JOHN NULTY LTD.

NTS | Volume I

Non-Technical Summary

Environmental Impact Assessment Report

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1.0 INTRODUCTION

1.1 BACKGROUND CONTEXT

This Environmental Impact Assessment Report (EIAR) has been prepared on behalf of John Nulty Ltd. to assess the likely significant environmental effects of the proposed development at Ardkill More and Drumcrow, Carrickaboy, Co. Cavan. John Nulty Ltd intends to apply for a 20 year permission for quarrying and extraction of rock that will include drilling, blasting, crushing and screening along with alterations to boundaries & all associated site works on lands at Ardkill More Townland and Drumcrow Townland, Carrickaboy, County Cavan.

Works will also include for the provision of new settlement ponds and installation of associated site drainage infrastructure and surface water pump to proposed new settlement ponds along with provision of discharge outlet via a Klargester Interceptor. Ancillary site works to include for landscape works, planting restoration of the quarry perimeter and reprofiling of overburden as required to facilitate development of the quarry and restoration of the associated site area.

The EIAR has been completed in accordance with Directive 2011/92/EU (as amended by 2014/52/EU) and relevant Irish legislation as well as in conformity with guidance in the European Commission's 'Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report' (2017) and EPA's Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (2022).The proposed development will consist of a 20-year permission to complete extraction of material granted within existing quarry envelope as per previously approved planning (Ref No.051801) alterations to boundaries & all associated site works.

The subject site is located at Ardkill More and Drumcrow, Carrickaboy, Cavan, Co. Cavan. The location of the site is shown in the context of the surrounding area in Site Location Map (Figure 1.1). The quarry is located approximately 7km south west of Cavan town, the most proximate urban settlement, along the Cavan to Kilnaleck road (L2517). Other small towns in the vicinity to the application site are Ballinagh and Kilnaleck, which are located approximately 4.5 km and 6.3 km to the west and southeast of the application site, respectively. The surrounding land use is predominantly agricultural. A full description of the proposed development is provided in Chapter 2 of this EIAR.

1.2 PURPOSE OF EIA

EIA requirements are now governed by Directive 2014/52/EU, which amends Directive 2011/92/EU ("the EIA Directive").
The primary function of the EIA Directive is to ensure that projects that are likely to have significant effects on the environment are subjected to an assessment of their likely impacts.Ireland's obligations under the EIA Directive have been transposed into Irish law and, in particular, the planning consent process through the provisions of Part X of the Planning and Development Act 2000, as amended, and the Planning and Development Regulations, 2001, as amended.

Article 1(1)(g) of the 2014 EIA Directive (2014/52/EU) outlines the stages and steps taken when completing an EIA.

i. the preparation of an environmental impact assessment report by the developer, as referred to in Article 5(1) and (2).

ii. the carrying out of consultations as referred to in Article 6 and, where relevant, Article 7.

iii. the examination by the competent authority of the information presented in the environmental impact assessment report and any supplementary information provided, where necessary, by the developer in accordance with Article 5(3), and any relevant information received through the consultations under Articles 6 and 7.

iv. the reasoned conclusion by the competent authority on the significant effects of the project on the environment, taking into account the results of the examination referred to in point (iii) and, where appropriate, its own supplementary examination; and

v. the integration of the competent authority's reasoned conclusion into any of the decisions referred to in Article 8a.

1.3 EIA METHODOLOGY

As per Article 5(1) of the 2014 Directive, an EIAR should provide the following information:

- Description of Project.
- Description of Baseline Scenario.
- Description of Likely Significant Effects.
- Description of Avoidance / Mitigation Measures.
- Description of Reasonable Alternatives (and rationale for chosen option); and
- A Non-Technical Summary.

Annex IV of the Directive sets out a more detailed outline of the information required in an EIAR. The subject EIAR has been prepared in full accordance with these stated requirements of Annex IV.

In addition to the 2014 Directive, this EIAR has been informed by, but not limited to:

- Guidelines for Planning Authorities on carrying out Environmental Impact Assessment, (Department of Housing, Local Government and Heritage, August 2018).
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, (EPA, May 2022).
- Environmental Impact Assessment of Projects: Guidance on Screening (European Commission, 2017).
- Environmental Impact Assessment of Projects: Guidance on Scoping (European Commission, 2017).
- Environmental Impact Assessment of Projects: Guidance on the Preparation of the Environmental Impact Assessment Report (European Commission, 2017).
- Advice Notes for Preparing Environmental Impact Statements, Draft, (EPA, September 2015).
- Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (European Union, 2013).
- Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licensing Systems - Key Issues Consultation Paper, Department of Housing, Planning, Community and Local Government, 2017.
- Circular letter PL 1/2017 - Advice on Administrative Provisions in Advance of Transposition (2017).
- An Bord Pleanála's last Refusal & Inspector Report.

We would also note that the pre-application discussions with the Planning Authority informed the content of the EIAR. The EIA process has been managed to ensure that the EIAR documentation and relevant analysis are confined to topics which are explicitly described in the legislation, and where environmental impacts may arise. Evaluation and analysis have been limited to topics where the indirect, secondary, or cumulative impacts are either wholly or dominantly due to the project under consideration.

1.4 EIA SCREENING & SCOPING

Screening is the term used to describe the process for determining whether a proposed development requires an EIA by reference to mandatory legislative threshold requirements or by reference to the type and scale of the proposed development and the significance or the environmental sensitivity of the receiving baseline environment. Article 93 of, and Schedule 5 to, the Planning and Development Regulations 2001 set out the classes of development for which a planning application must be accompanied by an environmental impact assessment report (EIAR).

Part 1 and Part 2 Schedule 5 of the Planning and Development Regulations, 2001 prescribes the categories of, and thresholds for, prescribed development requiring EIA.

Under Item 2(b) of Part 2 of Schedule 10 to Article 93 of the Planning and Development Regulations, 2001 – 2021, EIA is required where:

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

Having regard to the scale and nature of the project it is necessary for the development application to be accompanied by an EIAR in conjunction with the overall size of the development.

The proposed development has been subject to several pre-planning consultations, including formal pre-planning meetings held with Cavan County Council. An informal scoping process was carried out to identify the issues that are likely to be most important during the Environmental Impact Assessment process. This approach is consistent with the Environmental Protection Agency's Guidelines on the information to be contained in Environmental Impact Assessment Reports which provides that formal scoping, as per section 173(2)(a) of the Act, is not mandatory.

1.4.1 Consultation

The preparation of this EIAR has been informed by several pre-planning meetings with various departments of Cavan County Council. The approach adopted in undertaking this EIAR was discussed and largely agreed in principle during these consultations. Issues raised in consultations have been taken on board and addressed in the compilation of this document. Where relevant, statutory bodies were consulted by the experts assigned to each topic assessed under this EIAR, details of which are provided in the relevant Chapters.

1.5 PURPOSE & STRUCTURE OF THE EIAR

The primary purpose of this EIAR is to inform the EIA process, by identifying likely significant environmental impacts resulting from the proposed development, to describe the means and extent by which they can be reduced or mitigated, to interpret and communicate information about the likely impacts and provide an input into the decision-making planning process.

