River. This is less than 0.1% reduction in catchment area and therefore considered to be of negligible impact.

Any rainfall runoff intercepted by the quarry and temporarily lost from the northern Sub Basin (Aghnaclyffe – Aghamore) will be collected in the quarry sump; and, after settlement, it will be directed to the consented discharge point and returned to the same sub basin (immediately downstream of the quarry). Quarry dewatering is a non-consumptive abstraction and there will be no reduction in flow rates in the northern sub basin.

The operation of mobile and fixed plant presents a risk that pollutants may enter groundwater as a result of hydrocarbon spillage or leakage on Site. Such sources are identified as fuel, lubricating and hydraulic oils.

6.5 Proposed Mitigation Measures

The overall dewatering requirement in the final phase of the proposed development (to deal with the combined input from rainfall and groundwater ingress) equates to an estimated 1,223 m³/d. Water quality in the receiving watercourse is protected under the terms and conditions set by Discharge Licence WP 02/20.

Even though the average predicted rate (1,223 m³/d) would comply with the licensed rate (1,350 m³/d), it is recommended that the Applicant should lodge an application to vary the consented limit, making allowance for seasonal variations in rainfall.

The peak seasonal dewatering requirement at the final development is estimated at 2,450 m³/d. This would not cause any flood risk in the receiving watercourse because the system has already been tested at 3,500 m³/d under the terms of Discharge Licence WP 02/20 (Condition 2.1), effective from 20th October 2020.

All ingress water will drain under gravity into the dewatering sump, which will be maintained with a minimum surface area of approximately 2,450 m² and operational freeboard of 1 m, thus providing 2,450 m³ storage capacity. This is a precautionary approach – it allows 24 hours to settle out particles of 0.004 mm (fine silt) or greater.

The operational solution (when rainfall exceeds the capacity of the sump) is to allow temporary and shallow ponding across the across the final sinking (114 maOD), which has a surface area of approximately 5.2 hectares. Given that the quarry floor is relatively flat, the water would spread across a large part of the

floor without exceeding 25 cm depth during the design storm (6-hour duration and 100-year return period).

There is no risk of runoff from the quarry void to neighbouring land. The lowest point on the Site boundary is at *circa* 160 maOD, which is 45 m higher than the level of ponded water (temporary flooding) on the quarry floor.

Silt fencing will be erected at the toe of the outer slope of any screening bund when it is under construction. On each new section of screening bund, this silt fencing will be left in place until the slope is seeded and fully-vegetated.

Precautionary procedures have been advanced for the protection of groundwater quality; by minimising the likelihood of occurrence in the first instance, and specification of reactive measures for the management of accidental spillage and / or long-term leakage of fuel, lubricating or hydraulic oils should this occur. The company has an accredited ISO 14001:2015 EMS covering all of its quarry sites.

By protecting groundwater quality, there is no risk of pollutant linkage to down-gradient receptors, thus safeguarding the hydrology of the downstream environment and any Designated Site.

The radius of influence of dewatering drawdown at the final development is likely to be in the region of 140 m. It is considered that there will be no drawdown-related impact upon water levels and flow at local water supplies, all of which lie outside the radius of influence. The closest residential supply is taken from Well W2. This is some 205m to the southwest of the deepest proposed sinking at the Application Site. It is noteworthy that there is mains water supply coming to the neighbouring house (130m to the south).

The piezometer network provides sufficient coverage for groundwater level and quality monitoring to check that there is no risk of impact at these supplies.

6.6 Residual Impacts

No residual impacts are expected following implementation of the above mitigation.

The proposed restoration will see the cessation of dewatering and the water will recover to a level of approximately 160 maOD in the final development.

The Site will top out and drain naturally to the existing low point at the northeast corner of the landholding, adjacent to the Site entrance, where the water will be released at the consented discharge point and follow the same route as currently employed *i.e.* into a field ditch, which flows in a northeasterly direction to join Aghamore Stream.

6.7 Conclusions

The quarry straddles the boundary between the Cavan GWB (1,410 km²) and the Longford Ballinalee GWB (340 km²).

Given the overall area of the GWBs, the magnitude of impact of the proposed operation at the Applicant's quarry (0.22 km²) on the regional water balance is '**negligible**', therefore the significance of impact on the regional water balance is rated as '**imperceptible**'.

The final radius of influence of dewatering drawdown is estimated at c.140 m. All water supplies sit outside this radius. Therefore, it is considered that the proposed development will cause no derogation in the yield of local water supplies.

The dewatering operation is conducted under Discharge Licence WP 02/20 (dated October 2020), issued by Longford County Council. Water is discharged into a field ditch, which flows in a northeasterly direction to join Aghamore Stream, which then joins the Aghnaclyffe Stream and flows into Lough Gowna.

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Water quality in the receiving watercourse is protected under the terms and conditions set by the Discharge Licence.

Lough Gowna is a proposed Natural Heritage Area (pNHA), which is of '**high**' importance (rising to '**very high**' if NHA status is confirmed). As outlined above, the quarry will not have an adverse impact upon flow rate or water quality in Aghamore – Aghnaclyffe Stream, which feeds into Lough Gowna.

The magnitude of impact on the hydrology of the Lough is '**negligible**', therefore the significance of impact of activities within the Application Area on the hydrology of the Lough is rated as '**imperceptible**'.

On the basis of baseline study and subsequent impact assessment, there are considered to be no over-riding hydrological or hydrogeological related reasons why the Proposed Development should not proceed in the manner described by the Application. This conclusion assumes that any permission, if granted, should be conditioned by implementation and adherence to any relevant recommendations advanced within the full assessment and other such conditions that may be reasonably imposed by the Planning and Regulatory Authorities.

7.0 NOISE AND VIBRATION

7.1 Author of the Report

A Noise Impact Assessment (NIA), held as Appendix 7.1 has prepared by AONA Environmental Consulting Ltd., a specialist consultancy with extensive experience within the aggregates, cement, industrial minerals, energy minerals, building products and metaliferous mining sectors. AONA Environmental has extensive experience in noise impact assessments, including in excess of 10 assessments per annum for the mineral extraction and processing industry.

AONA Environmental Consulting Ltd. has over 25 years experience in the assessment of noise impact for the mineral extraction and processing industry.

7.2 Introduction

The NIA presents an assessment of the potential noise impacts of the proposed extension to existing mineral extraction site at Aughnacliffe Quarry on lands directly to the south of the existing quarry, at noise sensitive receiver locations in the Townlands of Aghamore Upper and Derreenavoggy, County Longford. This Noise Impact Assessment considers the potential noise impact of the proposed winning and working of the greywacke mineral resource at noise sensitive receiver locations in proximity to the proposed development site.

The significance of noise impact due to the proposed winning and working of the greywacke mineral resource is mainly dependent upon the proximity of sensitive locations to the noise sources within the proposed development area. The potential for a significant noise impact to occur has been assessed in accordance with the impact assessment procedures in the Quarries and Ancillary Activities, Guidelines for Planning Authorities, April 2004, Department of the Environment, Heritage and Local Government. (DoEHLG Guidance) and Environmental Management Guidelines Environmental Management in the

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Extractive Industry (Non-Scheduled Minerals), Environmental Protection Agency (2006)

7.3 Methodology

The Environmental Management Guidelines Environmental Management in the Extractive Industry (Non-Scheduled Minerals), Environmental Protection Agency (2006), the Environmental Protection Agency (EPA) has produced a Guidance Note for Noise in Relation to Scheduled Activities (EPA, 1996). It deals in general terms with the approach to be taken in the measurement and control of noise, and provides advice in relation to the setting of noise Emission Limit Values (ELV) and compliance monitoring. In relation to quarry developments and ancillary activities, it is recommended that noise from the activities on site shall not exceed the following noise ELVs at the nearest noise-sensitive receptor:

- Daytime: 08:00–20:00 h $L_{Aeq(1h)} = 55$ dB(A)
- Night-time: 20:00–08:00 h $L_{Aeq(1h)} = 45$ dB(A)

Baseline noise monitoring has been undertaken in accordance with *ISO 1996-1, 2016 Acoustics – Description, Measurement and Assessment of Environmental Noise*.

Noise prediction modelling has been undertaken using CadnaA noise modelling software. This allows for detailed prediction of noise levels to be undertaken for large numbers of receptor points and different noise emission scenarios. Noise level predictions have enabled the potential impact on the noise climate resulting from the proposed development to be determined. A noise model has been run for worst-case scenario to determine if the future noise impact will comply with the relevant guidelines. The modelling software calculates noise levels based on the emission parameters and spatial settings from the design drawings as supplied to AONA Environmental.

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7.4 Assessment of Baseline Conditions

The existing background noise levels (L_{A90} values) have been determined in the vicinity of the closest receivers to the proposed quarry extension site. The baseline noise monitoring results indicate a relatively quiet rural area. The noise monitoring data indicates that the existing noise level at NML 1 to the south of the quarry extension is approximately 35-40 dB(A) $L_{eq, 15min}$ / 30 dB(A) L_{90} and at NML 2 to the north of the quarry extension is approximately 45 dB(A) $L_{eq, 15min}$ / 35 dB(A) L_{90} .

Quarterly noise monitoring is undertaken at three locations along the boundary of the existing quarry site in order to assess compliance with Condition 4 of Planning Reference Number 07/831 which states that the noise level from within the premises shall not exceed:

- 55 dB(A) $L_{eq, 1\text{ hour}}$ over a continuous one-hour period between the hours of 08.00 and 20.00, when measured at all sensitive locations in the vicinity of the site; and
- 45 dB(A) $L_{eq, 15\text{ minutes}}$ at any other time. Audible tonal or impulsive components in noise emissions should be maintained at any noise sensitive locations.

All quarterly noise monitoring reports state that the noise emissions levels due to site activities at all noise monitoring locations are within the limit value of 55 dB $L_{Ar,T}$, and that the existing quarry is operating within the Planning conditions and is not a source of noise nuisance at local sensitive receptors.

7.5 Assessment of Impacts

Based on the relevant guidelines outlined above, the noise assessment indicates that the development must comply with a daytime noise limit of 55 dB

$L_{Aeq, 1 \text{ hour}}$ from all quarrying and related activities within the premises, when measured at 'noise sensitive locations'.

Appropriate sound power levels have been used in the noise models to predict noise levels during periods of proposed greywacke mineral resource extraction using associated plant and equipment and HGV movements within and to and from the site access area and the asphalt/batching plant on site. The predicted noise levels have been assessed against the noise limits outlined above.

AONA Environmental has undertaken source noise level readings in close proximity to the proposed noise sources on site. This has allowed for an accurate noise model of the future proposed noise sources on site to be prepared.

Noise levels have been predicted at sensitive receptor locations due to the noise sources within the proposed application boundary and worst-case noise levels have been predicted due to all noise sources within the site.

The predicted cumulative noise levels that will occur at noise sensitive receivers over a 1 hour period during each phase of extraction due to the following activities all on-going concurrently are based upon:

- Greywacke mineral extraction, using associated plant and equipment with mobile crushing and screening at quarry face;
- HGV movements on site haul roads to and from the site access, asphalt and concrete batching plant area;
- The operation of the asphalt and concrete batching plant;
- The operation of the drill rig at the quarry face;
- Overburden removal; and
- The placing of material on lands to the South East of the quarry void using a dozer, excavator and dump truck – 1 load every 2 hours.

