TOM PHILLIPS + ASSOCIATES
PLANNING FOR THE FUTURE

80 Harcourt Street
Dublin 2
D02 F449
t +353 1 478 6055

Also at:
Suite 454 + 455
No. 1 Horgan's Quay
Waterfront Square
Cork City
T23 PPT8
t +353 21 212 9840

e info@tpa.ie
w www.tpa.ie

ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR)

IN RESPECT OF

PROPOSED SAND AND GRAVEL QUARRY DEVELOPMENT

AT

ON A SITE OF C. 8.5HA ON LANDS AT KNOCKNAMOE AND BALLYMULLEN TOWNLANDS, ABBEYLEIX, CO. LAOIS

PREPARED FOR

BOOTH PRECAST PRODUCTS LTD.

SEPTEMBER 2023

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1.0 INTRODUCTION

This Environmental Impact Assessment Report (EIAR) has been prepared in relation to a planning application being submitted to Laois Co. Co. on behalf of Booth Precast Products Ltd. The development being applied for consisted of the following:

The development consists of a total area of 8.5 Hectares comprising of the following:

> *"The development will consist of the: extraction of sand and gravel (c. 787,310m^3 total or c. 1.57 million tonnes total, at a maximum extraction rate of c. 200,000 tonnes per annum) over the proposed 10 year permission sought; alterations to the existing agricultural entrance to create an entrance to the site with associated gates, piers and boundary fencing; provision of a haul road; site clearance; overburden removal; construction of screening berms; provision of a wheelwash and refuelling hard standing area; provision of hard and soft landscaping; and all associated site works above and below ground.*
>
> *The development will also consist of the phased and progressive restoration of the site to beneficial agricultural after-use."*

1.1 Site Location

The application site is located approximately 1km south of Abbeyleix town in the townlands of Knocknamoe and Ballymullen. Access to the application site is via a gated entrance off the L-5731-25 (Ballymullen Road) which is located to the west of the pit. Land use in the surrounding area is largely agricultural with scattered rural pattern of residential dwellings along the local roads. The density of housing increases on approach to Abbeyleix. Abbeyleix Bog is located on the lower lying area to the west of the site. The applicant also operates a manufacturing facility located approximately 1.3km to the south of the application site. The location of the application site and manufacturing facility are illustrated on Plate 1.1.

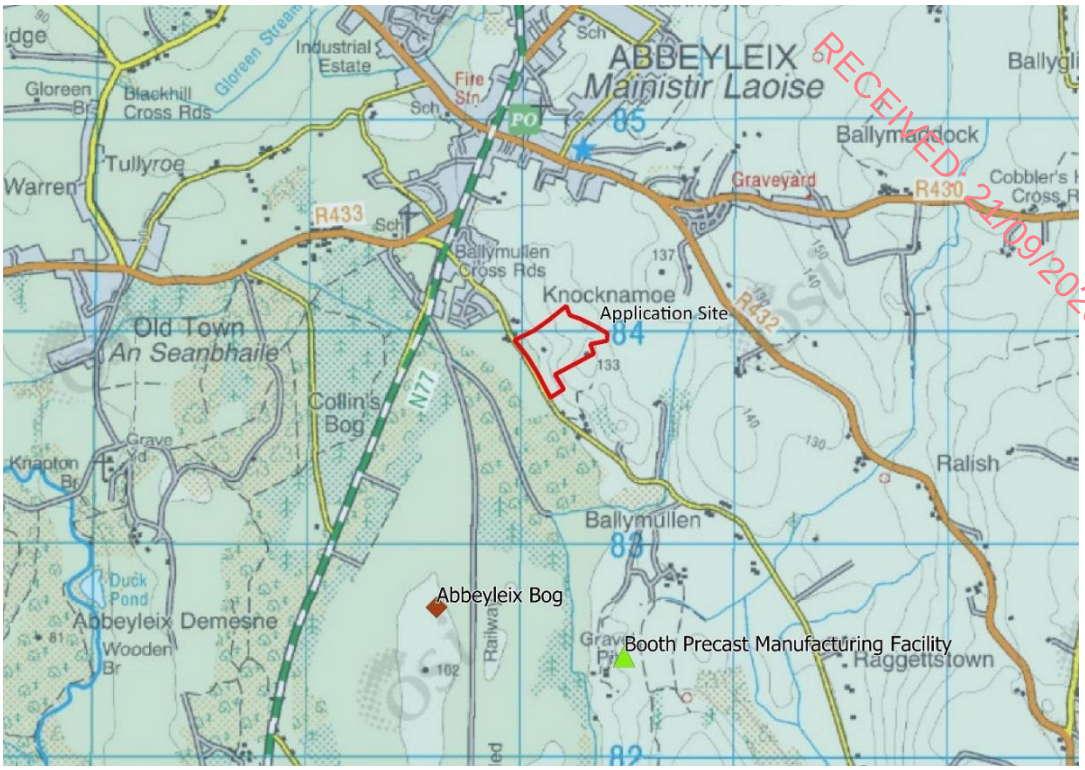


Plate 1.1: Site Location

1.2 The Application Site

The application site is 8.5 hectares in area and comprises of several grazing fields with some woodland and scrub in the central area which are separated by hedgerows. The site has an elevation range of between approximately 92mOD and 130mOD (Ordnance Datum) and is located on a hillside that steadily slopes in a westerly direction towards the lower lying and flatter peatlands of Abbeyleix Bog. The existing site layout map is displayed on Plate 1.2.

There is a number of existing sand and gravel pits in the area, the closest one is a small disused pit located approximately 500m to the southeast of the site. This is currently used as a Defence Forces and An Garda Síochána Shooting Range.

The proposed development consists of the removal of the existing vegetation and soil material and extraction of sand and gravel material in line with an 8 phase extraction plan. As extraction proceeds into various phases, overburden removed from the working phase will be used to restore the previous phase where material has been extracted. This will be undertaken on a rolling basis to minimise the uncovered area of the site.

The extracted material will be transported along the Ballymullen Road to the applicant's manufacturing facility located approximately 1.3km to the south of the application site. The material transported to the manufacturing facility will be processed into various grades of aggregate and sold to market or used to manufacture concrete products. There will be no direct transport of material from the application site to market.

Plate 1.2: Existing Site Layout Map

1.3 Previous Planning Applications

1.3.1 Reg. Ref. 21/694

A planning application for a very similar development was lodged with the Local Authority on 11th October 2021 under Reg. Ref. P21/694. The development originally applied for on the 8.5ha site consisted of the following:

- *"Removal of existing stand of trees, vegetation and overburden;*
- *Extraction of underlying sand and gravel;*
- *Upgrading of existing entrance and site lines to include removal of boundary vegetation;*
- *Construction of screening berms, wheel wash facility & refuelling area;*
- *Landscaping and restoration of the site;*
- *All associated ancillary facilities/works;*
- *The applicant is seeking a 10 year permission as part of the planning application;*
- *The application is accompanied by an Environmental Impact Assessment Report (EIAR) and a Natura Impact Statement (NIS)".*

A Request for Further Information (RFI) issued in relation to the planning application on 2nd December 2021 and an extension of time to submit further information was granted bringing the final date for submission of the further information response up to 10th September 2022. Unfortunately, due to time constraints in responding to each item raised in the RFI, the applicant decided to withdraw that planning application.