The fundamental principles to be followed when preparing an EIAR are:

- Anticipating, avoiding, and reducing significant effects.
- Assessing and mitigating effects.
- Maintaining objectivity.
- Ensuring clarity and quality.
- Providing relevant information to decision makers.
- Facilitating better consultation.

The EIAR document provides information on any identified effects arising as a consequence of the proposed development. The EIAR documents the manner in which the project design incorporated mitigation measures; including impact avoidance, reduction, or amelioration; to explains the manner in which significant effects will be avoided.

The key purpose of this EIAR document is to enable the competent authority to form a reasoned conclusion, in the context of the decision-making process, on the significant effects of the project on the environment, based on the examination of the EIA Report.

Pursuant to the provisions of Article 5(1) of the EIA Directive, where an environmental impact assessment is required, the

developer shall prepare and submit an EIAR which shall include at least:

(a) a description of the project comprising information on the site, design, size, and other relevant features of the project.

(b) a description of the likely significant effects of the project on the environment.

(c) a description of the features of the project and/or measures envisaged in order to avoid, prevent, or reduce and, if possible, offset likely significant adverse effects on the environment.

(d) a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment.

(e) a non-technical summary of the information referred to in points (a) to (d); and

(f) any additional information specified in Annex IV relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected.

EIAR shall include the information that may reasonably be required for reaching a reasoned conclusion on the significant effects of the project on the environment, taking into account current knowledge and methods of assessment. In addition, the developer shall, with a view to avoiding duplication of assessments, take into account the available results of other relevant assessments under European Union or national legislation, in preparing the EIAR.

The EIAR is divided into 2 volumes:

- the non-technical summary comprising a concise, but comprehensive description of the project, its environment, the effects of the project on the environment, the proposed mitigation measures, and the proposed monitoring arrangements.
- The main report consisting of 17 chapters and associated appendix as outlined in the table of contents.

A Natura Impact Statement (NIS) has been prepared regarding the proposed development by Noreen McLoughlin, of Whitehill Environmental Ltd.

The EIAR prepared for the scheme has endeavoured to be as thorough as possible and therefore the provisions included in the revised EIA Directive and all of the issues listed in Schedule 6, Sections 1, 2 and 3 of the Planning and Development Regulations 2001-2018 and in recent guidance documents have been addressed in the EIAR. In this context, the following topics/issues have been reviewed and addressed in the context of the proposed development:

- Alternatives & Planning
- Population and Human Health;
- Biodiversity;
- Land and Soils;
- Hydrology & Hydrogeology;
- Air & Climate;
- Noise & Vibration;
- Material Assets;
- Cultural Heritage
- Landscape and Visual
- Traffic & Transport;
- Risk Management;
- Interactions and;
- Mitigation

1.5.1 Risk of Major Accidents and Disasters

In accordance with Article 3(2) and Annex IV of the 2014 EIA Directive, the vulnerability of the project to risks of major accidents

and/or disasters, as well as likely significant effects on the environment if it did occur, are considered.

Article 3(2) of the 2014 EIA Directive states that an EIAR should consider the following: -

'The effects referred to in paragraph 1 on the factors set out therein shall include the expected effects deriving from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned'.

In addition, an EIAR should also contain the following information prescribed in 5(d) of Annex IV of the 2014 EIA Directive:

- "A description of the likely significant effects of the project on the environment resulting from, inter alia:

(d) the risks to human health, cultural heritage, or the environment (for example due to accidents or disasters);"

The 2018 Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment sets out two key considerations to address this: -

- "The potential of the project to cause accidents and/or disasters, including implications for human health, cultural heritage, and the environment;
- The vulnerability of the project to potential disasters/accidents, including the risk to the project of both natural disasters (e.g., flooding) and man-made disasters (e.g., technological disasters)."

1.6 EIAR TEAM & QUALIFICATIONS

Traynor Environmental Ltd. have coordinated the subject EIAR. Environmental specialist consultants were also commissioned for the various technical chapters of the EIAR document which are mandatorily required in accordance with the EIA Directive and Planning and Development Regulations 2018. Each environmental specialist was required to characterise the receiving baseline environment; evaluate its significance and sensitivity; predict how the receiving environment will interact with the proposed development and to work with the EIA project design team to devise measures to mitigate any adverse environmental impacts identified.

A full list of all consultants and the corresponding chapters that have been prepared is detailed below.

Table 1.1 - Qualifications of EIAR Authors

EIAR Section	Area of Expertise	Company
Chapter 1 - Introduction Chapter 2 – Project Description Chapter 3 – Alternatives & Planning Context Chapter 4 – Population and Human Health Chapter 6 – Land, Soil & Geology Chapter 8 – Air Quality Chapter 9 – Climate Chapter 10 - Noise and Vibration Chapter 11 – Material Assets Chapter 15 – Risk Management Chapter 16 – Interactions Chapter 17 – Summary of Mitigation Measures	Environmental Specialists	Traynor Environmental Ltd.
Study Consultant / Address		
Mr Nevin Traynor *BSc. Env, H. Dip I.T, Cert SHWW, EPA/FAS Cert.* Mrs Angela Kelly *BSc.Hort, PG. Dip.Env*/ Ms Zita Mc Cann *BSc. Forensic Science* Mr Killian Bannon *BSc.Agri* / Mr Aaron Mc Bennett *BSc. Env* **Add:** Belturbet Business Park, Creeny, Belturbet, Co. Cavan **Tel:** (087) 7947793 **Email:** nevin@traynorenv.ie **Web:** www.traynorenvironmental.com		

EIAR Section	Area of Expertise	Company
Chapter 3 – Planning and Policy Chapter 13 - Landscape	Architectural/Engineering Services	Michael Fitzpatrick Architects
Study Consultant / Address		
Mr. Michael Fitzpatrick BA(Hons) Arch, Dip Arch. MRIAI, of Michael Fitzpatrick Architects Ltd. Add: Main Street, Butlersbridge, Co Cavan Tel : 049 4365800 / 086 6039689 Email: info@mfarchitects.ie		

EIAR Section	Area of Expertise	Company
Chapter 9 – Biodiversity	Flora and Fauna / Biodiversity	Whitehill Environmental 
Study Consultant / Address		
Ms. Noreen Mc Loughlin MSc. of Whitehill Environmental Ltd **Add:** Whitehill, Edgeworthstown Co. Longford **Tel:** (087) 412724 **Email:** noreen.mcloughlin@gmail.com		

EIAR Section	Area of Expertise	Company
Chapter 12 - Cultural Heritage	Archaeology	WOLFHOUND ARCHAEOLOGY
Study Consultant / Address		
Mr. Mick Drumm BA, MIAI Director of Archaeological Services Wolfhound Archaeology **Add:** Killag, Duncormick, Co. Wexford **Tel :** (087) 1689599 **Email:** wolfhoundarchaeology@gmail.com		