The predicted worst-case cumulative noise levels at the noise sensitive receiver locations due to the proposed mineral extraction and associated HGV transport activities, the operation of the asphalt and concrete batching plants, the operation of the drill rig, overburden removal and the placement of material are in accordance with noise limit of 55 dB(A). As the proposed extraction moves in a vertical direction, this will bring additional noise attenuation due to the sides of the deepened quarry area, and will result in lower noise levels at the noise sensitive receivers in proximity to the mineral extraction activities.

The drill rig operations and blasting for the quarrying process will typically take place once per month. The preparatory drilling using an air drill and compressor which will operate for approximately two days every month. All neighbours are notified in advance of upcoming blasting dates and times. The vibration monitoring results during existing blasting on site indicate compliance with the relevant Air Overpressure limit of 125 dB(L) and the Peak Particle Velocity Limit of 12 mm/s.

It is accepted that all operators will have some noisier short term activities that have a higher noise limit of 70 dB(A) as distinct from normal operations such as overburden removal, bund construction, restoration works, etc. However, restoration works will be ongoing as the proposed development progresses, especially in the final phase of the works.

7.6 Proposed Mitigation Measures

Proposed mitigation measures are to be employed on site to minimise and control noise from the proposed activities. These measures will form an integral part of the proposed procedures for the quarrying operations.

7.7 Residual Impacts

It is considered that subject to the implementation of the mitigation measures

outlined above and the implementation of good operational practices at the quarry, that there will be no significant residual impacts upon the amenity of the nearest sensitive receptors in terms of noise disturbance from the proposed development.

7.8 Conclusion

A NIA has been undertaken in accordance with The Environmental Management Guidelines Environmental Management in the Extractive Industry (Non-Scheduled Minerals), Environmental Protection Agency (2006).

Existing background noise levels have been measured. The predicted noise levels have been established based on actual measured noise levels in proximity to actual plant and machinery that will be used on the mineral extraction site at Aughnaclyffe Quarry. Therefore, accurate predictions of future noise levels relative to each phase of development has been provided.

The predicted noise levels at the noise sensitive receivers due to the proposed mineral extraction site at Aughnaclyffe Quarry will meet the relevant site noise limits of 55 dB $L_{Aeq, 1 \text{ Hour}}$.

The significance of the noise impact of the mineral extraction related activities depends on the duration of each activity, the particular items of plant used and the time at which the activity occurs. All practical measures will be taken to ensure that the noise emissions associated with the proposed mineral extraction related activities do not cause excessive noise impact upon the local residents.

In summary, the predicted noise levels from the mineral extraction related activities on site will not exceed the relevant noise limits outlined in the Environmental Management Guidelines Environmental Management in the Extractive Industry (Non-Scheduled Minerals), Environmental Protection

Agency (2006). The proposed development is therefore not considered to result in a significant effect upon the environment in terms of noise.

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8.0 BIODIVERSITY

8.1 Author of the Report

An Ecological Impact Assessment Report ('EclA') has been prepared by Woodrow APEM Group ('Woodrow'), an Ireland-based environmental consultancy providing a full range of specialist ecological services. Woodrow has extensive experience in undertaking habitat and protected species surveys and in preparing impact assessments for a wide variety of projects, including a large number of quarry and wind farm sites.

The report was written by Aoife Moroney M.Sc. and Emmeline Cosnett B.Sc., with assistance from Adrian Walsh M.Sc., all of Woodrow. Both Aoife Moroney and Emmeline Cosnett are Ecologists with Woodrow, specialising in ornithological assessments and botanical and habitat assessments, respectively. The report was reviewed by Maeve Maher-McWilliams M.Sc., a Principal Ecologist with Woodrow. All authors demonstrate a high level of professional competency in their approach to environmental assessment.

8.2 Introduction

Woodrow APEM Group was engaged by Quarryplan (on behalf of Lagan Materials Ltd.) to undertake an ecological impact assessment for a proposed extension and deepening at Aughnacliffe Quarry and lands directly to the south of the existing quarry, in the townlands of Aghamore Upper and Derreenavoggy, County Longford.

The proposed quarry extension site (hereafter referred to as the 'Application Site') occupies an area of c. 36.8 ha in size, with c. 22 ha of the site comprised of the existing quarry and associated overburden and landscaping areas. The proposed new extraction is planned to take place over five phases and includes a restoration plan.

This report presents an assessment of the potential ecological impacts of the proposed development at Aughancliffe.

8.3 Assessment of Baseline Conditions

8.3.1 Desk Study

Information on areas designated for their ecological features within 15 km of the site, as well any designated sites with a hydrological connection were obtained, using NPWS data and maps³ and the EPA map viewer⁴ as well as the associated hydrological and hydrogeological report for this site. The potential for connectivity with the Application Site was assessed using the available datasets and professional judgement.

A source-pathway receptor linkage was identified between the Application Site and six internationally designated sites (Lough Forbes Complex SAC, Lough Oughter and Associated Loughs SAC, Lough Ree SAC, Lough Oughter Complex SPA, Lough Ree SPA and Lough Oughter Ramsar Site) and four nationally designated sites (Lough Forbes Complex pNHA, Lough Ree pNHA, Lough Oughter And Associated Loughs pNHA and Lough Gowna pNHA). An Appropriate Assessment (AA) screening report was also prepared, within which further information can be found on the Application Site's connectivity to internationally designated sites.

The desktop study also interrogation of biological records held for the surrounding area by The National Biodiversity Data Centre (NBDC) and Bat Conservation Ireland (BCI), in order to establish the recorded presence of important and protected species, or the likelihood of their occurrence. This identified a number of protected species that had been recorded within 10 km

³ NPWS Designations Viewer. Available at: <https://www.npws.ie/maps-and-data/designated-site-data> (Accessed January 2023)

⁴ EPA Map viewer. Available at: <https://gis.epa.ie/EPAMaps/> (Accessed January 2023)

of the Application Site and was used to inform and focus subsequent field surveys.

8.3.2 Field Surveys

An Extended Phase 1 habitat survey was carried out within the Application Site on 25/05/2022. The Application Site was walked, ecological features of interest were noted, and habitats were classified into recognised communities as outlined in Fossitt (2000).

The Application Site is divided into three main parts; an existing active quarry (ED4) to the north surrounded by scrub (WS1) and grassland (GS2 and GS4) mosaic to the east and west, with agricultural farmland (GS1 and GS4) to the south. A small patch of acidic poor fen and flush (PF2) habitat has been classified bordering the existing quarry site and within an area of wet/neutral grassland mosaic currently grazed by cattle. Note that *'Although poor fen and flush is not listed in Annex I of the Habitats Directive, it is very limited in extent in Ireland and should be regarded as being of special conservation importance'* (C. Ó Críodáin, pers. Comm), (Fossitt, 2000). The site lies within a rural setting, with scattered residential housing/farm buildings (BL3) in the environs of the proposed quarry extension. No Annex I habitats were identified within or immediately adjacent to the Application Site.

Two breeding bird surveys were carried out at the Application Site on 17/05/2022 and 24/05/2022. The Application Site provides a mosaic of suitable habitat for breeding passerines and hirundines in the form of scrub, wet grassland, hedges, treelines, derelict buildings, and sandy banks/crevices/holes associated with quarry faces. Two falcon species also were recorded nesting along the quarry ledges: the Annex I listed species peregrine and red-listed species kestrel.

A thorough mammal survey was conducted by experienced Woodrow ecologists on 21/04/2022, 24/05/2022 and 28/07/2022 to determine the

presence of badger *Meles meles*, including latrines, snuffle holes, prints and/or their resting places/setts. The surveys also included the recording of any incidental observations or detected evidence for other mammals of conservation concern e.g., Irish hare *Lepus timidus hibernicus*, pine marten *Martes martes*, Irish stoat *Mustela erminea* Hibernica and hedgehog *Erinaceus europaeus*. The mammal surveys yielded few signs of badger activity within 150 m of the Application Site. Two badger setts, which were *inactive* during the field surveys, were observed within the existing quarry footprint. Additionally, two occurrences of suspected badger droppings were observed in areas of scrub in the west and east of Application Site. Both the inactive setts and field signs were recorded outside of the footprint of the extension.

Some, albeit limited, evidence of fox activity was found within the Application Site, including a print, faeces, mammal trails and one potential inactive fox burrow within the existing quarry footprint. There was also an inactive, unidentified mammal burrow located in the southern edge of the Application Site, with the potential to be a fox den. There were no active dens located within the footprint of the extension or within the Application Site boundary. Hares were observed several times during field surveys and trails frequently used by them were also recorded throughout the southern section of the Application Site, within the agricultural lands in addition to the field margins.

An assessment of trees and structures within the Application Site, known as a Potential Roost Feature (PRF) survey, was undertaken during the extended phase 1 surveys. The PRF surveys identified five locations within the Application Site which had the potential to support roosting bats: three sheds, one derelict house and a mature treeline. Subsequently, two emergence and two re-entry surveys were undertaken at features identified during the PRF surveys. Two bat roosts were identified during the emergence/re-entry surveys: a likely transitional roost of a single soprano pipistrelle in the north-east facing gable of the derelict farmhouse and a potential Natterer's bat maternity roost in a small shed adjacent to the derelict farmhouse.

To assess the suitability of the site for foraging/commuting bats, three static detectors were deployed along hedgerows/treelines, supplemented by a transect survey along boundary features. A minimum of four species were recorded using the site by both the static detectors and the transect surveys, namely, common pipistrelle, soprano pipistrelle, Leisler's bat and *Myotis* sp. Overall, activity levels were low across the site, with the highest levels of activity associated with the mature trees and derelict farm buildings. Areas of wet grassland/scrub recorded low levels of activity, which may reflect the lack of linear features for foraging bats.

Waterbodies within the application site were examined for their suitability to support breeding amphibians, namely smooth newt *Lissotriton vulgaris* and common frog *Rana temporaria*. Surveys of the ponds on the site within the active quarry showed that smooth newts were present, with at least 11 individuals recorded (comprising males and females) within two different ponds. The ponds also were considered to contain vegetation suitable for breeding newt.

8.4 Assessment of Impacts

In general terms, the main potential physical impacts that quarrying may have on the receiving environment are:

1. Permanent habitat removal or alteration of habitats;
2. Direct impacts on species in the form of direct mortality and nest/roost/breeding site destruction;
3. Direct impacts on species through loss of nesting, roosting or resting places or supporting foraging habitats;
4. Dust deposition on habitats at the Application Site;
5. Disturbance to species e.g., through movement, noise, vibration and lighting; and
6. Water quality impacts, both groundwater and surface water.

With regard to downstream receptors (internationally and nationally designated sites), the AA screening determined that, due to the current water quality measures on site, absence of a strong hydrological connection and assimilative capacity of the intervening waters, there is no potential for significant effects on internationally designated sites. In terms of nationally designated sites, in particular Lough Gowna pNHA which lies c. 5 km from the Application Site via watercourse, the hydrological and hydrogeological report concluded that the proposed extension and deepening will not have an adverse impact on flow rate or water quality in the Aghamore-Aghnaclyffe Stream, which feed into Lough Gowna. The magnitude of effect on the hydrology of the Lough was concluded to be negligible and therefore the significance of effect of the proposed development on designated sites is considered to be **not significant**.