This EIAR has been prepared to address specific items raised as part of the RFI from Laois County Council. Although that application was withdrawn, each chapter of this EIAR has been updated where relevant in response to the RFI.

Notably, the area originally proposed for extraction under that planning application has been reduced by removing part of Phase 4 of the extraction plan (the portion directly upslope/upstream of the petrifying springs located in Abbeyleix Bog). This is discussed in Chapter 7.0 (Water). Considering buffer areas around the boundary of the application site, the removal of this section of Phase 4 will reduce the area proposed from extraction from approximately 6.5 Ha. to approximately 6.1 Ha compared to that originally proposed.

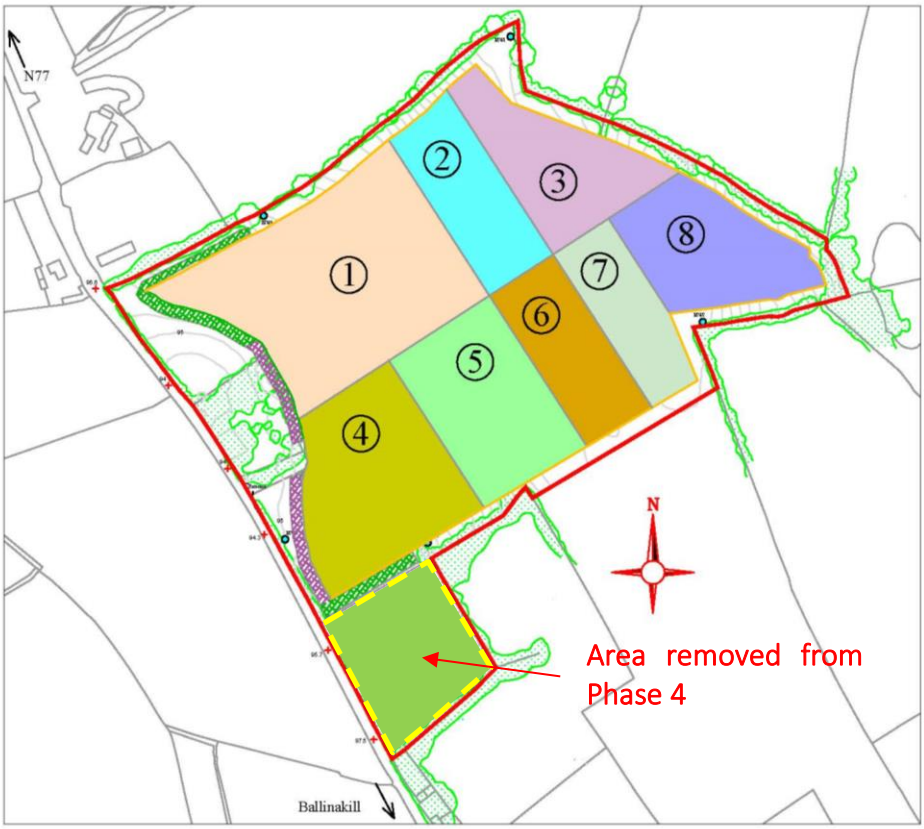


Plate 1.3: Revised Phased Extraction Plan

1.3.2 Reg. Ref. 20/7

An earlier planning application was submitted to Laois Co. Co. (planning reference P20/7) to extract and process sand and gravel at the subject site. This planning application was

subsequently withdrawn voluntarily by the applicant when they were made aware of the concerns of the local community and in particular the Abbeyleix Bog Project.

As a result of these concerns, the proposed development was revised and redesigned as part of the subject planning application to mitigate potential impacts. The proposed changes included:

- No processing of material will be carried out on site with all material extracted and hauled off site to the existing manufacturing facility for processing.
- The depth of extraction has been revised to a maximum depth of 3 meters above the winter water table to ensure protection to the underlying hydrogeological network system.
- Provision of a buffer zone between the extraction area and the road.
- Increasing the extraction/reinstatement phases from 4 to 8 so that no more than 2 hectares of ground will be exposed at any one time.
- The only proposed infrastructure at the site is a new site entrance, wheel wash, refuelling area and full retention oil interceptor and a port aloo toilet.
- Reduction of the time scale to a 10 year period.

In addition to the above measures which were adopted as part of the planning application submitted in October 2021, the extraction plan has now been revised as part of the FI response (Plate 1.3). The southern portion of Phase 4 of the extraction plan (the portion directly upslope/upstream of the petrifying springs) has been removed from the extraction plan (i.e. there will be no extraction of aggregate upslope/upstream of the petrifying springs). This is discussed in more detail in the Chapter 7.0 – Water. It is proposed to plant this area with wild flower to increase the biodiversity of the area.

1.4 Rationale for the Application

The applicant manufactures a range of concrete products at the existing manufacturing facility located in Ballymullen with sand and gravel being the main raw material. Currently the applicant sources material from several third-party quarries and sand & gravel pits which are located a considerable distance away from the manufacturing facility and not under the ownership of the applicant. The location of these quarries and pits in relation to the manufacturing facility and the application site are illustrated on Plate 1.4.

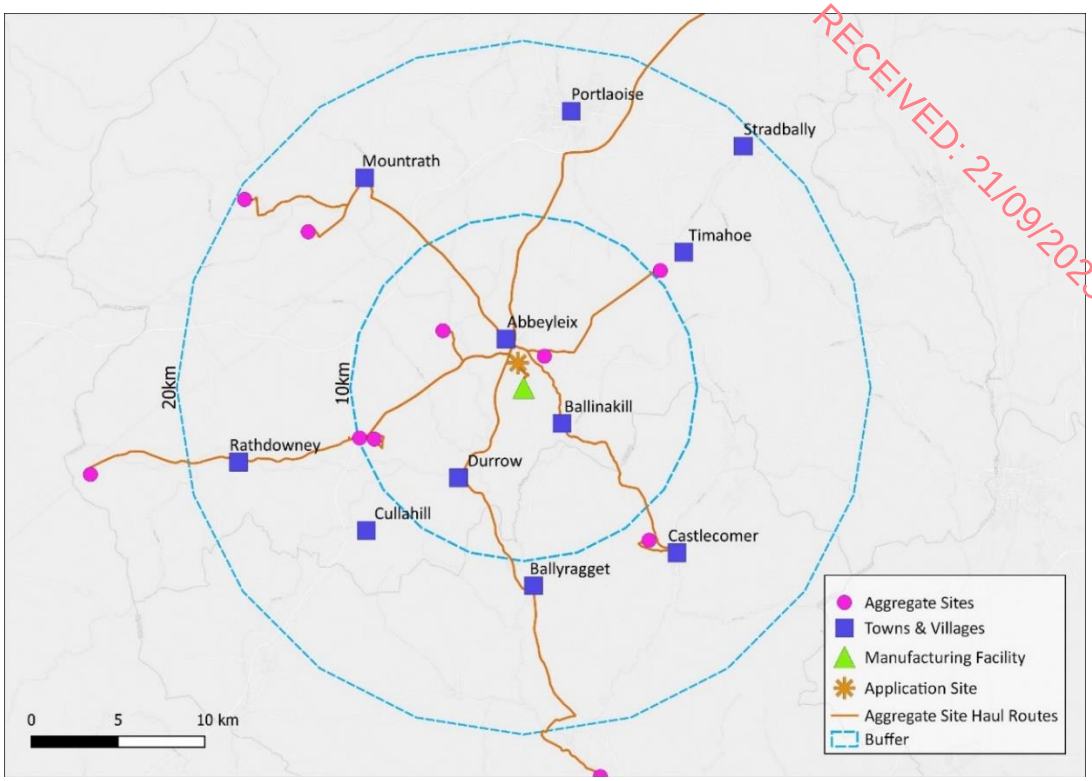


Plate 1.4: Third Party Quarries & Pits

As illustrated on Plate 1.4, many of the pits and quarries are located at distances of more than 10km from the application site. The transport of material from these third-party sites results in high transport costs and climate emissions associated with haulage of material over long distances.