EIAR Section	Area of Expertise	Company
Chapter 3 - Traffic & Transport	Traffic and Transport	RSA TTA Traffic Transport and Road Safety Associates Ltd.
Study Consultant / Address		
Mr. Matt Steele of Traffic Transport and Road Safety Associates Ltd. **Add:** Barran, Blacklion, Co Cavan Tel**:** (089) 4209704 / 071 9853847 **Email:** info@ttrsa.com		

EIAR Section Reviewed	Area of Expertise	Company
Chapter 7 – Hydrology & Hydrogeology	Hydrology & Hydrogeology	MWP
Study Consultant / Address		
Mr. Tim Moynihan BSc MSc(Geotech) C. Eng IEI P.Geol IGI Euro. Geol FRS of Malachy Walsh and Partners Ltd. **Add:** 2 Exchange Tower, 1-2 Harbour Exchange Square, London E14 9GE, UK. Tel**:** +44 (0) 20 7253 0893 **Email:** tim.moynihan@MWPEng.co.uk		

2.0 Project Description

2.1 Introduction

This chapter of the EIAR was completed by Taynor Environmental, provides details on the various elements of the existing quarry operation and the proposal development all related ancillary site works over an application site area of 3.53hd. at Ardkill More and Drumcrow, Carrickaboy, Cavan, Co. Cavan. The site was subject to Cavan County Council Planning Ref 051801 and An Bord Pleanála (Ref PL 02.219928) which was granted with conditions in 2007.

Existing operations are carried out on the lower lever at the quarry under Quarry Registration No QY7. The current application relates to the upper level of the quarry. The existing and proposed quarry operations comprise extraction of rock using blasting techniques; processing (crushing and screening) of the fragmented rock to produce aggregates for use in the manufacture of value-added products, road construction and site development works.

2.2 The Applicant

John Nulty Ltd is the owner of the landholding comprising the existing quarry. The quarry deepening subject to this application was previously granted permission for continued use as part of planning reference 05/1801: "to include 3.37ha of land within the existing quarry envelope – planning reg. no. 7325 & 97/166,". John Nulty Ltd. has been quarrying the lands in accordance with the conditions attached to these planning permissions/approvals. Nulty's quarry has been in existence since the 1940's and is an established part of the landscape. The existing quarry area which is outside of the red line boundary is currently operating under QY7 conditions.

2.3 Project Description

- John Nulty Ltd intends to apply for a 20 year permission for quarrying and extraction of rock that will include drilling, blasting, crushing and screening along with alterations to boundaries & all associated site works on lands at Ardkill More Townland and Drumcrow Townland, Carrickaboy, County Cavan.
- Works will also include for the provision of new settlement ponds and installation of associated site drainage infrastructure and surface water pump to proposed new settlement ponds along with provision of discharge outlet via a Klargester Interceptor.
- Ancillary site works to include for landscape works, planting restoration of the quarry perimeter and reprofiling of overburden as required to facilitate development of the quarry and restoration of the associated site area.
- Deepening of extraction from it's current level of 209mOD down to 175mOD over the proposed 20-year lifespan. The previously permitted planning permission proposed a quarry floor level of 175mOD under planning Ref 051801.
- The quarry is located in a naturally occurring rock outcrop which rises above the surrounding area. The top of the quarry face is approximately 248 mOD with the bottom of the quarry face being approximately 209mOD. The road level at the quarry entrance is 154mOD and 150mOD at the Site Office.
- It is proposed that surface water runoff will be collected and processed by passing through a cleaning/polishing system of settling pond and oil water separator to remove silt and any potential contaminants before being discharged into the naturally occurring surface water drain at green field discharge rates.
- The quarry has an existing discharge licence in accordance with the Water Pollution Discharge Licensing Regulations.
- Approximately 500,000 tonnes of material will be extracted over a twenty-year period, resulting in an average extraction rate of 25,000 tonnes per year up to a maximum of 50,000 tonnes per annum.
- It is proposed to install a new settlement pond and oil water separator to service the application site area.
- The settlement pond will be located to the north of the existing site office on lands in the ownership of John Nulty Ltd.
- The existing ponds on site will continue to service the existing QY7 Registered quarry and are outside the proposed red line boundary for this application and will not be discussed further.

Figure 2.1 - Site Location Map (Site indicated by Pin)

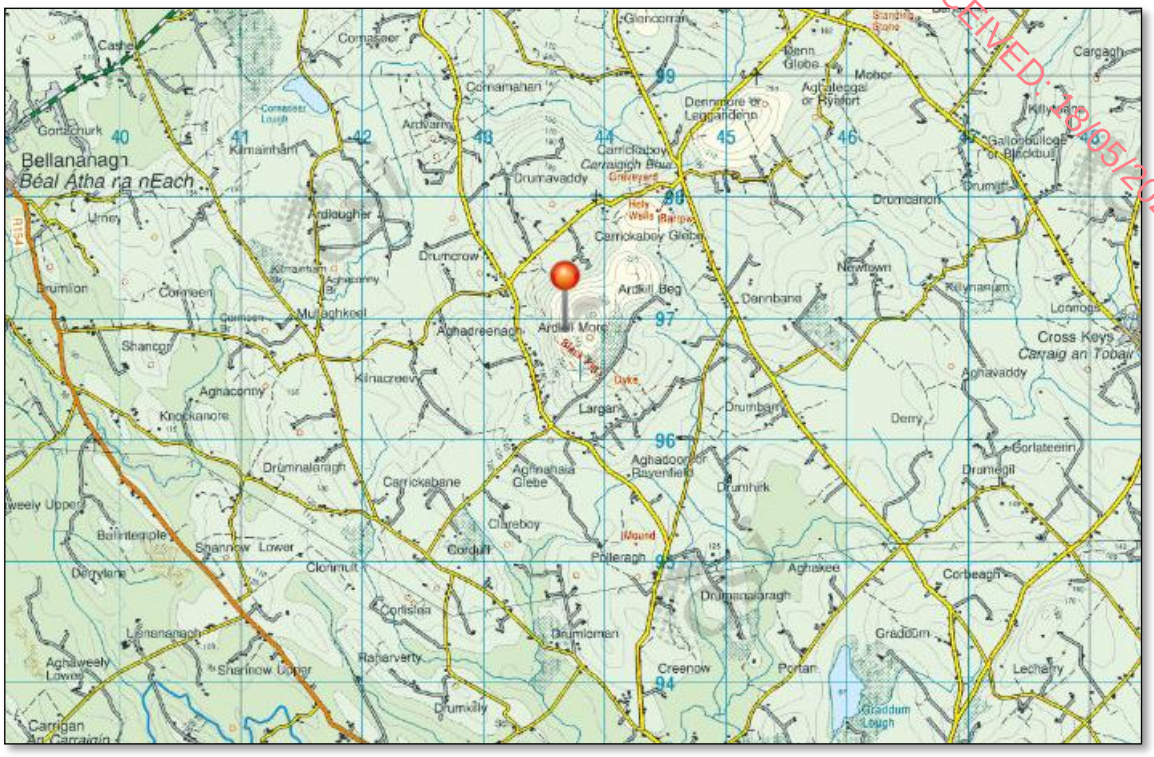


Figure 2.2 - Site Location Map (Site to which this application relates Outlined in Red)