The proposed development will result in the direct loss of c. 25% (2 ha) of scrub habitat, 70% (1.5 km) of mature, species-rich hedgerow and treeline and 100% (0.53 ha) of poor fen and flush habitat. Scrub is considered to be of low botanical value, being relatively common and widespread both in the wider area and in an Irish context. As such, the loss of 2 ha of scrub habitat is considered to be **not significant**. Species-rich treeline and hedgerow and poor fen and flush, however, are considered to be of high botanical value and conservation importance. As such, in the absence of mitigation, this loss would result in a **significant** effect at the local level.

Hedgerow and treeline habitat, derelict buildings, and the southern ledge of the quarry, will be directly removed as a result of the proposal. This could result in destruction of nests if undertaken during the bird breeding season. As such, in the absence of mitigation, there is potential for direct impacts in the form of nest destruction, nest abandonment and chick mortality. Nest sites which will be retained within the proposed development are the peregrine nest, sand martin colony and raven nest. Unmitigated, the potential direct disturbance to/destruction of nesting habitat, in particular for the red-listed species kestrel, and loss of breeding/foraging habitat for birds is considered to be **significant** at the local level.

No evidence of active resting places for badger and fox were observed and no inactive resting places were observed within the footprint of the proposed extension. It is therefore considered that there is no risk of direct impacts through the loss of setts/burrows. Operating hours of the quarry (restricted to daytime) mean that cases of direct mortality are unlikely.

Hares were noted on several occasions within the Application Site during the field surveys and there is therefore considered to be potential for hares to breed within areas of rank grassland, rush or other areas of cover. There is therefore potential for the direct destruction of a hare form (breeding site), in the absence of mitigation, which would constitute a **significant** effect at the local level.

The two bat roosts identified within the Application Site were considered within the design stage of the proposed development and will be retained in order to avoid direct impacts. Additionally, a 20m buffer will be placed around the Natterer's bat roost, within which no felling/quarry works will occur.

Though no bats were seen emerging from/re-entering crevices within the mature treeline, tree roosts are often transitional, and there is potential for these crevices to be used by bats occasionally. There will also be a loss of c. 1.5 km of foraging/commuting habitat in the form of treelines and hedgerows as a result of the proposed works. Unmitigated, the potential for direct mortality/disturbance to roosting bats due to inappropriate felling and the loss of a considerable amount (1.5 km) of foraging habitat, in particular in an area containing a significant roost, would constitute **significant** effects at the local level.

Smooth newts (both male and female) and suitable breeding vegetation were recorded in some of the quarry pools on the site. As such, the proposal has the potential to result in direct mortality to this species and their eggs, in the absence of mitigation. As the proposal will result in the removal of the pools currently inhabited by smooth newt, the proposed development will also result in a loss of breeding habitat. Unmitigated, the potential direct mortality to adult

smooth newts, destruction of eggs, and loss of breeding habitat would result in a **significant** effect, at the local geographic scale.

8.5 Proposed Mitigation Measures

The retention of the derelict house and adjacent shed was considered within the design-stage in order to avoid direct impacts on a small soprano pipistrelle roost and potential Natterer's bat maternity roost. Additionally, a 20 m buffer will be placed around the maternity roost, within which no quarrying works/felling will occur.

The earthen screening bunds in the south-west of the Application Site will be planted with a mix of pioneer native woodland and livestock hedgerow species. Phase 3 and Phase 4 of the development will see restoration planting of all peripheral habitats and field boundaries with pioneer woodland, wet woodland and gorse and thorn scrub as well as reseeding of species-rich neutral grassland habitat.

A Dust Impact Report was produced as part of this assessment to ensure that, in the event of dry weather, dust is managed appropriately on the site. Hedgerow, scrub and the derelict buildings will be removed outside of the bird breeding season and active bat season. Loss of nesting/roosting habitat will be compensated for by the installation of various types of nest/bat boxes and by compensatory planting.

Blasting will be limited to once a month during the sensitive period of the breeding season for peregrine, and no blasting will occur within 100m of the nest site during this period.

Removal of the kestrel nest will occur outside of the breeding season and two kestrel nest boxes will be installed. The nest boxes will be monitored for occupancy by an experienced ecologist in years 1, 2 and 3 post-planning. After

year 3, an experienced ecologist will determine if additional monitoring is required.

Additional screening will be planted between the bat roost and the margins of the quarry. The potential maternity roost will be monitored during the maternity period in years 1, 2 and 3 post-planning by a licenced bat ecologist. After year 3, an experienced ecologist will determine if additional monitoring is required. Blasting should not occur within 100 m of the potential maternity roost during the sensitive maternity period (April to August).

Pre-construction inspections will be carried out by a licenced bat ecologist prior to felling/demolition and sectional felling will be employed.

Two suitable ponds will be created in a designated area in the north-east of the site, c. 250 m east of the existing standing water inhabited by newts. The aim will be for a pond of 10 x 10 m (area approximately 100 m²). The pond will be allowed a year to develop some vegetation before being required by newts, as submerged plants are important as egg-laying sites for this species, as well as providing a habitat for invertebrates on which newts can feed.

Existing ponds in which newts have been recorded will be fenced off in August to January pre-works, with newt-proof fencing prior to the commencement of the breeding season for this species (which generally runs from March to July) prior to the undertaking of any proposed works that may affect such ponds. This aims to reduce their potential use as breeding locations for these species. Should translocation of newts be required, an exclusion and translocation plan will be drawn up and implemented prior to any destruction or exclusion of waterbodies within the quarry. This exclusion and translocation programme will use methodology agreed with NPWS and will be conducted under licence issued by NPWS.

The creation of compensatory newt ponds in the north-east of the Application Site will also create increased foraging opportunities for birds and bats.

Following the completion of mineral extraction within the proposed quarry site, the majority of the site will become a freshwater lake (c. 13.35 ha). The overburden material used in the restoration of the pit floor will be planted with a variety of native woodland species, scrub and gorse, and grassland. This will provide foraging and nesting opportunities for both ground-nesting and tree/hedgerow nesting bird species in the long term, as well as foraging and roosting opportunities for bats. The restoration scheme will also enhance habitats for insects and small mammals, providing increased foraging opportunities for birds and bats. It also includes the creation of ponds and wetland habitat which will benefit bird, bat and amphibian species in the long term.

8.6 Residual Impacts

The embedded mitigation, in combination with the additional mitigation and compensation measures described in this section, will ensure that there are limited negative residual effects on ecological receptors. This is with the exception of the loss of a small amount (0.53 ha) of poor fen and flush (PF2) habitat, which cannot be compensated for, resulting in a significant residual effect at the local level. In the long-term, the proposal has potential to increase the extent and biodiversity value of woodland, grassland and vegetated boundary habitats, and thus to result in long-term positive effects upon birds, badger, bats, and other mammals that occupy these habitats.

8.7 Conclusions

The EclA has established the ecological baseline at the Application Site at Aughnacliffe Quarry, County Longford, and has examined whether, in view of best scientific knowledge and applying the precautionary principle, the proposal either individually, or in combination with other plans or projects, may have impacts on ecological receptors, including designated sites, habitats and protected species.

Particularly sensitive ecological receptors at this site include the presence of breeding birds (including the Annex I listed species peregrine and red-listed species kestrel), roosting bats (including a small Natterer's bat roost and a single, unidentified bat roost), and breeding smooth newt.

Subsequent to implementing all of the recommended mitigation provided in this report, including the implementation of a restoration plan upon cessation of works, the majority of adverse impacts potentially posed by the proposal will be negated, with the exception of the loss of a small area of poor fen and flush habitat of significance on a local level. Some minor, temporary impacts at a local level will also remain, as a result of temporary dispersal of foraging species, during the operational phase of the excavation and of a temporary reduction in suitable breeding/roosting habitat for birds and bats.

Without mitigation, the proposal has the potential for significant negative impacts on ecological features of local (higher) importance. Therefore, consideration has been given to appropriate avoidance, mitigation and compensation measures, and any residual impacts that may apply. It is considered that full implementation of the mitigation and compensation measures and guidance referred to in the EclA will mean that, in view of best scientific knowledge, the proposed development at Aughnaclyffe will result in minimal significant effects on key ecological receptors.

9.0 LANDSCAPE AND VISUAL

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9.1 Author of the Report

A Landscape and Visual Assessment (LVIA) has been prepared by Pete Mullin, BA (Hons) CMLI, MILI Chartered Landscape Architect and principal of Mullin Design Associates and is held at Appendix 9.1. Pete has produced several 100 Landscape and Visual Impact Assessments during more than 25 years in the profession, and is a recognised specialist within the mineral sector.

9.2 Introduction

This assessment has been prepared to establish potential landscape and visual effects arising from proposed extension of an existed permitted hard rock extractive operation in the townlands of Aghamore Upper and Derreenavoggy, Aughnaclyffe, Co Longford.

The assessment has been structured in the following subsections:

- **Methodology** – explanation of how the assessment has been undertaken, with reference to methodology, terminology, assessment criteria, and planning policy.
- **Receiving Environment** - or Landscape and Visual Context – baseline description, classification and evaluation of the existing landscape character containing the application site and an assessment of visual amenity, with identification of visual receptors.
- **Project Description** – description of aspects of the proposed development which have the potential to cause a landscape and/or visual effect and measures which will be incorporated to mitigate or avoid greater potential effects.
- **Assessment of Impacts** – an outline of potential landscape and visual impacts with proposed mitigation measures and cumulative impacts.
- **Residual Impacts** and impact summary.

9.3 Assessment of Baseline Conditions

The site is located within Landscape Character Unit 2 -Northern Upland. This unit consists of the central northern section of the County, stretching from Drumlish in the west to Moyne in the north, Esker in the south and including the towns of Granard and Abbeylara in the east, up to and including the county boundary with Cavan.

The County Development Plan describes how sensitivity of much of this landscape can be classified as MEDIUM to HIGH.

The Zone of Theoretical Visual Influence (ZTVI) suggests the majority of potential visibility will be within 2km of the site with further potential visibility suggested in a Northeasterly direction and from high land associated with Corn Hill to the southeast. The selected viewpoints are considered representative of a range of views and viewer types, including residential, transport routes, and recreational routes, in a variety of distances, aspects, elevations, extents, and sequential routes.

9.4 Assessment of Impacts

Landscape and Visual Assessments attempt to measure the sensitivity of specific landscape resources and describe the significance of changes to that landscape occurring as a result of a proposed development. Landscape and Visual impacts are intrinsically linked; therefore measures to reduce landscape impacts will often assist with reduction of visual impacts and vice versa.

Detailed predefined criteria are supplied within the main LVIA, determining sensitivity and magnitude of change ratings. These are then considered through a combination of professional judgment (with reference to an assessment matrix) to determine predicted impacts / effects.

Aspects of the development which may potentially impact both the landscape character and or visual resource within the study area were considered.

The study considered this development typology over 3 main phases namely:

- Establishment Phase
- Extraction Phase
- Restoration Phase

It factors the influence of advanced screening measures including in this case advance woodland planting and screening berms notably to the south. It also accounts for the duration of each stage and proposed restoration measures.