The proposed development located within proximity of the manufacturing facility will substitute material being transported from these pits and quarries therefore will result in a reduction in the volume of traffic passing through Abbeyleix Town and the upper part of the L5731-25 (Ballymullen Road) as material will be sourced closer to site.

If the proposed development was not to proceed, the application site would remain as a greenfield site subject to agricultural use and material will continue to be imported to the manufacturing facility from third party sites not under the control of the applicant.

The applicant also operates a concrete batching plant located in Clonminam Industrial Estate in Portlaoise which produces ready-mix concrete. The site is rented from a third party and is authorised by short term permissions with the most recent granted in February 2021 for a 12 year period.

1.5 The Applicant

Booth Concrete was established in 1993 by Peter & Pat Booth. Since 1993, the Company has produced high quality concrete products for the construction industry throughout

Ireland. In 1996, it established Booth Precast Ltd. which manufactures insulated Concrete Flooring, Precast Chimney Systems along with many other Precast Concrete Products for the national market.

Booth Concrete is a significant employer in the locality employing approximately 35 people directly with a further 25 people employed indirectly associated with subcontractors or dependent ancillary services. In addition, Booth Concrete supports many sporting and charitable organisations.

The applicant operates two concrete manufacturing facilities, one located at Ballymullen which produces ready-mix concrete and precast concrete products and a facility located in the Clonminam Industrial Estate in Portlaoise which produces ready-mix concrete.

1.6 EIAR Methodology

1.6.1 EIAR Preparation

The primary objective of the EIAR is to identify baseline environmental and socio-economic conditions in the vicinity of the application site, predict potential beneficial and/or adverse effects of the proposal and propose appropriate mitigating measures where necessary. The following regulations and guidelines were considered as part of the preparation of this EIAR:

- *Guidelines on the information to be contained in Environmental Impact Statements* (EPA 2002).
- *Advice Notes on Current Practice (in the Preparation of Environmental Impact Statements* (EPA 2003).
- *Guidance for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment* (Department of the Environment, Community and Local Government, 2013).
- *Draft Revised Guidelines on the Information to be contained In Environmental Impact Statements* (EPA September 2015).
- *Draft Advice Notes for Preparing Environmental Impact Statements* (EPA September 2015).
- *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment* (DHP&LG, August 2018).
- *Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR)* (EPA, May 2022).

Information on the project and the receiving environment was obtained through a number of means including:

- Aerial Photographs
- Site visits and field surveys
- Site assessments (soils & geology, water, noise, dust etc.)
- Laois County Council
- Review of existing data for the general area of the site
- Review of previous studies carried out in the locality

- Consultation with interested parties

1.7 Environmental Impact Assessment Report

This EIAR is prepared by the developer and is submitted to the relevant Planning Authority as part of the process. The relevant Planning Authority uses the information provided to assess the potential beneficial and/or adverse effects and proposed mitigation measures to determine if permission should be granted. The EIA Directive (2014/52/EU) describes information which should be included as part of an EIAR:

> *"1. Where an environmental impact assessment is required, the developer shall prepare and submit an environmental impact assessment report. The information to be provided by the developer 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.*
>
> *Where an opinion is issued pursuant to paragraph 2, the environmental impact assessment report shall be based on that opinion, and 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. The developer shall, with a view to avoiding duplication of assessments, take into account the available results of other relevant assessments under Union or national legislation, in preparing the environmental impact assessment report.*
>
> *2. Where requested by the developer, the competent authority, taking into account the information provided by the developer in particular on the specific characteristics of the project, including its location and technical capacity, and its likely impact on the environment, shall issue an opinion on the scope and level of detail of the information to be included by the developer in the environmental impact assessment report in accordance with paragraph 1 of this Article. The competent authority shall consult the authorities referred to in Article 6(1) before it gives its opinion.*

Member States may also require the competent authorities to give an opinion as referred to in the first subparagraph, irrespective of whether the developer so requests.

3. In order to ensure the completeness and quality of the environmental impact assessment report:

(a) the developer shall ensure that the environmental impact assessment report is prepared by competent experts;

(b) the competent authority shall ensure that it has, or has access as necessary to, sufficient expertise to examine the environmental impact assessment report; and

(c) where necessary, the competent authority shall seek from the developer supplementary information, in accordance with Annex IV, which is directly relevant to reaching the reasoned conclusion on the significant effects of the project on the environment."

Article 3 of the EIA Directive (2014/52/EU) states that the following environmental factors/topics should be described and assessed:

"1. The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:
(a) population and human health;
(b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;
(c) land, soil, water, air and climate;
(d) material assets, cultural heritage and the landscape;
(e) the interaction between the factors referred to in points (a) to (d).

2. 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."

1.7.2 EIAR Format

The EIAR is presented in the 'Grouped Format Structure' where possible which gives an introduction, an overall project description, then examines each topic as a separate section. The coverage of each topic includes descriptions of the relevant characteristics of the proposed project, the existing environment, predicted impacts, mitigation measures and residual impacts.

Section 1.0 of the EIAR gives an introduction to the development and details in relation to the project team including external consultants retained to assess various environmental topics.

Section 2.0 of the EIAR gives details in relation to screening, scoping and consideration of alternative designs and processes.

Section 3.0 of the EIAR gives details in relation to the development including day to day processes that are/will be undertaken at the development.

Sections 4.0 - 15.0 of the EIAR details information on all aspects of the existing environment including any impacts or potential impacts identified associated with the proposed development. Mitigation measures are proposed where required in order to avoid, prevent, reduce or offset potential impacts identified.

Section 16.0 of the EIAR details a summary of mitigation and monitoring measures proposed in each section of the EIAR.