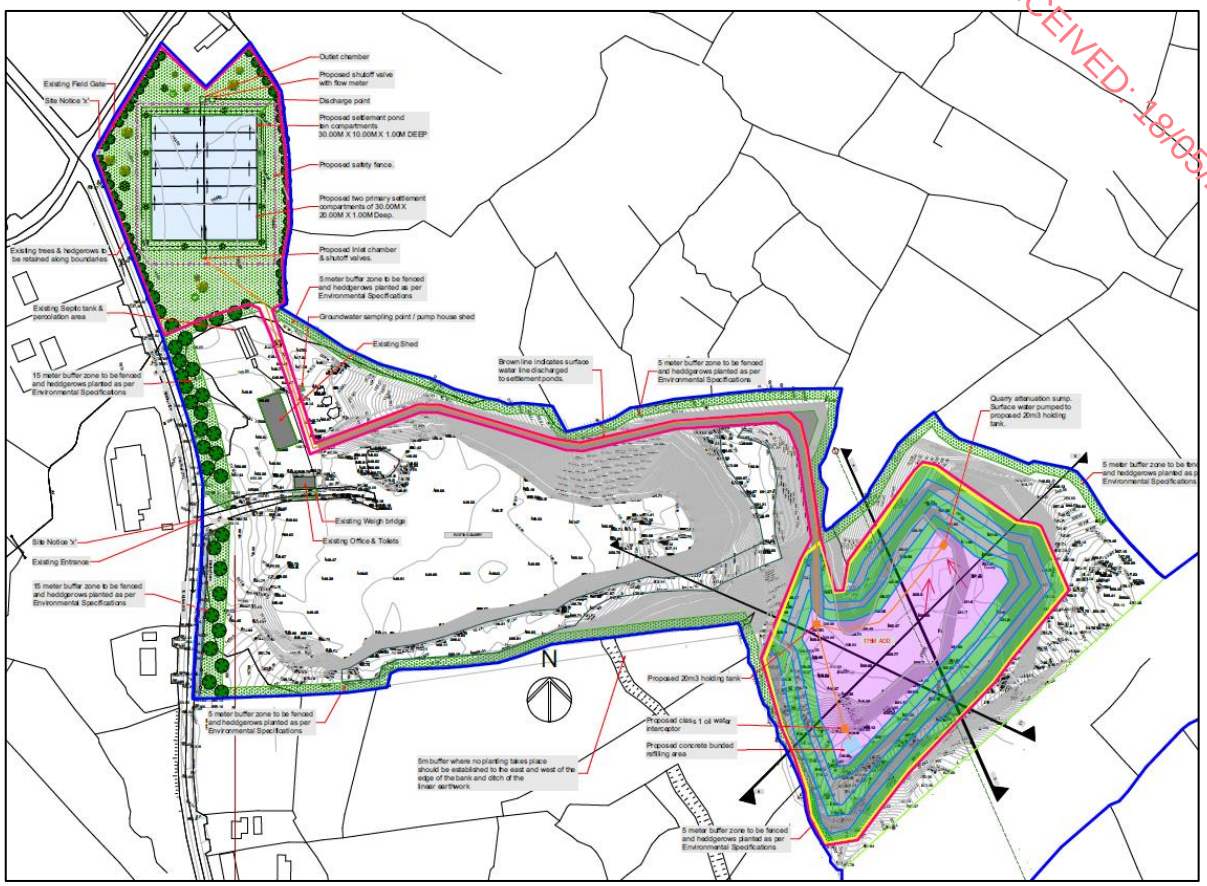
Figure 2.3 - Site Location Map (Area outlined in Green approved previously under QY7)

Photograph 2.1 – Current View of the Application Area.(Upper Level – Application Site)

Photograph 2.2 - Current View of the Application Area

Photograph 2.3 - Current View of the Application Area

Figure 2.4 Proposed Site Layout Plan



2.4 Site Location & Context

The subject site is located at Ardkill More and Drumcrow, Carrickaboy, Cavan, Co. Cavan. The location of the site is shown in the context of the surrounding area in Site Location Map (Figure 2.1 & 2.2). The quarry is located approximately 7km southwest of Cavan town, the most proximate urban settlement, along the Cavan to Kilnaleck road (L2517). Other small towns in the vicinity to the application site are Ballinagh and Kilnaleck, which are located approximately 4.5 km and 6.3 km to the west and southeast of the application site, respectively. The surrounding land use is predominantly agricultural.

The surrounding lands comprise of rough agricultural land with a number of detached residential houses located to the east and west of the site. There is also an industry unit located to the west of the site along the L2517 which belongs to Breffni Air. Residences within the general area consist of one-off rural houses and farmsteads with some ribbon development along the local road network – refer to EIAR Chapter 4 Population and Human Health.

As the application site forms part of the overall quarry, activities that will be undertaken at the application site and overall quarry are discussed in order to assess any potential cumulative impact associated with the application area. The proposed development consists of completing extraction of material within the existing quarry envelope. The processed aggregate will be then transported to market. Quarrying activity to date has altered the natural topography of the land and has resulted in the creation of a quarry void. The topography of the quarry land varies in height from 209mOD which is the lowest level of the existing quarry void to 248mOD which is the highest point of site located along the eastern boundary.

2.5 Site Infrastructure & Facility Services

2.5.1 Site Security

There is an existing entrance gate which has adequate fencing in place. There are no other vehicular access points to the application site. The entrance gates to the site are locked to prevent unauthorised access outside of the working hours. Ssafety and security measures are in place for the existing quarrying operations on the subject site.

2.5.2 Site Access Road

All HGVs utilising the quarry are confined within the Applicant's landholding. Adequate car parking provision for employees and visitors is provided at the existing weighbridge office. There will be no extra parking on site. The proposed development will be accessed via a local County Road (L2517) to the west of the application site. There is an existing hard surfaced haul route providing access to the existing aggregate stockpiles, which will be used to serve the proposal to complete the extraction of this 3.53ha. area of the quarry site. The alignment of this haul route will not change. The extracted rock/gravel will be transported by trucks from the site along the dedicated on-site haul route.

2.5.3 Wheel-Wash

A concrete wheel-wash currently exists on Site, which will be maintained, and the water is directed to the existing onsite settlement ponds after a Class 1 oil water separator. All trucks exiting the quarry use the wheel wash facility.

2.5.4 Fuel Storage Areas

There will be no fuel or hydraulic oil stored onsite. A new bunded area for refuelling will be located in the southern corner of the application site. No chemicals will be stored at the site.

2.6.5 Traffic Control

All traffic to and from the Site will use the existing entrance to the west of the site along the L2517. All trucks using the site will be confined within the Site boundary. There will be no queuing on the local road network. For all detailed information on traffic and transportation please refer to chapter 14 of the EIAR.

2.6.6 Offices and Ancillary Facilities

Ancillary facilities at the quarry include the main office, weighbridge, canteen, toilets, and a garage / workshop, which are outside this application boundary. A toilet is located within the site office building. Wastewater emanating from on-site employees, is diverted to an EN Certified Septic Tank and percolation area, designed, and certified by Traynor Environmental Ltd. Treated wastewater is then discharged to ground via a percolation area in the area immediately northwest of the site office.