Landscape sensitivity associated with this development is considered **Medium**. In terms of magnitude of change over the life of the proposals (from establishment to restoration), this typically varies, however is considered to be a **Medium** change during the establishment phase and with screening measured in place reducing to **Low** during the operational phase. Post restoration the magnitude of change on landscape character would diminish to **Very Low**.

This combined with the sensitivity would result in short term **Moderate** impact during the establishment stage , **Minor** impact during the operational stage, and reducing to **Negligible** Landscape Character impact post restoration.

Visual sensitivity varies according to the type of receptor. For this assessment they range from **High-Medium** to **Medium** sensitivity. In terms of magnitude of change range from **High** to **Very Low**.

Combined this results in visual impacts which range from **Major/Moderate** through to **Negligible**.

9.5 Proposed Mitigation Measures

A number of measures have been proposed to mitigate against adverse landscape and visual effects being generated by the proposed development.

These include:

- Retention and protection of existing all existing boundary hedgerows;
- Advanced earthworks and proposed screening woodland planting along the boundary with adjoining roads;
- Direction of proposed workings;
- Full restoration of the site with a significant portion focused on habitat creation for biodiversity benefit.

9.6 Residual Impacts

It is considered that subject to the implementation of the mitigation measures outlined in the LVIA, that there will be no significant residual impacts in terms of landscape and visual impacts from the proposed development.

9.7 Conclusion

Landscape Impacts/effects are predicted to be no more than **Moderate**. No predicted landscape impacts/effects are considered to fall within the significant range.

A single identified receptor (Viewpoint 4) is predicted to experience visual impacts / effects which are **Major/Moderate**, but notably this would only occur during the relatively short duration of the establishment phase. The impacts would be generated by the works required to establish long term screening measures such as earthworks and woodland planting. With this screening established, visual impact's at this location diminish to **Medium** and below the threshold considered significant.

No other predicted visual impact /effect associated with this development are considered to fall within the significant range.

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10.0 AIR QUALITY AND DUST

10.1 Author of the Report

An Air Quality & Dust Impact Assessment held at Appendix 10.1 has been prepared by AONA Environmental Consulting Ltd., a specialist consultancy with extensive experience within the aggregates, cement, industrial minerals, energy minerals, building products and metaliferous mining sectors. AONA Environmental has extensive experience in air quality and dust impact assessments, including in excess of 10 assessments per annum for the mineral extraction and processing industry.

AONA Environmental Consulting Ltd. has over 25 years experience in the assessment of air quality and dust impact for the mineral extraction and processing industry.

10.2 Introduction

The dust impact assessment report presents an assessment of the considers the potential dust impact of the proposed extension to existing mineral extraction site at Aughnaclyffe Quarry on lands directly to the south of the existing quarry, at noise sensitive receiver locations in the Townlands of Aghamore Upper and Derreenavoggy, County Longford.

The significance of impacts due to dust emissions from the proposed development are dependant upon the magnitude of the emissions, the prevailing meteorological conditions for that location, and the proximity of sensitive locations to the emission sources. The potential for these to occur and give rise to nuisance and health impacts has been assessed.

The Dust Impact Assessment has considered that all the winning and working of the greywacke mineral resource will be undertaken in a phased manner. The greywacke mineral resource will be extracted via drill and blast methodology as

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is the current, approved practice at the quarry. The mineral won will be processed at the quarry face via the use of mobile crushing and screening plant to produce a range of single size aggregates. The aggregate products will be stockpiled on the quarry floor, prior to being transported off-site or used in the manufacturing plant on site.

10.3 Methodology

The Institute of Air Quality Management (IAQM) guidance document entitled *Guidance on the Assessment of Mineral Dust Impacts for Planning (2016 V1.1)*, outlines that “*emissions of dust to air from minerals sites can occur during the preparation of the land, extraction, processing, handling and transportation of extracted minerals. Emissions can vary substantially from day to day, depending on the level of activity, the specific operations being undertaken, and the weather conditions. The scale of these impacts depends on the dust suppression and other mitigation measures applied*”.

This guidance provides advice on robust and consistent good-practice approaches that can be used to assess the operational-phase dust impacts for use in the planning process. The IAQM guidance document outlines a methodology by which it is possible to screen out the need for a detailed assessment based on the distance from a mineral site to potentially sensitive receptors and where the potential dust impact of a mineral site cannot be ‘screened out’, a more detailed dust assessment will be required.

This assessment considers the potential air quality impacts arising from the proposed development. An assessment is presented which employs the Source - Pathway-Receptor Approach to evaluate the risk of dust impacts and effects. Specifically, this assessment considers the potential air quality impacts associated with dust arising from the extension to existing mineral extraction site at Aughnaclyffe Quarry which has the potential to reduce amenity in the local community (‘disamenity dust’) and smaller dust particles which can remain airborne for longer, potentially increasing local ambient concentrations of

particulate matter (e.g. PM₁₀ and to a lesser extent PM_{2.5}), which is associated with a range of health effects.

10.4 Assessment of Baseline Conditions

Potentially sensitive locations (with respect to dust) were identified in the vicinity of the site that may be affected by generated dust. The distance from the source of dust emissions to a receptor plays an important role in the potential dust impact experienced.

Meteorological conditions such as rainfall and wind speed and direction have the greatest impact on potential dust deposition impacts in proximity to the site. The closest representative Met Eireann weather station data to Aughnaclyffe Quarry is located at Mount Dillon. This weather station is located ~25km SSW of Aughnaclyffe Quarry. Mount Dillon meteorological station records temperature and rainfall. This data exhibits a relatively high rainfall level throughout the year (Long Term Average 74.2 mm in June - 111.8 mm in October), which acts as a significant natural dust suppressant on site.

Wind speed and direction data have been obtained from a windrose for the Met Eireann weather station at Clones, located ~55 Km north-east of the proposed quarry extension site, which exhibits a wind direction to be primarily from a south-westerly direction.

The nearest properties in proximity to the proposed quarry extension site are presented in Figure 10.1 and Table 10.1.



Figure 10.1: Dust Sensitive Receptors (DSR) in proximity to the proposed quarry extension site at Aughnaclyffe Quarry.

Reference	Address	Grid Coordinates		Distance to dust source (Mineral extraction)
NSR 1	L5081, Aghamore Upper	224388	286169	~320 m
NSR 2	L5087, Aghacordrinan	224570	285952	~475 m
NSR 3	L5087, Aghacordrinan	224562	285899	~465 m
NSR 4	L5090, Aghacordrinan	224632	285449	~655 m
NSR 5	Derreenavoggy	223690	285439	~295 m
NSR 6	Derreenavoggy	223761	285503	~205 m
NSR 7	Derreenavoggy	223727	285641	~125 m
NSR 8	L50813, Aghamore Upper	223508	286033	~185 m
NSR 9	L50813, Aghamore Upper	223530	286286	~275 m
NSR 10	L50813, Aghamore Upper	223655	286415	~300 m
NSR 11	L50813, Aghamore Upper	223935	286342	~250 m
NSR 12	L50813, Aghamore Upper	224062	286389	~360 m

Table 10.1: Main Dust Sensitive Receivers (DSR) in proximity to the proposed quarry extension site at Aughnaclyffe Quarry.

Table 10.1 provides a list of the 12 nearest sensitive receptor properties surrounding the planning application area, of which 9 are located within 400m of existing and proposed quarry operations. The nearest sensitive receptor property is located within ~125m of the proposed quarry operations. The dust impact assessment is based upon nearest sensitive receptor proximity to the proposed development site. Each receptor chosen is considered to illustrate the worst-case scenario relative to the wind direction and proximity to proposed workings. Three residential receptors located in excess of 400m from the quarry have been screened out from detailed consideration due to their distance to existing and proposed workings.

Existing dust deposition rates are measured by positioning four Bergerhoff glass deposition gauges at strategic locations near to the boundaries of the existing site for periods of 30 +/- 2 days. This monitoring is undertaken quarterly and analysed by TMS Environment Ltd. The results of the dust deposition monitoring during the period between May 2021 to December 2022 are reported in Table 10.2 and indicates compliance compared against the industry standard dust deposition limit value of 350 mg/m²/day.

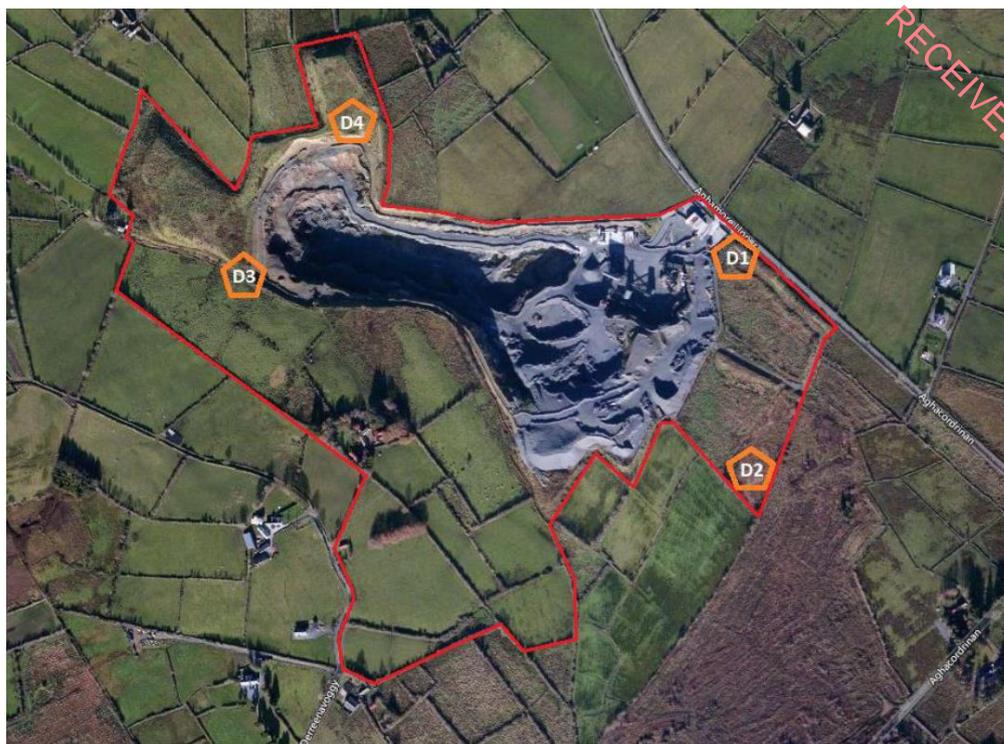


Figure 10.2: Dust monitoring locations (as extracted from TMS Environment Ltd Reports)

Time Period	Location and Deposited Dust Rate (mg/m ² /Day)			
	D1	D2	D3	D4
31 st May 2021 - 30 th June 2021	82	57	84	102
14 th July 2021 - 13 th August 2021	50	Note 1	39	19
4 th October 2021 - 8 th November 2021	97	150	71	68
27 th January 2022 - 24 th February 2022	275	58	105	170
5 th April 2022 - 9 th May 2022	207	121	68	57
9 th June 2022 - 11 th July 2022	Note 2	338	28	Note 1
8 th August 2022 - 5 th September 2022	52	28	184	104
5 th September 2022 – 3 rd October 2022	128	117	132	224
3 rd October 2022 - 4 th November 2022	102	117	37	347
4 th November 2022 – 2 nd December 2022	51	39	131	37
AVERAGE	116	113	88	125
Dust Deposition Limit = 350 mg/m ² /day				

Table 10.2: Dust deposition rate at site boundary locations during periods between 31st May 2021 to 2nd December 2022

Note 1: Not reported due to the presence of organic matter in the collection vessel.