The EIAR is structured under the following subject headings:

- Section 1.0 Introduction
- Section 2.0 Screening, Scoping & Alternatives
- Section 3.0 Project Description
- Section 4.0 Population & Human Health
- Section 5.0 Biodiversity
- Section 6.0 Land, Soils and Geology
- Section 7.0 Water
- Section 8.0 Climate
- Section 9.0 Air
- Section 10.0 Noise
- Section 11.0 Traffic
- Section 12.0 Landscape
- Section 13.0 Material Assets
- Section 14.0 Cultural Heritage
- Section 15.0 Interactions
- Section 16.0 Mitigation & Monitoring Summary

Sections 4.0 to 14.0 of the EIAR follows the same general format, as follows:

- An **Introduction** describing the purpose of the section.
- A description of the **Methodology** used in the section.
- A description of the aspects of the **Existing Environment** relevant to the environmental topic.
- A description of the **Proposed Development.**
- An **Impact Assessment** of the development on the environmental topic.
- A description of **Mitigation Measures** proposed in order to avoid, reduce or where possible remedy any adverse environmental effects identified.
- Details in relation to **Monitoring** proposed to ensure that mitigation measures are effective.
- Any **Residual Impacts** after mitigation measures are proposed.

1.7.3 EIAR Impact Assessment

A key purpose of Environmental Impact Assessment (EIA) is to assess the 'likely significant effects'. The classification of impacts associated with the proposed development follows

criteria as set out in the EPA Guidance Document - *Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA May 2022)*. Table 1.1 details a summary of Table 3.4 which is referenced in the aforementioned EPA guidance document. Each Section of the EIAR described potential impacts in terms of its quality, significance, extent, probability, duration & frequency and type, where possible.

Table 1.1: Description of Effects (Table 3.4 of EPA Guidance Document)

Characteristic	Level	Description
Quality	Positive	A change which improves the quality of the environment.
	Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
	Negative	A change which reduces the quality of the environment.
Significance	Imperceptible	An effect capable of measurement but without significant consequences.
	Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
	Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
	Moderate	An effect that alters the character of the environment in a manner consistent with existing and emerging baseline trends.
	Significant	An effect, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
	Very significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
	Profound	An effect which obliterates sensitive characteristics.
	Extent	Describe the size of the area, number of sites and the proportion of a population affected by an effect.
	Context	Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions.
Probability	Likely	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
	Unlikely	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Duration and Frequency	Momentary	Effects lasting from seconds to minutes.
	Brief	Effects lasting less than a day.
	Temporary	Effects lasting less than a year.
	Short-term	Effects lasting one to seven years.
	Medium-term	Effects lasting seven to fifteen years.
	Long-term	Effects lasting fifteen to sixty years.
	Permanent	Effects lasting over sixty years.

	Reversible	Effects that can be undone, for example through remediation or restoration.
	Frequency	Describe how often the effect will occur. (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually).
Types of Effects	Indirect (Secondary)	Impacts on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
	Cumulative	The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects.
	'Do Nothing'	The environment as it would be in the future should the subject project not be carried out.
	'Worst Case'	The effects arising from a project in the case where mitigation measures substantially fail.
	Indeterminable	When the full consequences of a change in the environment cannot be described Irreversible When the character, distinctiveness, diversity, or reproductive capacity of an environment is permanently lost.
	Residual	Degree of environmental change that will occur after the proposed mitigation measures have taken effect
	Synergistic	Where the resultant effect is of greater significance than the sum of its constituents.

1.8 EIAR Team

The team members involved in the preparation of the EIAR are included in Table 1.2:

Table 1.2: EIAR Study Team

Chapter	Company	Competent Expert	Area and Level of Expertise
1.0 Introduction 2.0 Screening & Alternatives 3.0 Project Description 4.0 Population & Human Health	Tom Phillips + Associates in association with Earth Science Partnership	• Síne Kelly (TPA) • Patrick O'Donnell (ESP)C Eng. BSc. Eng. Dip Eng. MIEI • David Killeen (ESP) BSc. Env. • Sean O'Donnell (ESP) BSc. Eng.	• Town Planner (Associate) • Principle Engineer • Senior Env Consultant • Project Engineer
5.0 Biodiversity	Dr Roger Goodwillie	• Dr Roger Goodwillie B.A. (Hons.), M.Sc.	• Senior Ecologist
	Applied Ecology Ireland	• Sarah Ingham MSc BSc (Hons.) ACIEEM	• Senior Ecologist
6.0 Land, Soils & Geology 7.0 Water	Hydro-Environmental Services (HES)	• David Broderick BSc, H.Dip Env Eng, MSc Dr • Michael Gill BA, BAI, Dip Geol., MSc, MIEI	• Hydrogeologist • Hydrogeologist
8.0 Climate	Tom Phillips + Associates in association with Earth Science Partnership	• Síne Kelly (TPA) • Patrick O'Donnell (ESP) C Eng. BSc. Eng. Dip Eng. MIEI • David Killeen(ESP) BSc. Env.	• Town Planner (Associate) • Principle Engineer • Senior Env Consultant
9.0 Air	AWN Consulting	• Dr. Avril Challoner CSci BSc MSc MIAQM MIEnvSc	• Senior Env Consultant
10.0 Noise	Noise & Vibration Ltd.	• Brendan O'Reilly MPhil (Noise and Vibration) ISEE SFA EAA	• Noise and Vibration Consultant
11.0 Traffic	Tobin Consulting Engineers	• Maria Rooney BEng, MEng MIEI	• Design Engineer
12.0 Landscape 13.0 Material Assets	Tom Phillips + Associates in association with Earth Science Partnership	• Síne Kelly (TPA) • Patrick O'Donnell (ESP) C Eng. BSc. Eng. Dip Eng. MIEI • David Killeen(ESP) BSc. Env.	• Town Planner (Associate) • Principle Engineer • Senior Env Consultant

Chapter	Company	Competent Expert	Area and Level of Expertise
14.0 Cultural Heritage	Charles Mount Archaeology	• Charles Mount M.A., Ph.D., M.B.A., Dip. EIA & SEA Mgmt., M.I.A.I.	• Consultant Archaeologist
15.0 Interactions 16.0 Impact & Mitigation Sum.	Tom Phillips + Associates in association with Earth Science Partnership	• Síne Kelly (TPA) • Patrick O'Donnell (ESP) C Eng. BSc. Eng. Dip Eng. MIEI • David Killeen(ESP) BSc. Env.	• Town Planner (Associate) • Principle Engineer • Senior Env Consultant

Biopics for personnel who contributed to the EIAR are detailed below.

Tom Phillips + Associates (TPA)

TPA is one of Ireland's most respected and experienced town planning consultancies, helping to shape the urban landscape for almost 20 years. Straightforward, experienced and professional, the Practice has built its long-standing reputation from the strength and reliability of our staff, and a commitment to excellence and effective problem-solving.

TPA's expertise is demonstrated by it ability to navigate the complex planning environment and excellent track record of delivering challenging development projects.

Síne Kelly (TPA)

Síne joined the Practice of TPA upon graduating from University College Dublin in 2005, with a Masters of Regional and Urban Planning, following completion of an undergraduate degree in Agricultural Science, specialising in Landscape Horticulture (2003). Síne has over 18 years' town planning experience and in that time has developed an extensive understanding of all aspects of the planning industry throughout Ireland and has significant experience in preparing planning applications and supporting documentation, including EIAR input, for both small- and large-scale strategic projects, including extractive industries, residential, office, healthcare, student accommodation, education, hospitality, retail and industrial uses. Síne has worked extensively with numerous varied organisations, including both private and public sector, Planning Authorities, An Bord Pleanála and semi-state bodies.