2.6.7 Quarry Activities

The natural resources on site will be utilised in an efficient and prudent manner to ensure the potential of the site is maximised. Blasting practices currently employed are in accordance with best industry practice and are carried out by independent, licensed contractors Irish Industrial Explosives (IIE) who also monitor and report each blast.

2.6.8 Utilities and Services

Electrical power is currently provided to the application site via mains supply. Site based staff are contactable by mobile phone. Runoff from storm water in the lower level of the quarry is accumulated in the exiting settlement ponds prior to discharge to the local watercourse and then to the Ballinagh Stream, in accordance with Discharge Licence granted for the site (Ref No. SS/WW004/18)

There is a bored well, which is used for groundwater sampling located on the northwest corner of the site upgradient of the Tricel Septic Tank and percolation area which serve the office. This has been used in the past to top up evaporation losses in the wheel wash and discharges to the settlement ponds for treatment.

2.6.9 Lighting

There is no requirement for lighting outside of the subject lands but within the lands, certain working hours (after dark in winter periods) necessitate lighting that is extinguished when the site is closed thus causing no external light pollution. Any lighting required on site is temporary in winter months and will be supplied by mobile light stands powered by generator. Sufficient lighting is provided at the site to ensure safe operations during winter periods.

2.6.10 Landscape and Boundary Treatment

Fencing is currently in place along several portions of the quarry boundary including along the local road L2517. It is proposed to maintain 5 m buffer zone around the perimeter of the site. It will be fenced and planted with native hedgerow as per environmental specifications.

2.6.11 Overburden

Overburden is the earth, clay and glacial till material that must be removed before the underlying rock can be extracted. All overburden in relation to this area of the quarry has already been removed.

2.7 Site Management

2.7.1 Working Hours.

It is proposed that the following working hours will be adhered to at the quarry with no operations permitted outside of those times:

- 07:00 to 18:00 hours Monday to Friday; and
- 07:00 to 14:00 hours Saturday
- No operations will be carried out on Sundays and public holidays.

2.7.2 Personnel

The Applicant employs 5 permanent employees on the site in addition to a number of indirect employees such as, HGV drivers and maintenance contractors, etc. The continued development of the site is consistent with the policies set out in the National Planning Guidelines for the sector; the Regional Planning Guidelines and the Cavan County Development plan which recognise the requirement for:

- A secure supply of construction aggregates and related products is necessary for the continued development of the region.
- Proven aggregate reserves need to be safeguarded for future extraction.
- 'Best environmental management practice' to be implemented within quarry developments.

2.7.3 General Waste

General waste consisting of canteen/office waste is stored in wheelie bins supplied by the waste contractor and collected on a weekly basis. This waste is recovered/ recycled or disposed of at a licensed facility namely Wilton Waste Recycling Limited.

2.7.4 Plant and Equipment

Plant currently in use for at the site includes a loading shovel, excavator with rock breaker, crusher, secondary and tertiary mobile screeners, and mobile fuel bowser (as required).

2.7.5 Duration of Extraction

Approximately 500,000 tonnes of material will be extracted over a twenty-year period, resulting in an average extraction rate of 25,000 tonnes per year up to a maximum of 50,000 tonnes per annum.

2.8 Restoration Plan

Upon the cessation of extraction operations, it is proposed to return the extracted areas to natural habitat after-use. Where feasible, restoration of exhausted and redundant areas will be carried out at the earliest opportunity. However, it is envisaged that the majority of the restoration will be carried out after extraction operations at the site have ceased.

2.9 Aftercare

Where possible, in this area soil will be used for vegetation to develop naturally, with heath and scrub species colonising the bare ground. On completion of the restoration works, redundant structures, plant equipment and stockpiles will be removed from site on permanent cessation of extraction activity.

3.0 Alternatives Considered & Planning Policy

The proposed site is outside any town or village and is not zoned as part of the County Development Plan 2022-2028. Detailed information on the planning and development context of the site is provided in the Planning Report which accompanies this application.

According to the Cavan County Development Plan "The County contains a wealth of natural resources including many raw materials critical to the construction industry. The Council acknowledges the need for extractive industries in terms of supply of aggregate materials for the construction sector. This industry material yields an important contribution to the economy. Such material is a significant natural resource, and it is important to safeguard this material for future use, whilst also ensuring that impacts on the environment and the community are acceptable. Cavan County Council will ensure that all natural resources are exploited in an environmentally sound and sustainable manner."

The Applicant has already provided a significant capital investment in the existing quarry and an alternative location is not considered to be viable or make best use of the existing reserves in the local area. The propose deepening of the existing quarry at the subject site is considered to be the most appropriate development.

The established nature and planning history of Nulty's Quarry are such that the deepening of the existing quarry would represent the most economic and sustainable way forward.

Mineral extraction/quarrying proposals will, in addition to sustainable development principles, also be assessed on the basis of the scale of the development and the capacity of the road network in the area to accommodate associated traffic.

4.0 Population and Human Health

Human health is considered in the context of the relevant pathways, such as noise, air, soil, and water in the context of acceptable limits. The EIAR shows that the continued extraction at the quarry would operate within acceptable limits for noise dust and potential effects on soil and water would be addressed through good practice and mitigation measures to avoid accidental spillages of fuel, etc. Surface water from the site will be collected in a newly constructed settlement pond where silts and sediment settle out prior to discharge. A discharge license (Ref: SS/WW004/18) was granted by Cavan County Council to John Nulty Ltd. In 2020 The restoration of the quarry would be beneficial when compared against the existing baseline. The traffic assessment shows that the junction is forecast to operate with 99 % spare capacity during the operational phase of the development, in all of the scenarios tested.

On the basis of the above it is considered that there would not be significant adverse effects on human health or amenity. The proposed development would have positive and medium-term effects on employment by providing jobs at the quarry. Mitigation measures are proposed in relation to the various environment topics.

5.0 Biodiversity

The Biodiversity chapter describes the existing environment, in terms of biodiversity. The chapter was prepared using the results of the desk study and site visits. The potential zone of Influence for the quarry operation is identified as 5km.

The available existing ecological information on the Quarry was collated during the desk study. In addition, information was collated on designated nature sites within a 15km radius of the proposed site and on protected and rare species within the 1km square of the site. The Site was walked and was surveyed in accordance with the Heritage Council's *Habitat Survey Guidelines* (Smith et al., 2010) and the Institute of Environmental Assessment's *Guidelines for Baselines Ecological Assessment* (IEA, 1995).

Habitats within the development site were classified in accordance with Level 3 of *A Guide to Habitats in Ireland* (Fossit, 2000). These habitats are denoted in the text along with their habitat code, e.g., the habitat code for improved agricultural grassland is GA1. A species list was compiled, and target notes were made. Any mammal and bird activity were also noted. The species nomenclature for vascular plants conforms with *The New Flora of the British Isles'* (Stace, 2010).
The ecological evaluation and impact assessment within the Biodiversity Chapter was undertaken with reference to relevant parts of the 2016 Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland developed by the Chartered Institute of Ecology and Environmental Management (CIEEM, January 2016).