Note 2: The collection vessel, was missing upon collection and consequently there is no result reported.

10.5 Assessment of Impacts

The assessment of dust impacts on identified receptors is a qualitative process, particularly where there is an absence of legislative standard defining a nuisance level for deposited dust. Assigning significance to nuisance impacts has therefore been subjective and has involved a judgement based on the likely magnitude, frequency, duration and reversibility of the impact.

The assessment to consider the impacts that can be expected to occur in the future as a result of the proposed quarry extension. This considers the potential significant effects, or impacts, that can reasonably be expected to occur. The following aspects of the proposed quarry extension site have been identified that could possibly give rise to a dust impact:

- Excavation, drilling / blasting of mineral and processing;
- Loading and despatch of vehicles;
- On-site transportation of material; and,
- Overburden Stripping, material placement and Restoration.

The dust disamenity effects predicted at the nearest receptors around the proposed minerals extraction development is summarised in Table 10.3, setting out the risks of impacts for each activity being assessed.

Ref. (See Fig. 10.3)	Location relative to nearest dust source	Residual Source Emissions	Pathway Effectiveness	Dust Impact Risk	Receptor Sensitivity	Magnitude of Dust Effect
DSR 1 Note 1	~320m "downwind" of mineral extraction	Medium	Moderately Effective (Very Frequent & Distant)	Low Risk	High	Slight Adverse Effect
DSR 5 Note 2	~295m "upwind" of mineral extraction	Medium	Moderately Effective (Frequent & Distant)	Low Risk	High	Slight Adverse Effect
DSR 6 Note 3	~205m "upwind" of mineral extraction	Medium	Moderately Effective (Frequent & Distant)	Low Risk	High	Slight Adverse Effect
DSR 7 Note 4	~125m "upwind" of mineral extraction	Medium	Moderately Effective (Frequent & Intermediate)	Low Risk	High	Slight Adverse Effect
DSR 8 Note 5	~185m "crosswind" of mineral extraction	Medium	Moderately Effective (Frequent & Intermediate)	Low Risk	High	Slight Adverse Effect
DSR 9 Note 6	~275m "crosswind" of mineral extraction	Medium	Moderately Effective (Frequent & Distant)	Low Risk	High	Slight Adverse Effect
DSR 10 Note 7	~300m "crosswind" of mineral extraction	Medium	Moderately Effective (Frequent & Distant)	Low Risk	High	Slight Adverse Effect
DSR 11 Note 8	~255m "downwind" of mineral extraction	Medium	Moderately Effective (Frequent & Distant)	Low Risk	High	Slight Adverse Effect
DSR 12 Note 9	~360m "downwind" of mineral extraction	Medium	Moderately Effective (Very frequent & Distant))	Low Risk	High	Slight Adverse Effect

Table 10.3. Dust Disamenity Effects at Specific Representative Receptors

Note 1 – DSR 1 represents the property to the northeast of the proposed development. The windrose in Figure 10.2 indicates that the wind may blow towards this property at >5m/s for approximately 40% of the time.

Note 2 – DSR 5 represents the property to the to the northeast of the proposed development. (The windrose in Figure 10.2 indicates that the wind may blow towards this property at >5m/s for approximately 15% of the time.

Note 3 – DSR 6 represents the property to the southwest of the proposed development. The windrose in Figure 10.2 indicates that the wind may blow towards these properties at >5m/s for 15% of the time.

Note 4 - DSR 7 represents the property to the southwest of the proposed development. The windrose in Figure 10.2 indicates that the wind may blow towards these properties at >5m/s for 15% of the time.

Note 5 - DSR 8 represents the property to the southwest of the proposed development. The windrose in Figure 10.2 indicates that the wind may blow towards these properties at >5m/s for 20% of the time.

Note 6 - DSR 9 represents the property to the southwest of the proposed development. The windrose in Figure 10.2 indicates that the wind may blow towards these properties at >5m/s for 20% of the time.

Note 7 - DSR 10 represents the property to the southwest of the proposed development. The windrose in Figure 10.2 indicates that the wind may blow towards these properties at >5m/s for 20% of the time.

Note 8 - DSR 11 represents the property to the southwest of the proposed development. The windrose in Figure 10.2 indicates that the wind may blow towards these properties at >5m/s for 20% of the time.

Note 9 - DSR 12 represents the property to the southwest of the proposed development. The windrose in Figure 10.2 indicates that the wind may blow towards these properties at >5m/s for 40% of the time.

Overall, the proposed development is considered to have the potential to cause a 'Slight Adverse Effect' at the residential receptor located within 400m of the proposed quarry extension site. There will be a 'Negligible Effect' at other residential receptors in the surrounding area. Therefore, the overall effect is considered to be 'not significant'. This is based on a consideration of the different magnitude of effects at individual receptors, and the number of receptors that would experience these potential effects.

There are no sensitive habitats in close proximity to the quarry. The nearest sensitive habitat to Aughnaclyffe Quarry is Lough Gowna, which is a proposed Natural Heritage Area (pNHA) located ~3.6 km to the east. Therefore, due to the significant separation distance between the site and the nearest sensitive habitat, any further assessment of the ecological effects resulting from the predicted dust impact is not required in this instance.

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10.6 Proposed Mitigation Measures

Proposed mitigation measures are to be employed on site to minimise and control any potential dust emissions from the proposed activities. These measures will form an integral part of the operational procedures for the mineral extraction and processing operations.

10.7 Residual Impacts

It is considered that subject to the implementation of the mitigation measures outlined in the assessment and the implementation of good operational practices at the quarry, that there will be no significant residual impacts upon the amenity of the nearest sensitive receptors in terms of air quality impacts from the proposed development.

10.8 Conclusion

Overall, the proposed development is considered to have the potential to cause a 'Slight Adverse Effect' at the nearest residential receptor located 400m of the of the proposed quarry extension site. There will be a 'Negligible Effect' at other residential receptors in the surrounding area. Therefore, the overall effect is considered to be 'not significant'.

Any residual dust deposition impacts resulting from the future de-commissioning and restoration of the quarry site will be of a short duration and all potential dust impacts from the extension to existing mineral extraction site at Aughnaclyffe Quarry are considered to be reversible i.e. the risk of impact will cease on completion of extraction and restoration of the site.

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11.0 TRAFFIC IMPACTS

11.1 Introduction

This section of the EIAR is prepared by Chris Tinsley MRTPI, whose competency is set out at Section 1. Mineral is currently extracted at the quarry and transported from the quarry via Heavy Goods Vehicle (HGV) in accordance with the extant planning permission for the site (Reference 07/831). No intensification above the permitted levels of traffic movements is proposed. The following section reviews the proposed development in the light of the existing, permitted baseline scenario.

11.2 Assessment of Baseline Conditions

11.2.1 Haul Route

The 2007 EIS (Section 11.3.3) describes how all traffic entering and leaving the Site does so via a dedicated entrance and egress and that there is a 75:25 split from which traffic is generated by and enters the site. The EIS describes how c.75% utilise the northern route to the R198 whilst 25% utilise the southern route to the R194.

11.2.2 Traffic Volumes

The 2007 EIS describes at Section 11.3.3 how the current extraction rates were 270,000 tonnes per annum. The 2007 EIS also states that 2005 quarterly shipping data confirmed an average of 70 HGV trips per day to and from the subject site and an additional 10 trips associated with once-off collection of aggregate. The EIS also describes how there were 8 full time staff, all commuting to and from the site on a daily basis.

11.3 Assessment of Impacts

As per the 2007 application, the project before the Planning Authority seeks no intensification to the levels of traffic previously considered and found acceptable via the granting of the extant mineral extraction planning permission at the site. Vehicles will continue to utilise the existing entrance and egress at the quarry, with the quarry entrance featuring appropriate signage. Given the same, there are therefore no associated impacts arising and there are no implications on the safety and or convenience of all road users.

It is confirmed that the hours of operation associated with the existing and proposed mineral extraction (only) i.e. the project before the Council is in accordance with those specified in the extant permission for the site:

- 0700-1800 Monday to Friday
- 0700-1300 Saturdays

There are no proposed mineral extraction operations (winning and working of minerals) proposed to take place outside of the permitted hours, or on a Sunday, other than in exceptional circumstances, as detailed at Section 4 of this EIAR.

It is essential to recognise that this planning application is not seeking to introduce any additional downstream processing or production plant at the site. The proposal is seeking to laterally extend and deepen the quarry in order to make best use of the mineral resource at the site. Therefore, hours of operations established through separate planning consents are not being altered by the grant of the project before the Council and the existing downstream processing/production planning units remains constant.

11.4 Mitigation Measures

Given that no impacts are predicted to arise, no mitigation is proposed or required to be advanced within this Section of the EIAR.

11.5 Residual Impacts

Subject to the proposed development not resulting in any intensification over and above that previously considered and deemed acceptable for the quarry, the proposed development is not anticipated to result in any significant effects upon the environment.

11.6 Conclusions

This proposal does not seek to increase the volume of traffic flow associated with the established mineral development at this quarry site. There is no “intensification” in highway’s terms associated with the project, and no exceedance of the established baseline. The existing quarry entrance and egress will continue to be utilised, as will the established haul routes to and from the nearest regional routes. Given the same, the proposed development is not considered to result in any significant effects upon the environment in terms of highways impacts.

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12.0 CULTURAL HERITAGE

12.1 Author of the Report

An Archaeological Impact Assessment (AIA) has been prepared by Chris Farrimond of Farrimond MacManus Ltd and is held at Appendix 12.1.

Graduating in 1998 from Queen's University, Belfast, with a B.A. (Hons.) degree in Archaeology / Palaeoecology, Chris has over twenty years of post-graduate consultancy experience in all aspects of Cultural Heritage and Archaeological Management, i.e. devising appropriate archaeological management strategies in relation to developmental impact upon archaeological sites and monuments and the successful monitoring and managing of the implementation and completion of related management and mitigation strategies.

A Company Director of Farrimond MacManus Ltd. since 2005, and eligible to hold Archaeological Excavation Licences in both N.I. (since 2002) & R.O.I. (2003), Chris also has considerable experience in managing archaeological excavations, staffing and programmes of post-excavation works and reporting.

12.2 Introduction

The AIA was prepared during November 2022 sets out the archaeological background of the proposed development area, assessing its archaeological potential and outlines a proposed methodology for the identification and appropriate recording of any remains which may prove to survive.

The assessment of archaeological potential and recommendations for the treatment of the site have been undertaken according to best professional practice and in line with statutory Planning Policy Guidelines.

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The commissioning of Farrimond MacManus Ltd., preparation of this AIA and implementation of its recommendations is intended to ensure full compliance with all statutory obligations and current best practice whilst undertaking the proposed works.