Earth Science Partnership (ESP)

Patrick O'Donnell

Patrick is a senior chartered engineer with over 40 years' experience of site and consultancy based experienced on large infrastructural projects including road projects, main drainage projects, wastewater and water treatment facilities. Since founding Earth Science Partnership in 2003 he has provided a planning and environmental consultant experience to over one hundred quarry clients in relation to planning, environmental and engineering projects. This included compiling planning applications and contributing to the various sections of EIARs (previously EIS) for quarry planning applications which have included Section 34 applications to Local Authorities and Substitute Consent and Section 37L applications to An Bord Pleanála.

David Killeen

David is a senior environmental consultant with ESP has over 15 years of consultancy on mining, quarrying, waste, manufacturing, and transportation projects. This included compiling planning applications, Environmental Impact Statements, Environmental Impact Assessment Reports, Appropriate Assessments, Discharge Licences, Waste Licence and Waste Facility Permit applications. David has also undertaken environmental monitoring programs for quarries, waste facilities and mine sites. David has compiled and contributed to the various sections of EIARs (previously EIS) for quarry planning applications which have

included Section 34 applications to Local Authorities and Substitute Consent and Section 37L applications to An Bord Pleanála.

Sean O'Donnell
Sean is a project engineer with over 10 years of consultancy based experience. This has included undertaking topographical surveys using total station and GPS surveying equipment, compiling planning application documents and drawings, waste facility permit applications and land transfers.

Roger Goodwillie Consultant Ecologist

Roger Goodwillie
Roger has been in ecological practice for 40 years, working first with An Foras Forbartha (The Planning Institute) and then as a consultant with projects for NPWS and other agencies as well as private developers and companies. He qualified in botany and is County Recorder for Kilkenny for the Botanical Society of Britain and Ireland. He is a full member of the Chartered Institute for Ecology and Environmental Management (CIEEM).

Applied Ecology Ireland

Sarah Ingham
Ms Sarah Ingham worked as an Ecologist and Project Manager with various environmental consultancies throughout Ireland from early 2014 until the present date. Ms Ingham is primarily a bird expert with robust professional experience in surveying and studying bird ecology both within and outside Special Protection Areas throughout Ireland.

Most notably Ms Ingham has a great deal of applied knowledge and experience of conducting protected species breeding surveys of hen harrier, merlin, golden plover, red grouse and snipe, as well as wintering swans and geese. Survey techniques included vantage point surveys, breeding bird transects, prey density point counts, nest finding and habitat mapping. Ms Ingham also worked as a habitat specialist on numerous projects, most notably the National Irish Uplands Habitat Survey.

Since taking up her position as a full-time ecological consultant in 2014, Ms Jorgensen has project managed all elements of several large scale and complex wind farm ecology projects such as Knockacummer Wind Farm and Glentane Wind Farm Phases I and II in Co. Cork. She was responsible for overseeing implementing the Hen Harrier Species and Habitat Management Plan for these three wind farm projects from the pre-construction to operational phase.

She has written over 100 Appropriate Assessment Screening Reports, Natura Impact Statements and Ecological Impact Assessments for various infrastructural developments throughout Ireland and managed a team of up to 5 ecologists to assist in this work.

She has also taken the role of on-site Ecological Clerk of Works at numerous wind farms under construction, such as Slieve Callan Wind Farm, Co. Clare and Ballyhoura Wind Farm, Co. Cork.

In her role with Earth Science Partnership, Ms Ingham has sole responsibility for the management and output of all ecological elements of engineering projects which come through the office, as well as sourcing new clients and tendering for environmental work. Ms Jorgensen is an Associate Member of the Chartered Institute of Ecology and Environmental Management (ACIEEM).

Hydro-Environmental Services (HES)

Hydro-Environmental Services (HES) are a specialist geological, hydrological, hydrogeological and environmental practice which delivers a range of water and environmental management consultancy services to the private and public sectors across

Ireland and Northern Ireland. HES was established in 2005, and our office is located in Dungarvan, County Waterford. Our core areas of expertise and experience include upland hydrology and windfarm drainage design. We routinely complete impact assessments for hydrology and hydrogeology for a large variety of project types.

Michael Gill
Michael Gill is an Environmental Engineer, Hydrologist and Hydrogeologist with 18 years' environmental consultancy experience in Ireland. Michael has a degree in Civil and Environmental Engineering, a MSc in Engineering hydrology from TCD and a MSc in Applied Hydrogeology from Newcastle University. He has completed numerous (60+) hydrological and hydrogeological assessments relating to bedrock quarries and sand and gravel pits. Recent examples include Ardfert quarry in County Kerry and Midleton Quarry in County Cork. Michael has also recently wrote a guidance document with NPWS for the hydrological assessment of petrifying springs.

David Broderick
David Broderick is a hydrogeologist with over 14 years' experience in both the public and private sectors. Having spent two years working in the Geological Survey of Ireland working mainly on groundwater and source protection studies David moved into the private sector. David has a strong background in groundwater resource assessment and hydrogeological/hydrological investigations in relation to developments such as quarries and wind farms. David has completed numerous geological and hydrogeological assessments for input into EIARs for a range of quarry, wind farm and commercial developments. Recent examples include Garryhesta, Midleton, and Copperingerstown Quarries in County Cork.

Noise and Vibration Consultants Ltd.

Brendan O'Reilly

Mr. Brendan O'Reilly of Noise and Vibration Consultants Ltd. Mr. O'Reilly has a Master's degree in noise and vibration from Liverpool University and has over 35 years' experience in noise and vibration control (and many years' experience in preparation of noise impact statements) and is a member of a number of professional organisations. Mr. O'Reilly was a co-author and project partner (as a senior noise consultant) in 'Environmental Quality Objectives Noise in Quiet Areas' administered by the Environmental Protection Agency on behalf of the Department of the Environment, Heritage and Local Government (as a first step towards implementation of the EC Directive relating to the Assessment and Management of Environmental Noise (EU, 2002). Noise & Vibration Consultants have considerable experience in the assessment of noise impact and have compiled EIA studies ranging from quarries, mines, retail development, wastewater treatment plants, housing developments and wind farms.

AWN Consulting

Dr. Avril Challoner

Avril is a Senior Environmental Consultant in the Air Quality section of AWN Consulting. She holds a BEng (Hons) in Environmental Engineering from the National University of Ireland Galway, HDip in Statistics from Trinity College Dublin and has completed a PhD in Environmental Engineering (Air Quality) in Trinity College Dublin graduating in 2013. She is a Chartered Scientist (CSci), Member of the Institute of Air Quality Management and specialises in the fields of air quality, EIA and air dispersion modelling.

Tobin Consulting Engineers

Maria Rooney

Maria is a Senior Engineer in the Roads and Transportation section of the Building and Infrastructure division of Tobin Consulting Engineers. Maria is a TII (NRA) approved Road Safety Auditor Team Member with in depth experience in Traffic and Transportation projects. She has worked on a variety of projects assisting Tobins Environmental Department in preparing Environmental Impact Assessments Reports (EIAR). The EIARs include projects such as solar farms, waste management facilities and quarries. Maria also has also carried out numerous traffic and transportation assessments for a wide variety of projects including commercial, residential, educational and healthcare facilities. Maria has also gained experience in planning, detailed design, traffic management plans and tender preparation.