The proposed development is not within a site designated for nature conservation or subject to any nature conservation designations. There are four Natura 2000 sites within 15km, i.e., Lough Oughter and associated Loughs SAC, Lough Oughter Complex SPA, Lough Sheelin SPA 004065 and Moneybeg and Clareisland Bog SAC 002340.

This current NIS has been undertaken to evaluate the potential impacts of the proposed development with regard to the effects upon the conservation objectives and qualifying interests (including the habitats and species) of the Lough Oughter and Associated Loughs SAC and the Lough Oughter Complex SPA. It is considered that following mitigation, that the proposed project does not have the potential to significantly affect the conservation objectives of these aforementioned Natura 2000 sites and the integrity of these sites as a whole will not be adversely impacted.

The habitats present within the application site and surrounding area described, classified, and evaluated in the Biodiversity Chapter. The main habitats within and close to the application site include those habitats directly associated with the quarry, i.e., exposed gravel or till (ED1), spoil and bare ground (ED2), recolonising bare ground (ED3), active quarries and mines (ED4), Exposed Siliceous Rock (ER3) and undisturbed habitats immediately surrounding the quarry, i.e., dry siliceous heath (HH1), wet heath (HH3), dry-humid acid grassland (GS3), wet grassland (GS4) and scrub (WS1). Areas of improved agricultural grassland (GA1), treelines (WL2), hedgerows (WL1) and Drainage Ditch (FW4) occur beyond the areas surrounding the quarry.

Amphibians such as the common frog *Rana temporaria* occurs in certain areas around Ardkill More/Drumcrow and are considered likely to habitat the area however no other sightings of amphibians, reptiles or invertebrates were observed during the site visits. Records exist from the relevant 1km square (N4396) for the badger *Meles meles** which was recorded during a previous quarry development on lands adjacent to the application site, carried out in 2005 (Brian Keeley, 2005). It was not classed as an active badger shelter at this time. In the case of the quarry at Ardkill More and Drumcrow, there are no protected habitats or plant species within 9km of the quarry boundary, therefore any risk to protected habitats from dust deposition from the operation of this quarry is negligible.

On the day of the survey itself, there was no evidence for the occurrence of any protected mammals within the area. There were no visible tracks or trails and no evidence of any badger setts. There are no habitats within the site that would accommodate roosting or hibernating bats and have therefore been excluded from further assessment. There will be no direct disturbance to any species listed in Annex I of the Birds Directive or Annex II of the Habitats Directive

6.0 Land, Soils and Geology

Existing information on the regional soils, superficial deposits and bedrock geology of the area and its surrounds was collated and evaluated. Subsequent to this data compilation and review, site visits and inspections were undertaken to review the superficial deposits and bedrock geology at the Quarry and in the surrounding area.

To facilitate the continued extraction of rock within the 3.53 application site, a small volume of over burden associated with the site periphery may be required. The impact on soils/subsoils may be considered to be of medium-term nature in that they will be reused or integrated as a fundamental part of site rehabilitation. In the long term there will be no deleterious effects on the soils.

The bedrock geology at the Quarry is well understood, according to the GSI bedrock geology 1:100,000 scale map, the subject site and surrounding area is shown as being on the interface between the Red Island Formation (to the west) and the Sleive Glah Formation (to the east). When operational, quarry aggregates produced at the site will be independently tested and geologically assessed on an annual basis to confirm that the aggregates are compliant with the requirements of the relevant aggregate quality standards and to ensure that the aggregates are of suitable quality and are fit for purpose.

7.0 Hydrology and Hydrogeology

7.1 Background and Objectives

Traynor Environmental have been engaged by John Nulty Ltd to undertake an Environmental Impact Assessment report (EIAR) for hydrology and hydrogeology in relation to planning for quarry works at Ardkill More and Drumcrow, Carrickaboy, Cavan Co. Cavan.

The objectives of this assessment include:

- Undertake a detailed review of the hydrology and hydrogeology of the area and of the proposed development using published data followed by a site survey of the site and surrounding area to assess flow paths both above and below ground.
- Identify any potential impact on surface water and groundwater due to the proposed development.
- Identify potential mitigation measures to avoid, remediate or reduce any likely and impact of the works on the area.
- Carry out a design for proposed works to ensure that the proposed works will not have a negative impact on the surrounding hydrology or hydrogeology of the area.

7.2 Summary of Proposed Development

- John Nulty Ltd intends to apply for a 20 year permission for quarrying and extraction of rock that will include drilling, blasting, crushing and screening along with alterations to boundaries & all associated site works on lands at Ardkill More Townland and Drumcrow Townland, Carrickaboy, County Cavan.
- Works will also include for the provision of new settlement ponds and installation of associated site drainage infrastructure and surface water pump to proposed new settlement ponds along with provision of discharge outlet via a Klargester Interceptor.
- Ancillary site works to include for landscape works, planting restoration of the quarry perimeter and reprofiling of overburden as required to facilitate development of the quarry and restoration of the associated site area.
- Deepening of extraction from it's current level of 209mOD down to 175mOD over the proposed 20-year lifespan. The previously permitted planning permission proposed a quarry floor level of 175mOD under planning Ref 051801.
- The quarry is located in a naturally occurring rock outcrop which rises above the surrounding area. The top of the quarry face is approximately 248 mOD with the bottom of the quarry face being approximately 209mOD. The road level at the quarry entrance is 154mOD and 150mOD at the Site Office.
- It is proposed that surface water runoff will be collected and processed by passing through a cleaning/polishing system of settling pond and oil water separator to remove silt and any potential contaminants before being discharged into the naturally occurring surface water drain at green field discharge rates.
- The quarry has an existing discharge licence in accordance with the Water Pollution Discharge Licensing Regulations.
- Approximately 500,000 tonnes of material will be extracted over a twenty-year period, resulting in an average extraction rate of 25,000 tonnes per year up to a maximum of 50,000 tonnes per annum.
- It is proposed to install a new settlement pond and oil water separator to service the application site area.
- The settlement pond will be located to the north of the existing site office on lands in the ownership of John Nulty Ltd.
- The existing ponds on site will continue to service the existing QY7 Registered quarry and are outside the proposed red line boundary for this application and will not be discussed further.

7.3 Receiving Environment

A field drain is located along the northeastern boundary of the quarry. This drain flows northwest towards the Ballinagh Stream which is located 1.2km downstream of the site. This Ballinagh stream a tributary of the Erne River.

On a regional scale, the majority of the site is mapped in the Erne_SC_030 sub-catchment which is a collection of small separate stream sub-basins that drain northwest towards the Erne River, approximately 8.5km to the northwest of the site.

The south-western of the site is mapped in the Erne_SC_010 sub-catchment. However, due to the void created by the quarry there is no surface water drainage from the site into the Erne_SC_010 sub-catchment (i.e., all surface water runoff and licensed discharges are into the Erne_SC_030 sub-catchment).