12.3 Assessment of Baseline Conditions

The statutory heritage authorities at the National Monuments Service of the Department of Housing, Local Government and Heritage keeps a record of all known monuments and sites including the Sites and Monuments Record (SMR) and the National Inventory of Architectural Heritage (NIAH). These records, as well as the Topographical Files of the National Museum of Ireland and historic Editions of the Ordnance Survey 6" maps, were consulted for a study area of 3km from the boundaries of the Planning Application Area to provide an overview of the known archaeological / heritage sites within the boundaries of the Application site and within the wider landscape.

Fourteen archaeological sites and monuments and seven NIAH sites are recorded as being located within 3km of the Application site. None are located within the Application site or within its immediate environs. Consultation of historic mapping revealed no heritage assets within the area of the proposed quarry extension.

The Topographic Assessment confirmed that the proposed development area is located within a relatively elevated area within an undulating rural setting with numerous lakes and rivers within the wider landscape: the access to lakes and rivers provides ease of access to natural resources such as water and food. While there are no lakes located within 3km of the Application site, a reasonably significant watercourse is located c.400m to northwest of the site.

The proposed development site could therefore be considered as being located within an area of moderate archaeological potential given its topographical setting. Considering these results, the potential for the identification of

archaeological remains during the extraction works has been assessed as moderate.

12.4 Assessment of Impacts

The desk based assessment for the area revealed a number of known archaeological sites within a 3km radius of the proposed development. However, none of these sites are located within the boundaries of the proposed development area or within its immediate vicinity and it is not therefore currently anticipated that works associated with the subject proposal will have an adverse impact upon any previously recorded archaeological site or monument or other heritage asset located within the general vicinity.

Historical and archaeological records relating to the area surrounding the proposed development site indicate that it lies within an area of archaeological potential with a number of known archaeological and historic sites located within the study area.

Although there are no known sites located within the boundaries of the proposed development site, the undeveloped nature of the proposed area of the lateral extension area suggests that the preservation potential of previously unidentified archaeological remains or deposits should be considered high.

Substantial invasive groundworks will be required to facilitate the proposed development, which have the potential to adversely impact upon any previously un-recorded sub-surface archaeological remains which may survive within the Application site boundaries.

Whilst there remains moderate to high potential for archaeological remains to survive within the site boundaries (in the previously undeveloped portions of the Site), their exact location nature and extent remains uncertain.

Statutory legislation and Planning Policies relating to Culture and Heritage allow for the granting of permission for development which will affect sites known to contain archaeological remains, whereupon the Minister will impose conditions to ensure that appropriate measures are taken for the identification and mitigation of the archaeological impacts of the development, including where appropriate the completion of a licensed excavation and recording of remains before development commences.

Given that there is the potential for archaeological remains to survive within the site boundaries, but these are an unknown, it is recommended that archaeological mitigation measures are implemented in line with planning policy guidelines and statutory heritage requirements.

12.5 Proposed Mitigation Measures

Due to the potential of sub-surface archaeological remains to survive within the boundaries of the Application site, it is recommended that a programme of archaeological investigations be put in place prior to and during development of the proposed quarrying site. This should be carried out as part of a method statement / archaeological programme of works to be agreed with the developer and relevant heritage authorities.

12.6 Residual Impacts

It is considered that subject to the implementation of the mitigation measures outlined above, there will be no significant residual impacts upon cultural heritage as a result of the proposed development.

12.7 Conclusions

Consultation of the heritage databases has confirmed that the proposed scheme lies within an area of archaeological / historical potential, with several archaeological sites and monuments and NIAH structures recorded within a

3km radius. However, none of the sites are located within the boundaries of the Application site and none are located within the immediate vicinity of the site. Therefore, it is not anticipated that the proposed development works shall have a significant adverse impact upon any previously recorded heritage features or their setting.

The desktop study has confirmed that the site is located within an area of moderate archaeological potential given the location of the proposed development area within a wider archaeological landscape. Substantial invasive groundworks will be required to facilitate the proposed development, which have the potential to adversely impact upon any previously un-recorded sub-surface archaeological remains which may survive within the proposed development area.

Whilst there remains moderate-high potential for archaeological remains to survive within the site boundaries, their exact location, nature and extent remains uncertain. Given that there is the potential for archaeological remains to survive within the site boundaries, but these are an unknown, it is recommended that archaeological mitigation measures are implemented in line with planning policy guidelines and statutory heritage requirements.

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13.0 WASTE MANAGEMENT

13.1 Introduction

This section of the EIA is prepared by Chris Tinsley MRTPI, whose competency is set out at Section 1. This section of the EIA addresses the potential effects of the proposed development in terms of waste management. The proposed development provides for the removal of the greywacke mineral resource and the restoration of the site to biodiversity after use.

The evaluation of effects of the proposed development in terms of waste management comprises a qualitative assessment based on an analysis of potential effects on the environment undertaken in other sections of this EIA. The assessment presented within this section also takes into account a review of relevant literature and professional judgement in relation to impacts upon the environment in terms of the proposed development.

13.2 Proposed Development

The proposed development comprises the extraction of greywacke and restoration of the site to biodiversity after use.

The mineral won at the site will be processed via mobile crushing and screening plant. Out of specification and lower value material resultant from this process will be stored in the landforms to the east, south and west of the proposed quarry void, as shown in the proposed development plans. The landforms have been designed using terrain modelling software to ensure sufficient stability. The material will then be topped with overburden and top soils and planted with an appropriate woodland/ grassland mix.

Other than out of specification material derived from mineral processing, the main waste management concerns will principally revolve around vehicular

wastes associated with routine maintenance and repairs and accidental fuel and oil spillages and the potential for entry into surface and groundwater. These issues are discussed at Section 6 and within the H&HIA held as Appendix 6.1.

13.3 Assessment of Impacts

A number of precautions, mitigation and best practice measures are detailed at the H&HIA appended at Appendix 6.1 and outlined at Section 6 of this EIAR. These measures will be implemented to ensure that any potential impact associated with the proposed development on local surface and groundwater features will be minimised. These measures will safeguard and protect from potential pollution events and contaminants entering and impacting upon surface water and groundwater resources.

By implementing the measures as outlined in Section 6, there are not considered to be any direct or indirect impacts resultant from the proposed development upon the local water environment. On completion of the proposed development, there will be a permanent reduction in direct risks to surface water features and groundwater.

13.3.1 Unplanned Events

According to the EPA guidelines, unplanned events, such as accidents, can include “spill from traffic accidents, floods or landslides affecting the site, fire, collapse or equipment failure on the site”.

The vulnerability of the proposed development to unplanned events is considered to be limited due to:

- the proposed works being planned and designed by suitably qualified professionals;
- the rural location of the Application site; and
- the experience of the Applicant in operating mineral extraction sites.

Spillages and leaks from HGVs and other plant or vehicles moving within the site is considered to be sufficiently mitigated against within the proposed development, either as an integral part of the design or as part of the procedures and mitigations proposed for the operation of the site.

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13.4 Mitigation Measures

A number of mitigation measures are detailed at various sections of this EIAR which detail how specific actions and measures can be implemented as part of the proposed project to ensure that the proposed development does not result in any significant effects upon the environment. Measures include:

- Works undertaken in accordance with proposed plans, taking account of quarry face angles, stockpiling etc;
- Fuel Handling and Storage Measures as detailed at Section 6;
- Good site management practices;
- Contingency plans / procedures;
- Noise and dust controls;
- Measures for the regular inspection and maintenance of plant and machinery;
- Systems for recording and monitoring impacts associated with the development upon the environment e.g. water quality ; and
- Management of restored areas.

The above list is not comprehensive but provides the main mitigation measures advanced as part of the proposed development, to ensure that the proposed development would not result in any significant effects upon the environment in terms of the management of waste.

13.5 Residual Impacts

Subject to the implementation of the mitigation measures as detailed within this EIA, the proposed development is not considered to result in any significant effects upon the environment.

13.6 Conclusions

The proposed development has the potential to result in significant effects associated with waste management, however, subject to the implementation of the measures outlined above and other measures recommended within this EIA, it is not anticipated that there will be any significant Waste Management Related impacts.

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14.0 SOIL AND NATURAL RESOURCES

This section of the EIAR is prepared by Chris Tinsley MRTPI, whose competency is set out at Section 1. It is a requirement that consideration be given to the likely significant direct and indirect consequences that a development proposal would have on the environment which might result from the use of natural resources.

Legislation and guidelines outline that the scope of an EIAR needs to be determined by evaluating the aspects of the environment likely to be significantly affected by the development with reference to a number of categories and their inter relationship. One such category is 'Soils'.

14.1 Assessment of Baseline Conditions

14.1.1 Minerals

Greywacke aggregates are won from naturally occurring, finite resources and are utilised for a range of purposes including in the use of blocks, concrete, asphalt and various other building materials which require the structural properties and strength inherent in aggregate materials. As outlined in Section 5 it is submitted that the proposed project will not give rise to a significant impact upon the greywacke formation.

The extracted material will be utilised for a range of purposes. Global environmental issues like fossil fuel use and alternative energy sources are matters subject to national/international treaties and agreements and are considered to be outside the scope of this statement, as the cumulative contributions of this particular development to such matters are insignificant in a national context.

The Applicant intends on conserving natural resources by maximising the resource potential of the site in order to allow the maximum yield without

resulting in any significant effects upon the environment and extracting the material in an efficient, well-planned manner.

14.1.2 Soils

As detailed in Section 4, the application site consists of mix of land which are currently the subject of quarrying and undeveloped lands directly adjacent to the existing quarry void which are in agricultural use.

With respect to the impacts upon soils, these have already been removed from the existing quarry void area and therefore no impacts will be experienced in this part of the Application site. Soils and overburden within the proposed lateral extension areas will be progressively removed as works progresses southwards/eastwards across the site.

A proportion of the stripped overburden and topsoil material will be utilised in the construction of the southern screening bund, with the remainder placed on the landforms to be created around the periphery of the quarry. Therefore, any impacts associated with soils will be temporary, with all soils remaining on-site throughout the course of operations.

14.2 Residual Impacts/ Mitigation Measures

It is considered that the loss of soil cover to facilitate the proposed development will be mitigated by the screening and restoration benefits proposed. The soil transfer will have no effect on neighbouring agricultural lands or ecological features. The proposed restoration proposals will see the site restored to biodiversity after use.

Mitigation measures outlined below will be implemented during the proposed mineral extraction and restoration activities at the site to mitigate against any potential adverse impacts on natural resources. The measures are a re-iteration of those identified elsewhere within this EIAR and include:

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- Works undertaken in accordance with proposed development plans, taking account of quarry face angles, stockpiling etc;
- Fuel Handling and storage measures as detailed at Section 6;
- Good site management practices;
- Contingency plans / procedures;
- Monitoring of ground water; and
- Management of restored areas.

The above list is not exhaustive, but provides the main mitigation measures advanced as part of the proposed development, to ensure that the proposed development would not result in any significant effects upon the environment.

14.3 Conclusion

The Applicant intends to conserve the natural resources by maximising the resource potential at the site. It is considered that the loss of soil cover to facilitate the continued expansion of the quarry will be mitigated by the screening benefits and the site restoration as proposed. The soil transfer will have no effect on neighbouring agricultural lands or ecological features.

Given the above, the proposed development is not considered to result in any significant effects upon the environment in this regard.