Dr. Charles Mount Heritage Services

Dr Charles Mount

Charles Mount is an PhD level qualified archaeologist and EIAR consultant with more than 25 years experience of Irish archaeology and cultural heritage. He has worked in both the State and industrial sectors and has extensive experience of the commissioning and management of all types of archaeological services from desk-based reports to test and full excavations and geophysical surveys and is capable of assessing impacts on archaeology and

cultural heritage at all stages of land use planning and development from site selection, through EIAR to planning condition compliance. He provides services to a diverse range of clients from multinational to Semi-States and SMEs throughout Ireland.

1.9 Technical Difficulties

The EIA Directive and Irish National regulations require that difficulties such as technical deficiencies, lack of information or knowledge encountered in compiling any specified information for the EIAR be described. Data limitations and technical difficulties associated with the compilation of the EIAR are detailed in relevant sections of the EIAR.

1.10 References

Advice notes on current practice in the preparation of Environmental Impact Statements (EPA, 2003)

Draft Advice Notes for Preparing Environmental Impact Statements (EPA September 2015).

Draft Revised Guidelines on the Information to be contained In Environmental Impact Statements (EPA September 2015)

Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU) (European Union, 2017)

Environmental Management Guidelines – Environmental Management in the Extractive Industry (Non – Scheduled Minerals) (EPA, 2006)

European Communities (Environmental Impact Assessment) (Amendment) Regulations, 1999 (S.I. No. 93/1999)

European Communities (Environmental Impact Assessment) (Amendment) Regulations, 2001 (S.I. No. 538/2001)

European Communities (Environmental Impact Assessment) (Amendment) Regulations, 2006 (S.I. No. 659/2006)

European Communities (Environmental Impact Assessment) Regulations, 1989 (S.I. No. 349/1989)

European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018, (S.I. No. 296/2018)

Guidance for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (DECLG, 2013)

Guidance for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of the Environment, Community and Local Government, 2013)

Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (DHP&LG, August 2018)

Guidelines on the information to be contained in Environmental Impact Statements, Environmental Protection Agency (EPA, 2002)

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

Laois County Development Plan 2021 – 2027

*Local Government (Planning & Development) Regulations, 2001 (*S.I. No. 600 of 2001 as amended)

Planning and Development Act, 2000 (as amended)

2.0 SCREENING, SCOPING & CONSIDERATION OF ALTERNATIVES

2.1 Introduction

This section of the EIAR details the screening exercise carried out in relation to the proposal and the alternative locations, layouts and designs considered as part of the process.

2.2 EIA Screening

The first step of the EIA process is screening which establishes whether an EIA is required or not. The project needs to be considered in its entirety for screening purposes. This means that off-site and secondary projects as well as indirect, secondary and cumulative impacts need to be identified and assessed at an appropriate level of detail. Plate 2.1 details the steps to be followed as part of the screening exercise.

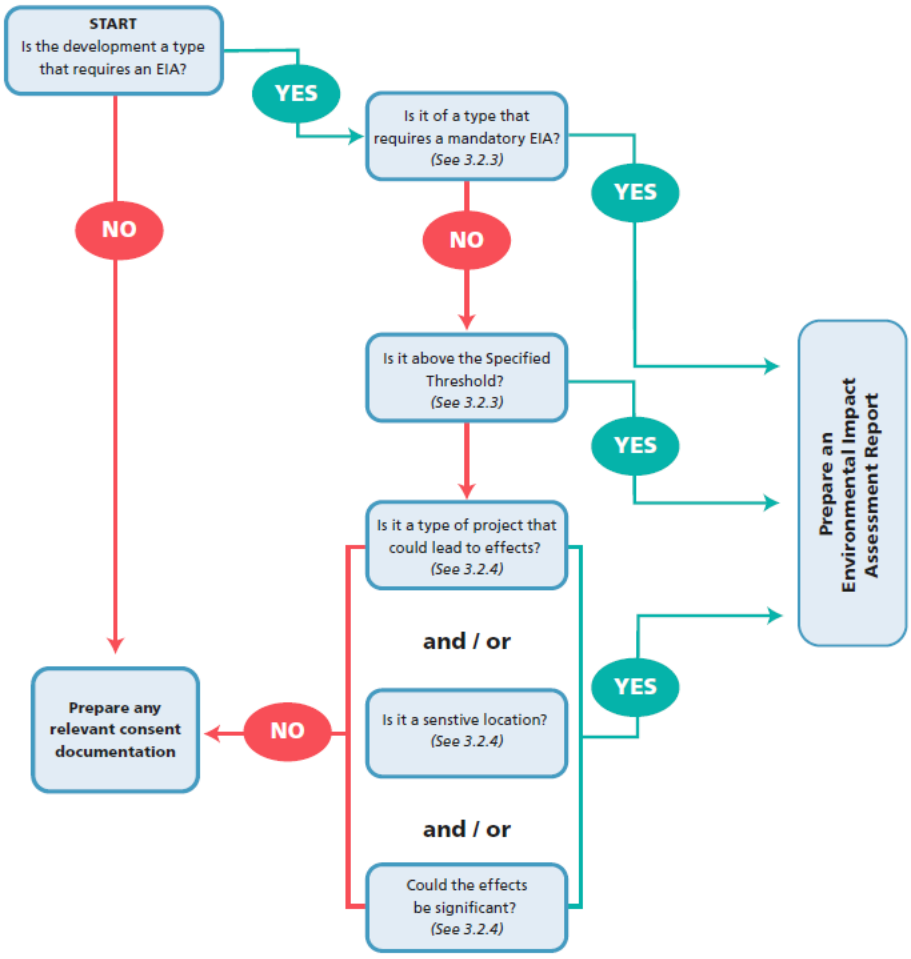


Plate 2.1: EIA Screening Process (EPA May 2022)

The EIA Directive, "Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment" as amended by Council Directives 97/11/EC, 2003/35/EC, 2009/31/EC, 2011/92/EU and 2014/52/EU is designed to ensure that projects likely to have significant effects on the environment are subject to a comprehensive assessment of environmental effects prior to development consent being given.

Screening involves an initial determination to establish whether the proposal is a project which is listed in one of the Annexes to the EIA Directive 2014/52/EU. The EIA Directive lists projects for which EIA is mandatory (Annex I) and those projects for which EIA may be required (Annex II). With regard to Annex II projects, Member States can choose to apply thresholds or use case by case examination or a combination of both to assess whether these projects require EIA. These Annexes have been transposed into Irish law and the prescribed classes of development which require EIA are outlined in Schedule 5 of the Planning and Development Regulations 2001 (S.I. 600 of 2001) as amended. The relevant thresholds for quarrying and extractive developments are details in Section 2.1.1.

2.2.1 Screening Criteria

The sections of Schedule 5 of the Planning and Development Regulations 2001 (S.I. 600 of 2001) as amended which are applicable to the proposed development are detailed below and referenced A, B and C.

(A) Part 1, 19
Quarries and open-cast mining where the surface of the site exceeds 25 hectares.

(B) Part 2, (b)
Extraction of stone, gravel, sand or clay, where the area of extraction would be greater than 5 hectares.