The existing discharge license for the site (License Ref: SS/WW004/18) has a maximum flow rate of 4000m³/day. An amendment to the existing discharge license will be sought should planning be granted. The discharge rate will be controlled with a hydro Valve prior to the new settlement pond and monitored with a flow meter shut off prior to discharge.

There is a low risk of both pluvial and fluvial flooding at the proposed development areas. Surface water on the quarry floor is managed by a sump as described below. Groundwater inflows will not occur in the extraction area. Based on the above information there is low potential risk of flooding at the development site (Flood Zone C).

The Groundwater Body (GWB) in which the quarry site is located is the Cavan GWB (IE_NW_G_061). The Geological Survey of Ireland (GSI) has classified the Silurian Metasediments and Volcanics and Ordovician Metasediments in this area as Poor Bedrock Aquifers – Pl.

The GSI map indicates that the solid geology underlying the site comprises two different formations:

1. Rocks of the Red Island Formation (RI)

2 Strata of the Slieve Glah Formation (SG)

The difference in bedrock formation delineated by the fault lines also indicates that there is no hydrological connection between the activities at the quarry and the potable wells in the area.

7.4 Surface Water Management Proposals

The surface water management proposed for the site is as follows:

1. All rainwater falling on the extraction floor of the quarry will be directed to a quarry sump located on the floor of the quarry(application site).
2. Rainwater will then be pumped to a 20m³ (20,000 litre) holding tank from the quarry sump automatically by a high-level float switch.
3. Some concrete bunded area for refuelling of vehicles will be located in the southern corner of the application site.
4. Water from the bunded area will also be directed to the holding tank, after a Class 1 oil water separator.
5. Water will then flow by gravity to the Settlement Pond passing through a 100mm pipe at a controlled rate set by the Hydro Valve.
6. Water will first enter the inlet chamber before flowing into one of the primary settlement sections.
7. The ponds have been designed to facilitate maintenance and silt removal. Water will enter the primary settlement area via a diffuser pipe inlet. The pond consists of two primary settlement compartments, followed by a series of interconnected settlement compartments which can be used all together or separately for cleaning and seasonal variations.
8. The settlement pond will have a freeboard of 0.5m. The depth of the pond will be 1m. This will allow sufficient retention time for the solids to settle out of the water.

9. The proposed settlement ponds will be divided into 5 chambers. The 2 primary settlement compartments will be 30m x 20m x 1m deep(600m³) in size where initial settlement will take place. The water will then flow through consecutive chambers of 30m x 10m x 1m each (3000m³). This will provide for a maximum retention volume in the settlement pond of (3600m³).
10. The pond has been designed allowing for a climate change factor of 20%.
11. The settlement pond will be lined with an impermeable material.
12. The estimated maximum discharge per day from the proposed extraction area is (24.204 l/s) equivalent to 2052m³ leaving the pond. In conjunction with QY7 this will comply with a maximum of 4000m³ as per the existing discharge licence.
13. The existing discharge licence has allowed for QY7, and Quarry approved under 05/1081. The maximum flow will not exceed 4000m³ per day as per the discharge licence SS/W004/18.
14. The volume of water being discharged will be recorded on a daily basis by installing a flow meter at the point of discharge.
15. The settlement pond will be cleaned and maintained on a regular basis to ensure that they continue to operate efficiently. (Every 3 – 6 months)
16. Surface water sampling will be undertaken as per the existing discharge licence limits.
17. All flow rate calculations are included in Appendix of this chapter.

7.5 Impacts and Mitigation Measures

Overview of the Impact Assessment Process

The conventional source-pathway-receptor model for groundwater / surface water protection was applied to assess impacts on groundwater and surface water specifically on downstream sensitive ecological receptors and local groundwater supplies. In the case of the subject site the primary potential hazards are suspended solids, leaching and spillages, and accidental discharges of potential pollutants to the local surface waters and groundwater causing a deterioration in water quality. Possible sources of potential pollutants are confined to plant and machinery.

The pathway in terms of groundwater flow is via the underlying aquifer which is classified as Pl - Poor - Bedrock which is Generally Unproductive except for Local Zones. The potential pathway for surface water is via potential surface water runoff (if any) that might ultimately enter local streams. Due to the contained nature of the site, bedrock permeability, proposed new settlement pond, new concrete bunded area and all associated mitigation measures, however this is not expected to arise.

7.6 Residual Impact Assessment

If the proposed mitigation measures are fully implemented, no residual impacts are anticipated during the operational and post-operational stages of the quarry development.

8.0 Air Quality

An assessment of fugitive dust emissions from the quarry has been undertaken. Sensitive receptors have been identified within 500m of the site. A number of these receptors were assessed in greater detail, as they are considered to have a potential greater risk of dust impact. In the absence of any mitigation measures, the risk of impact from dust emissions associated with the proposed development at the Quarry generally varies from insignificant to moderate.

A number of existing mitigation measures are in place to minimise the generation / migration of fugitive dust and to ensure that the extraction, processing, and restoration operations comply with the threshold values described above. These mitigation measures are in accordance with the 'best practice / mitigation' measures for the sector.

9.0 Climate

The planned rock extraction at the quarry will not have a significant impact on the microclimate beyond the quarry boundary. Any change in wind turbulence near the rock face will be imperceptible at the nearest house. No mitigation measures such as shelter-belts are required in relation to microclimate conditions beyond the quarry boundary.

10.0 Noise and Vibration

Noise

To determine the noise impact from the activities from the proposed development, Traynor Environmental Ltd. carried out a noise modelling assessment. The existing measured noise levels within the site boundary were assessed for potential impact, at the nearest noise sensitive receptors (residences). The daytime noise criterion limits arising specifically from site operations at the sensitive receptors are met at all noise sensitive locations during operations.

Vibration

Blasting-induced vibration is impulsive and transient in nature. A typical blast consists of a number of drilled blast holes into which are placed explosive charges. The charged holes are detonated individually by use of detonators each with different delays. The main reason for complaints on other quarry sites, from blast-induced vibration is usually attributed to the fear of damage and/or nuisance rather than actual damage or nuisance itself. The human body is very sensitive to vibration; this can result in concerns being raised at vibration levels well below the threshold or the levels stated in the existing planning conditions.

The frequency of blasts is dependent on market demand. The duration of a blast in terms of noise is of short duration, similar to a clap of thunder. A number of existing mitigation measures are in place to minimise disturbances due to blasting. These mitigation measures are in accordance with the 'best practice / mitigation' measures for the sector. Blasting is carried out by a qualified "shotfirer".

11.0 Material Assets

The Environmental Protection Agency guidelines in relation to environmental impact assessment (2022) indicate that the consideration of material assets relates to built services, roads and traffic and waste management. Roads and traffic are addressed separately in the EIAR and this non-technical summary relates to build services and waste management only.

The application site is located south-east of Cavan town, off the L2517 regional road in the town lands of Ardkill More and Drumcrow. There is a dispersed pattern of housing development in the vicinity, there is no distinctive village or settlement in the immediate vicinity. The application area is bounded on all sides by agricultural land and there are a number of dwellings located along the roads in the vicinity. The site is access from a local road (L2517). Ancillary facilities at the site include the main office, weighbridge & office, canteen, toilets, and a garage / workshop.