15.0 SOCIO-ECONOMIC IMPACTS

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15.1 Introduction

This section of the EIAR is prepared by Chris Tinsley MRTPI, whose competency is set out at Section 1. This section considers the impact of the proposed development in the context of population/settlement, employment and other socio-economic effects.

15.2 Assessment of Baseline Conditions

The Application site is comprised of an existing quarry and adjacent undeveloped agricultural lands. Mineral extracted at the quarry is utilised in a number of construction products. The quarry benefits from planning permission for a number of value added processes including asphalt production and concrete batching.

The existing quarry is therefore delivering a range of direct socio-economic benefits in terms of direct and indirect employment associated with the quarrying and downstream manufacturing uses at the site. The quarry is also providing a number of indirect socio-economic benefits in terms of the production of aggregates and other building products, which are vital to local construction projects and the delivery of infrastructure.

15.2.1 Population

County Longford has recorded the highest jump in population nationwide over the last 6 years according to data released from Census 2022. When compared to 2016, Longford has seen the country's largest increase in population with over 46,600 people living in the county, a jump of 14% of 2016's figure of 40,800.

The population in Longford is relatively well distributed with 16,046 people within Longford MD; 10,674 within Granard MD; and 14,153 within Ballymahon MD with relatively higher concentrations around the larger towns of Longford Town, Ballymahon, Granard, Lanesborough and Edgeworthstown

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15.2.2 Employment

Preliminary 2022 census data shows that employment levels in County Longford (48.4%) were lower than the national average (53.4%) and unemployment at the county level (11.8%) was higher than the national average at 9.1%. Pockets of relatively high unemployment were evident around Newtownforbes, Edgeworthstown, Ballymahon and Longford town when compared to other areas within the county.

15.2.3 Housing

Department of Housing, Local Government and Heritage data⁵ describes how there were 11,542 people homeless across Ireland in November 2022. The number of people who are homeless rose by 145 people since October 2022 and by 27% compared with a year ago (8,917, November 2021)

As a result of the housing crisis within Ireland, the Government has introduced the “Housing for All - a New Housing Plan for Ireland”. This is the government’s housing plan to 2030. It is a multi-annual, multi-billion euro plan which seeks to improve Ireland’s housing system and deliver more homes of all types for people with different housing needs. The plan estimates that Ireland will need an average of 33,000 new homes to be provided each year from 2021 to 2030.

⁵ Available at <https://www.gov.ie/en/collection/80ea8-homelessness-data/>

Statistics from the Department of Housing, Local Government and Heritage⁶ states that 7,544 homes were completed in Q3 2022, a rise of 62.5% from the same quarter in 2021. The number of new home completions for the first three quarters of 2022 was 20,807, which is more than was seen for the whole of 2021 (20,560) or any other year since the series began in 2011.

The Housing for All Action Plan Update and Q3 Progress Report describes how an increase in homelessness seen in recent months is a serious concern for Government. While emergency measures such as deferring any 'no fault' tenancy terminations from taking place over the winter months are necessary and will help in the short-term, the long-term response remains an increased and sustainable supply of new homes.

15.2.4 Infrastructure Delivery

The Government has stated⁷ that in response to Brexit and wider challenges such as climate change, a core tenet of the Government's strategy is to bring greater economic resilience to Ireland's regions by addressing the infrastructure deficits that currently exist. Under this €116 billion plan, public capital investment will reach 4% of national income, placing Ireland well above the recent EU average of 2.9%.

When launched in 2018 Project Ireland included over 150 projects which each have a value in excess of €20 million. This pipeline of projects has continued to expand and evolve since then, with numerous major projects being completed and many more projects entering into the pipeline. There are now over 200 large projects at various stages of the project lifecycle.

15.3 Impact Assessment

⁶ Available at <https://www.gov.ie/en/publication/da0d1-action-plan-update-and-q3-2022-progress-report/>

⁷ Project Ireland 2040, Prospects Ireland's Pipeline of Major Infrastructure Projects, Investment Projects and Programmes Office, December 2019

15.3.1 Population and Employment

The proposed development will sustain existing full time employment associated with the winning and working of the mineral at the quarry. The proposed development will also sustain indirect employment associated with the working of the operation of the quarry and associated downstream manufacturing employment through contractors, hauliers, engineers and mechanics.

Direct benefits associated with the proposed development will include direct employment of local people across semi-skilled, skilled and professional sectors. It is anticipated that ongoing employment opportunities will remain available to the local population for years to come, along with providing job security for those currently employed by the business.

The mineral resource to be won and worked at the application site will underpin the applicant's business model and directly supports the jobs outlined above. The proposed development will sustain rural employment in this part of Longford, providing an alternative to agriculture and will provide additional employment opportunities for the increasing population and workforce currently being experienced in Longford and over the coming years.

The proposed development is estimated to generate an expenditure of several hundred thousand euro per annum, with much of this expenditure being made locally on the likes of purchases, transport, fuel, wages and business rates. This is considered to result in a direct economic impact on the local economy.

The socio-economic impacts associated with the proposed development will be positive. The employment and expenditure generated by the proposed development will result in a tangible positive impact in this rural location in County Longford, sustaining local direct employment and the resultant indirect and induced economic benefits as outlined above.

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15.3.2 House Building and Infrastructure

In order to meet the need for new housing, as is desired by central Government, the physical infrastructure, in the form of construction products is required. The applicant is a key supplier of construction products throughout Ireland.

The applicant's business plays an important role in delivering the products required in order to deliver the housing and infrastructure required in Ireland over the coming years. The continued supply of a local source of mineral to facilitate the local manufacture of the construction products is therefore considered to be of significant importance.

The quarrying sector is intrinsically linked with the construction sector. By association, the continued and steady supply of mineral and mineral products is of significant importance in delivering housing growth. As detailed in Section 2 of this EIAR, no suitable alternatives have been identified and the extraction of the mineral at the Application site has been determined to be the BPEO.

The drive to provide more housing and deliver improved infrastructure will put a huge strain on planned mineral deposits. The steady supply of locally available resources is essential to maintaining competition and supplying the market.

Geological Survey Ireland (GSI) estimates that 60 tonnes of aggregate are required for the construction of a typical house. This increases to some 400 tonnes when roads and utilities are included.

Current demand for aggregates in Ireland, at 12 tonnes per capita, is twice the average demand in the EU 28 member states⁸. In response to the Project Ireland 2040 plan, the Irish Concrete Federation (ICF) have advised that the

⁸ Irish Concrete Federation, Essential Aggregates providing for Ireland's needs to 2040, 2019

State will need to produce an estimated 1.5 billion tonnes of aggregates to meet housing and infrastructure demand arising from the Government's plan.

The widely recognised unprecedented demand for housing and associated requirement for infrastructure delivery is reflected in demand for aggregates. The proposed extraction of the greywacke mineral resource at the application site would therefore have a number of positive impacts in terms of a local supply of the construction products to facilitate the necessary housing growth and infrastructure delivery in the County.

The impacts associated with the proposed development in terms of housing and infrastructure delivery will be positive. The physical infrastructure required to drive construction will be driven by mineral won at the application site. The proposed development will therefore result in a tangible positive impact via the continued supply of construction materials required to deliver the housing and infrastructures projects, which the Government has identified as being critical to the State.

15.4 Conclusion

The application site is located within a rural setting, with an increasing population but lower than average employment rate. The proposed development will sustain the direct employment associated with the winning and working of the material currently experienced at the quarry, as well as significant employment associated with the downstream manufacturing processes associated with the mineral.

The Government is embarking on significant housebuilding and infrastructure delivery projects across the country. The proposed development will provide the essential raw materials required to provide construction materials which will directly impact the delivery of these projects.

The proposed development will allow for the economic benefits currently being generated by the extraction of mineral at Aughnaclyffe Quarry to be sustained. The development will sustain direct and indirect local employment, allow for continued expenditure in the local area and allowed for continued investment in the staff and facilities at the quarry.

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16.0 CLIMATE CHANGE, ACCIDENTS AND DISASTERS

16.1 Introduction

This section of the EIAR is prepared by Chris Tinsley MRTPI, whose competency is set out at Section 1. The EIA Regulations require applicants to include within an EIAR, a description of the likely significant effects on the environment of the proposed development resulting from, among other things—

“the impact of the proposed development on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the proposed development to climate change”.

16.2 Baseline Setting

Climate change not only means changes in the average climate such as temperature but also changes in the frequency and intensity of extreme weather and climate events. Though climate change projections, like all projections of the future, are subject to uncertainty, the latest climate modelling projections by Met Eireann for Ireland are in broad agreement with previous research⁹ on the subject.

In terms of temperature trends, the EPA describes¹⁰ how Ireland's climate is changing in line with global trends, with a temperature increase of, on average, 0.8°C compared with 1900. By the middle of this century (2041 – 2060) the average annual temperatures are projected to increase by between 1–1.2°C and 1.3–1.6°C depending on the emissions trajectory. The number of warm days is expected to increase and heat waves are expected to occur more frequently.

⁹ Available at: <https://www.met.ie/epa-climate-projections-2020>

¹⁰ Available at: <https://www.epa.ie/environment-and-you/climate-change/what-impact-will-climate-change-have-for-ireland/#:~:text=Ireland's%20climate%20is%20changing%20in,depending%20on%20the%20emissions%20trajectory.>

In terms of precipitation, the EPA also describes how Ireland has seen an increase in average annual national rainfall of approximately 60mm or 5% in the period 1981-2010, compared to the 30- year period 1961-1990. Significant reductions are expected in average levels of annual, spring and summer rainfall. Projections indicate a substantial increase in the frequency of heavy precipitation events in Winter and Autumn (approx. 20%).

16.3 Impact Assessment

The only potential for direct and indirect climate change impacts from the proposed development is considered to be through the emissions resultant from the burning of hydrocarbons as fuel both on site and in the transportation of materials to and from the quarry.

To date there have been limited technological advances with respect to emissions in the delivery method of aggregates to market, with improvements focusing on enhanced performance and rating of the diesel engines in the HGV's.

It is proposed that mineral extracted at the site will be processed using mobile crushing and screening plant, as is current practice at the quarry. The proposed development will result in the haulage (and associated emissions) being less than those associated with the transportation of material over a greater distance.

The mineral can only be worked where it is found and the application site is one which is well placed to serve a number of market areas throughout the Northwest and Midland Regions of Ireland and which has been demonstrated via this EIAR, to not result in any significant effects upon the environment.

The Applicant's commitment to sustainability is reflected in its stated purpose which is "*to make a material difference to the lives of our colleagues, customers*

and communities". This is embedded as a key part of Breedon's corporate strategy.

Breedon's sustainability topics have been grouped under six themes, one of which is Climate Change and Energy. In 2022 Breedon committed to develop carbon reduction targets aligned to the Science Based Targets Initiative's 1.5°C pathway. The Applicant's most significant proportion of CO₂ originates from process emissions resultant from cement manufacture. In terms of quarry operations, Breedon is committed to operating its business in a manner that ultimately eliminates its contribution to global warming by seeking to mitigate its climate change impacts through industrial innovation and the application of industry best practice.