(C) Part 2, 13(a)
Changes, extensions, development and testing
(a) Any change or extension of development which would:-
(i) result in the development being of a class listed in Part 1 or paragraphs 1 to 12 of Part 2 of this Schedule, and
(ii) result in an increase in size greater than-

- *25 per cent, or*
- *an amount equal to 50 per cent of the appropriate threshold, whichever is the greater. Where a project is of a specified type but does not meet, or exceed, the applicable threshold then the likelihood of the project having significant effects on the environment needs to be considered. Both the adverse and beneficial effects are considered. This is done by referencing the criteria specified in Annex III of the amended Directive.*

1. Characteristics of projects
The characteristics of projects must be considered, with particular regard to:
(a) the size and design of the whole project;

(b) cumulation with other existing and/or approved projects;
(c) the use of natural resources, in particular land, soil, water and biodiversity;
(d) the production of waste;
(e) pollution and nuisances;
(f) the risk of major accidents and/or disasters which are relevant to the project concerned, including those caused by climate change, in accordance with scientific knowledge;
(g) the risks to human health (for example due to water contamination or air pollution);

2. Location of projects

The environmental sensitivity of geographical areas likely to be affected by projects must be considered, with particular regard to:
(a) the existing and approved land use;
(b) the relative abundance, availability, quality and regenerative capacity of natural resources (including soil, land, water and biodiversity) in the area and its underground;
(c) the absorption capacity of the natural environment, paying particular attention to the following areas:

(i) wetlands, riparian areas, river mouths;
(ii) coastal zones and the marine environment;
(iii) mountain and forest areas;
(iv) nature reserves and parks;
(v) areas classified or protected under national legislation; Natura 2000 areas designated by Member States pursuant to Directive 92/43/EEC and Directive 2009/147/EC;
(vi) areas in which there has already been a failure to meet the environmental quality standards, laid down in Union legislation and relevant to the project, or in which it is considered that there is such a failure;
(vii) densely populated areas;
(viii) landscapes and sites of historical, cultural or archaeological significance.

3. Type and characteristics of the potential impact

The likely significant effects of projects on the environment must be considered in relation to criteria set out in points 1 and 2 of this Annex, with regard to the impact of the project on the factors specified in Article 3(1), taking into account:
(a) the magnitude and spatial extent of the impact (for example geographical area and size of the population likely to be affected);
(b) the nature of the impact;
(c) the transboundary nature of the impact;
(d) the intensity and complexity of the impact;
(e) the probability of the impact;
(f) the expected onset, duration, frequency and reversibility of the impact;
(g) the cumulation of the impact with the impact of other existing and/or approved projects;
(h) the possibility of effectively reducing the impact.

2.2.2 Determination

A. The proposed development is less than the 25 hectare threshold listed under Part 1, 19 as the application area is 8.5 hectares.

B. The proposed development is greater than the 5 hectare threshold listed under Part 2, 2(b) as the application area 8.5 hectares. Therefore, EIA is a mandatory requirement.

2.3 Requirement for an Appropriate Assessment

Appropriate Assessment is required to be carried out under the Habitats Directive and specifically Article 6(3) thereof for plans or project likely to have significant effects on Natura 2000 sites. It is most recently implemented under the European Communities (Birds and Natural Habitats) Regulations 2011. An Appropriate Assessment is required to be carried out for development on or adjacent to sites classified by the Minister pursuant to the regulations as special areas of conservations (SACs) or special protection areas (SPAs).

Specifically Article 42(1) of the 2011 Regulations requires public authorities to screen for Appropriate Assessment in relation to a plan or project, which is not directly connected with or necessary to the management of the site as a European Site, in view of best scientific knowledge and the conservation objectives of the site and to assess the plan or project not only individually but also in combination with other plans or projects likely to have a significant effect on the European site.

There are 4 EU designated sites (3 Special Areas of Conservation (SAC) and 1 Special Protected Area (SPA)) located within a 15km radius of the proposed application area. (Table 2.1).

Table 2.1: EU Conservation Sites within 15km of the Proposed Development

Site Code	Site Name	Distance from Site (Km)	Designation
002162	River Barrow and River Nore	2.2km W	SAC
000869	Lisbigney Bog	4.4km S	SAC
002333	Knockacoller Bog	14.5 km NW	SAC
004233	River Nore	2.3km W	SPA
000417	Grantstown Wood And Lough	11km SW	pNHA
000418	Cuffsborough	9.2km SW	pNHA
000419	Knockacoller Bog	14.2km NW	pNHA
000420	The Curragh And Goul River Marsh	8.7km SW	pNHA
000421	Timahoe Esker	10.6km NE	pNHA
000862	Coolacurragh Wood	11.7km SW	pNHA
000869	Lisbigney Bog	4.4km S	pNHA
000874	Forest House Wood	10.9km NW	pNHA
000876	Ridge of Portlaoise	12.7km N	pNHA
001923	Shanahoe Marsh	5.4km NW	pNHA
002076	River Nore/Abbeyleix Woods Complex	2.2km W	pNHA

An AA (Stage 1) Screening was undertaken in relation to the proposal and it was concluded that the proposal required proceeding to Stage 2 (AA). A Natura Impact Statement (NIS) accompanies the planning application as a standalone document. The NIS concluded the following.

> *Once the proposed mitigation measures are in place and operative there is no likelihood that this development will have significant impacts on the Natura 2000 site network, in particular on the nearby sites, the River Barrow & River Nore SAC.*
>
> *This is a finding of no significant effects and means that the proposed development by itself or in combination with other plans and projects would not adversely affect the integrity of the European sites or their conservation objectives*.

2.4 Consultation and Scoping

A scoping exercise was conducted as part of planning application P20/7 which was submitted to Laois Co. Co. The subject development consists of the same development with the following modifications:

- No processing of material will be carried out on site with all material extracted and hauled off site to the existing manufacturing facility for processing.
- The depth of extraction has been revised to a maximum depth of 3 meters above the winter water table to ensure protection to the underlying hydrogeological network system.
- Provision of a buffer zone between the extraction area and the road.
- Increasing the extraction/reinstatement phases from 4 to 8 so that no more than 2 hectares of ground will be exposed at any one time.
- The only proposed infrastructure at the site is a new site entrance, wheel wash, refuelling area and full retention oil interceptor and a port aloo toilet.
- Reduction of the time scale to a 10 year period.
- Reduction in the area to be extracted as part of Phase 4 of the extraction plan.

The scoping exercise was conducted following consultation with the applicant and members of the design team. Consultation with statutory bodies and interest groups was also undertaken to provide an opportunity to:

- Identify concerns and measures about the project and use these to inform the preparation of the EIAR.
- Incorporate mitigating measures where required.
- Take into consideration the expertise and knowledge of experts and interest groups.

The list of parties who were consulted with in relation to the proposed development is detailed below. Responses received from parties are detailed in Appendix 2.1 located in the appendices section of this document.

- Laois Co. Co.