The application site is located in a rural area. There is a dispersed pattern of residential development along the local road L2517 to the west of the site. There are no residences within 200 metres of the quarry extraction area. There are no schools, churches, or shops in the vicinity.

Electrical power is currently provided to the application site via mains supply. Electricity will provide the principal source of energy for office lighting and heating. Site based staff at the application site are contactable by mobile phone, landline and email and broadband connections to the site office are provided via a mobile network. An existing septic tank and percolation area is located on site. Potable water is provided to the site via a private well.

Waste management facilities for general waste, ancillary operational waste and extractive waste are already in place at the quarry. Waste oils, batteries, tyres, domestic waste, and scrap metal are stored on site in designated areas and collected and recycled or disposed of by an authorised waste contractor. Very little extractive waste is produced at the site and any such waste is disposed of appropriately.

12.0 Cultural Heritage

The cultural heritage and archaeological component of the proposed development at Ardkill More and Drumcrow, Carrickaboy, Co. Cavan consisting of a paper and fieldwork study was carried out. There are no items of cultural heritage, archaeological sites or monuments or buildings of heritage interest known within the application site. There are no direct or indirect impacts on any known items of cultural heritage, archaeology, or buildings of heritage interest in the application area or the vicinity. The site boundary is located >50m from the nearest section of the of Linear earthwork "Black Pig's Dyke" (CV031-004) monument.

13.0 Landscape and Visual

A landscape and visual impact assessment has been undertaken for the proposed development. The assessment approach was informed by the Guidelines for Landscape and Visual Impact Assessment, Landscape Institute and Institute of Environmental Management & Assessment, Third Edition, 2013.The continued extraction at the quarry is sought to a maximum depth of c. 175 mod.

Effects on landscape character were considered in the context of the published landscape characterisation map taken from the Cavan County Development Plan 2022-2028. The proposed development is located within a Normal Rural Landscape. Direct changes to this landscape would be very limited as the nature of the proposal comprises for the most part, the proposed development of the existing quarry.

The landscape surrounding the proposed development area retains a positive character and sense of place largely due to the integrity of its landform, the strongest characteristics of which are the steeply sloping contours of Ardkill More falling to areas of pasture with hedgerow grid broken up by the local roads limited plantations and a limited number of small loughs. The landscape value of this general area is thus considered to be moderate.

Visual effects at a selection of viewpoint locations were assessed and judged to be not significant. During the Post operational stage, the quarry would cease to operate. Plant and machinery would be removed and the site would be restored in accordance with the Mitigation and Restoration Plan. This would result in some beneficial effects on surrounding landscape and visual amenity compared with the current baseline.

14.0 Traffic

This chapter of the EIAR, has been compiled by Matthew Steele BA (Hons) MSc FCILT FRGS MCIHT and Pamela Townley BSc (Hons), both Directors of Traffic Transport and Road Safety Associates Ltd. (TTRSA) with over twenty years' experience of assessing the traffic and transport related impacts of development. The assessment updates that prepared as part of planning application ref. no. 19/227 (ABP Ref. 306803). The content of this Chapter was scoped with Mr John Wilson, then of the Roads Section of Cavan County Council, as part of the aforementioned planning application. The roads, traffic and transport impacts of the proposed development have been assessed by utilising an approach based on the prevailing (TII) guidelines on Traffic and Transport Assessment (TTA) (May 2014). The assessment has taken account of the cumulative traffic and transport impact of the proposed development and existing land uses in its immediate vicinity.

The development (quarry) site is accessed off the L2517 Local Road at Ardkill More and Drumcrow, Carrickaboy, Co. Cavan, approximately 7km to the south of Cavan Town. TTRSA have been informed that access to the quarry site by vehicles collecting stone is predominantly to and from the north (towards Cavan Town) on the L2517. This route provides connectivity to both the N55 and N4 National Roads. The current site entrance was constructed pre-2005. A functioning wheel-wash is present. The traffic assessment contained within this Chapter is based on the geometry of the current site entrance.

The main significance criteria when assessing traffic impact is the performance of affected junctions. Other criteria include, for example: any increase in road traffic collisions (which may result in environmental impacts due to spillage); likely damage to the road structure; and, measurable increases in noise and atmospheric pollutants.
Traffic counts were undertaken in February 2018, and traffic modelling was conducted using the industry standard PICADY modelling software, including the traffic predicted to be generated during the operational phase of the development through to 2044. The traffic modelling shows that the site entrance will operate with at least 99% spare capacity during the operational phase of the development.

The development is not predicted to have a significant traffic and transport impact in terms of: road structure; traffic noise; or air pollution. The continued operation of the quarry with sub-standard egress visibility from the existing position of the site entrance to the south along the L2517, combined with substandard stopping sight distances for northbound road users on the L2517 increases the risk of a collision occurring on the L2517 in the vicinity of the site. Such a collision is likely to result in injury to vulnerable road users and/or vehicle occupants and environmental impacts including the uncontrolled release of pollutants into the local environment from vehicles involved in the collisions. Operational phase mitigation measures have been proposed to reduce the level of risk of a road collision occurring in the vicinity of the site entrance.

15.0 Risk Management

The potential for the accident scenarios considered in relation to this chapter affecting other projects in the vicinity was considered, and the overall conclusions regarding risk and consequence remains as described in the detailed risk score tables as "low risk scenarios".

16.0 Interactions

The interactions of the various potential impacts and mitigation measures have been covered, where applicable, under the relevant sections within the EIAR.

17.0 Summary of Mitigation Measures

The 2022 EPA Guidelines regarding information to be contained in EIAR's identifies the following strategies for the mitigation of effects.

Mitigation by Avoidance: Avoidance usually refers to strategic issues - such as site selection, site configuration or selection of process technology- is generally the fastest, cheapest, and most effective form of effect mitigation. In many situations, mitigation by avoidance may be viewed as part of the 'consideration of alternatives.

Mitigation by Prevention: This usually refers to technical measures. Where a potential exists for unacceptable significant effects to occur (such as noise or emissions) then measures are put in place to limit the source of effects to a permissible and acceptable level.

Mitigation by Reduction: This is a very common strategy for dealing with effects which cannot be avoided. It tends to concentrate on the emissions and effects and seeks to limit the exposure of the receptor. It is generally regarded as the 'end of pipe' approach because it tends not to affect the source of the problems. As such this is regarded as a less sustainable, though still effective, approach.

Offsetting: This is a strategy used for dealing with significant adverse effects which cannot be avoided, prevented, or reduced. It includes measures to compensate for adverse effects. Examples include restoration of buildings, walls, or features to compensate for loss of similar features, planting of new vegetation elsewhere to replace unavoidable loss of similar vegetation, provision of a new amenity area to replace amenity lost as a result of a project.

For a comprehensive list of all proposed mitigation measures, refer to the individual chapters and corresponding appendices of this EIAR.

RECEIVED: 18/05/2023