16.4 Accidents and Disasters

Given the nature of the proposed processes on-site and the experience of the applicant in extraction, transporting and handling minerals and in operating quarry plant and machinery, the potential for accidents and disasters relating to the processes are considered to be limited. In any event, operations at the site will be controlled by a multitude of legislation and adopted best practice procedures.

The proposed mineral extraction and restoration works will be covered by a host of health and safety legislation and the site will be subject to regular monitoring and inspection by the relevant regulatory authorities.

The proposed development plans have been prepared by chartered geotechnical engineers at Quarrydesign Ltd, using digital terrain modelling software. The designs have been prepared in order to accord with health and safety legislation and mineral extraction best practice standards in order to minimise the potential for accidents to occur.

Extreme weather events such as 1 in 100 year storm event have been modelled within the H&HIA (held at Appendix 6.1). The assessment demonstrates that during such an event, surface waters can be wholly managed within the site, with no risk to neighbouring land.

Given the temperate climate of the island of Ireland, it is considered that even with the increasing volatility of the weather events that are predicted in the future, it is not anticipated that these events would have the potential to give rise to a natural disaster at the site.

16.5 Conclusion

The potential for likely significant impacts on climate change due to greenhouse gas emissions are considered unlikely given the scale and nature of the proposals. The only potential for direct and indirect climate change impacts from the proposed development is considered to be through the emissions resultant from vehicle movements associated with the development.

Given the worldwide geographic location of the site (in the Midwest of Ireland, in the mid-latitudes), it is predicted that the development will not be adversely affected by climate change, having the capacity to deal with the most likely variations in climate and storm events.

Given the nature of the proposed processes on-site and the experience of the applicant, the potential for accidents and disasters relating to the processes are limited and, in any event, are controlled by a multitude of legislation.

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17.0 HUMAN HEALTH

17.1 Introduction

This section of the EIAR is prepared by Chris Tinsley MRTPI, whose competency is set out at Section 1. The EIA Regulations require the Applicant to consider the impacts of the proposed development upon human health. As detailed in Section 1 of this EIAR, this topic is covered across a number of the sections of this EIAR (see Table 1.1 for convergence).

In this regard, the consideration of human health is a prerequisite of the relevant guidance and legislation governing target levels with respect to:

- Water Quality Standards (Section 6);
- Noise Emissions (Section 7); and
- Air Quality (Section 10).

Each of the above sections of the EIAR explicitly references the appropriate guidance when establishing whether the proposed development is acceptable in human health terms and indeed in the case of noise and air quality considers wider guidance from the World Health Organisation.

17.2 Baseline Setting

The site is currently operated in accordance with the extant planning permission and other regulatory regimes. Best practice and operating procedures are in place at the quarry to ensure a healthy and safe working environment. As detailed in Sections 7 and 10, air quality and noise monitoring data collected at the quarry show no exceedances in accepted levels.

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17.3 Impact Assessment

17.3.1 Water Environment

Consideration of the potential for impacts upon the water environment and thereby on human health is explicitly undertaken by measurement against the relevant standards provided in guidance and legislation as referenced in Section 6 of this EIAR and the accompanying H&HIA held at Appendix 6.1.

The H&HIA assesses the risk of derogation at local water supplies, stating that the piezometer network provides sufficient coverage for groundwater level and quality monitoring to check that there is no risk of impact at local water supplies.

17.3.2 Noise

Consideration of the potential for impacts from noise on human health is explicitly undertaken by measurement against the standards provided in guidance and legislation, as referenced in Section 7 of this EIAR.

The following policy documents, standards and guidelines relevant to the baseline noise monitoring survey are relevant to the specific monitoring procedures adopted as part of the baseline noise survey:

- Quarries and Ancillary Activities, Guidelines for Planning Authorities, April 2004, Department of the Environment, Heritage and Local Government. (DoEHLG Guidance); and
- Environmental Management Guidelines Environmental Management in the Extractive Industry (Non-Scheduled Minerals), Environmental Protection Agency (2006).

The CadnaA noise modelling (as detailed at Section 7) has been developed to allow detailed noise predictions to be undertaken in accordance with:

- ISO 9613-2:1996 Acoustics – Attenuation of sound during propagation outdoors – Part 2 General methods of calculation; and
- BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites.

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Noise monitoring data from the locations around the boundary of the quarry has been reviewed and shows no exceedance in accepted limits. A background noise survey was undertaken in February 2023 in proximity to the nearest noise sensitive locations to establish the current ambient noise levels in the area. The predicted worst-case 1-hour noise levels (dB L_{Aeq}) at Noise Sensitive Receivers during the proposed development are predicted to be in accordance with the daytime noise limit of 55 dB $L_{Aeq, 1 \text{ hour}}$ from quarry activities.

Prediction noise and vibration levels as a result of blasting have been predicted at the nearest sensitive receptors. These blasts result in very short – term instantaneous noise impact at all residential receivers in the vicinity of the quarry and will not constitute a significant impact, as the blast monitoring results will be required to be within the limits prescribed by the DoEHLG in their relevant guidance. The operator will continue to carry out blast monitoring (ground-borne vibration and air overpressure) for each blast.

Given the above, the proposed development is not considered to have the potential to result in any significant effects upon human health in terms of noise or vibration. Notwithstanding, a number of mitigation measures are proposed to minimise operational impacts.

17.3.3 Air Quality

Consideration of the potential for impacts upon human health from air emissions is explicitly undertaken by measurement against the standards provided in guidance and legislation, as referenced in Section 10 of this EIAR.

The assessment with regards to air quality has primarily been undertaken with cognisance to the Institute of Air Quality Management (IAQM) guidance document entitled Guidance on the Assessment of Mineral Dust Impacts for Planning (2016 V1.1).

Statutory standards exist for concentrations of suspended particulate matter (both PM₁₀ and the PM_{2.5}) under The Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011).

World Health Organisation (WHO) Global Air Quality Guidelines (AQGs) were released in September 2021 and are held in the Dust Impact Assessment Report held at Appendix 10.1. These provide clear evidence of the damage air pollution inflicts on human health, at even lower concentrations than previously understood. The guidelines recommend new air quality levels to protect the health of populations, by reducing levels of key air pollutants, some of which also contribute to climate change.

No statutory air quality criterion has been set at a European, National or World Health Organisation (WHO) level, although a range of national 'yardstick' criteria from many countries is found in literature.

Noise monitoring data from the locations around the boundary of the quarry has been reviewed and shows no exceedance in accepted limits.

Overall, the proposed development is considered to have the potential to cause a 'Slight Adverse Effect' at the nearest residential receptor in the surrounding area. Therefore, the overall effect is considered to be 'not significant'. This is based on a consideration of the different magnitude of effects at individual receptors, and the number of receptors that would experience these potential effects.

Any residual dust deposition impacts resulting from the future de-commissioning and restoration of the quarry will be of a short duration and all potential dust impacts from the site are considered to be reversible i.e. the risk of impact will cease on completion of quarrying and restoration of the site.

Given the above, the proposed development is not considered to have the potential to result in any significant effects upon human health in terms of air quality. Notwithstanding, a number of mitigation measures are proposed to minimise operational impacts.

17.4 Residual Impacts

Subject to the continued practices at the quarry which are demonstrated to be effective via the monitoring results and the implementation of any additional mitigation measures detailed at Sections 6, 7 and 10 of this EIAR, the proposed development is not considered to result in any significant effect upon human health.

17.5 Conclusion

The impacts of the proposed development upon human health are considered to have been fully covered within the relevant sections of the EIAR; namely the Water Environment; Noise and Air Quality Sections (Section 6, 7 and 10).

All of these sections identify relevant guidance and legislation which has been implemented to protect human health and demonstrates how monitoring results from the quarry should that the existing practices and working methods are appropriate and adequate for protecting human health. The proposed development will see a continuation of the best practices already observed at the quarry which will accord with the relevant standards.

Notwithstanding, a number of mitigation measures are proposed in order to further minimise impacts associated with the proposed development. Given the

same, the proposed development would not result in any significant effect upon the environment by virtue of human health impacts.

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18.0 INTRA AND INTER CUMULATIVE IMPACTS

This section of the EIA is prepared by Chris Tinsley MRTPI, whose competency is set out at Section 1. The EIA has considered the environmental aspects within and around the site, which potentially could experience impact as a result of the proposed development. The proposed development involves a lateral extension and deepening of Aughnaclyffe Quarry.

Regulation 2 (e) (v) requires the applicant to provide a description of the likely significant effects on the environment of the proposed development resulting from, among other things- the cumulation of effects with other existing or approved developments, or both, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources.

The cumulative effects assessment, considered in this section, for the project follows the guidelines as set by the Institute of Environmental Management and Assessment (IEMA).

IEMA's guidelines recognise two major sources of cumulative effects:

- Intra-project effects – These occur where a single receptor is affected by more than one source of effect arising from different aspects of the project. An example of an intra-project effect would be where a local resident is affected by dust, noise and traffic disruption during the construction of a scheme, with the result being a greater nuisance than each individual effect alone; and
- Inter-project effects – These effects occur as a result of a number of past, present or reasonably foreseeable proposed developments, which individually might not be significant but when considered together could

create a significant cumulative effect on a shared receptor and could include developments separate from and related to the project.

Cumulative impacts may arise from the combined effects of a number of existing or proposed developments, in combination with the proposed development being evaluated, on a single receptor/ source. Where appropriate, potential cumulative effects have been identified in the individual environmental assessments contained within this EIAR, in the reports on air quality, noise, biodiversity, water environment and landscape and visual impact, for example.

Consideration has been given to how the different environmental effects of the development will interact and how the development will interact with other developments in the area with each specialist report/section of the EIAR.

18.1 Intra Cumulative Effects

Intra cumulative impacts can occur where a single receptor is affected by more than one source of effect arising from different aspects of the project. This has been assessed at relevant sections of the EIAR. For example at Section 7, the Noise Impact Assessment considers the worst case scenario assuming that haul road movements, excavator and mobile plant would all be operating concurrently.

The potential cumulative effects have been identified in the individual environmental assessments contained within this EIAR, where applicable and, given that the predicted levels of impact accord with the limits as prescribed in the various guidance and that no one of the potential receptors are subjected to all of the potential effects of the development at once, then the proposed development is considered to have no unacceptable intra cumulative impacts.

18.2 Inter Cumulative Impacts

This EIAR has demonstrated that not significant effects upon the environment are anticipated as a result of the proposed development.

In order for there to be inter cumulative impacts, it is a practical necessity for there to be an overlap (accumulation) of impacts with other developments / projects creating similar effects.

Following consideration of the various technical sections of this EIAR and accompanying reports, the vast proportion of the impacts arising from the proposed development are sufficiently remote that the potential for them to overlap with other operations/ consented development is limited. Where appropriate, the potential for inter cumulative impacts have been considered in more detail in the individual sections.

In the Noise Section of this EIAR for example, the background noise survey includes noise emanating from surrounding land uses. These background noise levels have been used to identify the background noise environment upon which the CadnaA noise models are based. As such, the assessment therefore accounts for the cumulative impacts of existing development and operations and the proposed operations at the Application site operating concurrently.

There are no other operational mineral development sites in close proximity to application site. It is considered that by virtue of the differing development types and degree of separation distance between the site and other contributing development types, that no potential for likely significant cumulative effects is predicted.

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