- An Taisce
- Department of Culture, Heritage and the Gaeltacht (Development Applications Unit)
- Department of Communications, Climate Action & Environment
- Environmental Protection Agency (EPA)
- Office of Public Works (OPW)
- Geological Survey Ireland (GSI)
- Heritage Council
- Health and Safety Authority (HSA)
- Inland Fisheries Ireland (IFI)
- Transport Infrastructure Ireland (TII)
- Irish Water (IW)
- Health Service Executive (HSE) Ireland
- Arts Council
- ESB Networks
- Irish Rail
- Local Residents

Subsequent to the withdrawal of the earlier planning application (LCC Ref. No. P207) a number of site visits and informal meetings took place between the applicants' consultants and members of the Abbeyleix Bog Project (ABP) with a view to assessing the site and proposals to carry out ongoing monitoring to alleviate the concerns of the ABP.

The proposals included installing groundwater monitoring wells in Abbeyleix Bog which would assess water levels and water quality as part of the assessment of the proposed development in relation to Abbeyleix Bog and associated habitats. The wells would continue to be monitored during the operational and decommissioning phases of the development. However, no formal proposals were agreed.

Three monitoring wells were recently installed on adjoining lands to the west of the application site and public road. The wells are located to the east of Abbeyleix Bog and are upstream of the petrifying spring located in Abbeyleix Bog. These wells and wells already located at the application site will be used to monitor water quality and groundwater levels going forward.

Water level monitoring at the 3 no. recently installed piezometer sets, and at all 5 no. on-site monitoring wells, was completed during July and August 2022. Based on the groundwater levels measured as part of these investigations, the groundwater gradient (flow direction) within the sand and gravel aquifer in the area of the site is westerly, with groundwater likely discharging into the Ballymullen Stream as baseflow (also as springs at Abbeyleix Bog) and into the River Nore via the Ballymullen Stream and/or via baseflow/springs.

There is a mapped petrifying (calcified) spring located on the edge of Abbeyleix Bog to the southwest of the proposed development. The proposed development site is located to the northeast of the spring. However, due to the revised extraction plan (i.e. reduced area at Phase) there is now no proposed aggregate extraction directly up-gradient of the spring location.

2.5 Consideration of Alternatives

EIA guidance and legislation requires that consideration should be given to alternatives which should include, where relevant; sites, routes, alignments/layouts, processes and strategies. A number of alternatives were considered as part of the project. In terms of environmental considerations and constraints, the proposed site was considered the preferred option.

2.5.1 Alternative Locations & Layout

A number of areas were considered as part of the assessment process which included areas in the existing land holding and off-site locations. Option A was the preferred option as it has a number of advantages over the other options reviewed.

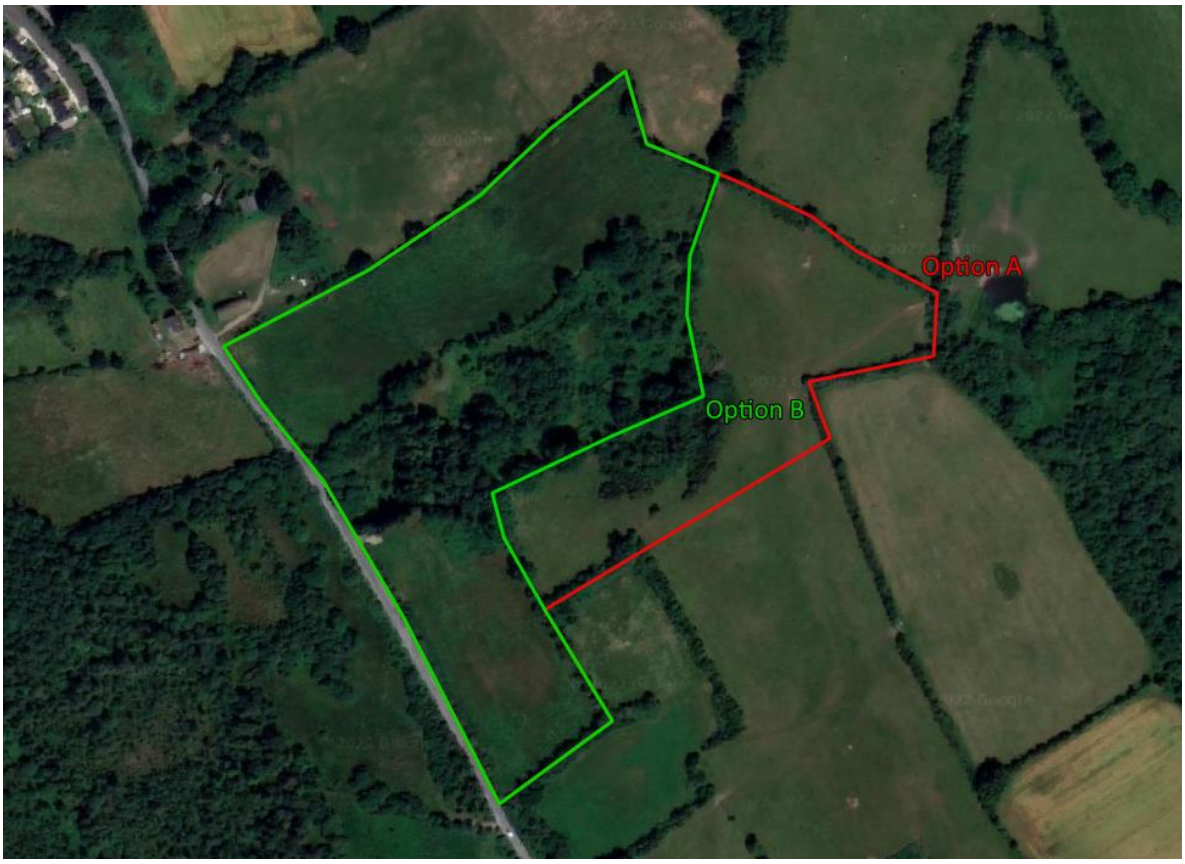


Plate 2.2: Location of Option A & Option B

Option A
This option consisted of 8.5 Ha. which consists of land owned by the applicant (5.4 Ha.) and land owned by a third party which will be subject to extraction of the available resource.

Advantages

- The resource would meet the demand over a medium to long term period (10 Years).
- The area is located within proximity of the manufacturing facility.

- It would result in less traffic passing through Abbeyleix Town associated with the transport of material to the manufacturing facility as material would be sourced closer to the manufacturing facility.
- The applicant would have a guaranteed source of material for a medium to long term period and not have to source material from quarries away from the manufacturing facility during the life of the permission.

Disadvantages

- The proposal would involve the introduction of a new land use to the area.
- It would result in the removal of an area of c. 2.85 Ha. of woodland and vegetation present on the site.
- It would result in the loss of the current land use which is agricultural.

Option B

This option consisted of applying for planning permission for an area of 5.4 hectares which is owned by the applicant.

Advantages

- The area is located within proximity of the manufacturing facility.
- It would reduce traffic passing through Abbeyleix town on route to the manufacturing facility as material would be sourced closer to the manufacturing facility.
- The applicant would have a guaranteed source of material and not have to source material from quarries away from the manufacturing facility during the life of the permission.

Disadvantages

- The proposal would involve the introduction of a new land use to the area.
- It would result in the removal of an area of c. 2.35 Ha. of woodland and vegetation present on the site.
- It would result in the loss of the current land use which is agricultural.
- The site would only have a short to medium term reserve of material (5 Years).

Option C

A previous planning application was submitted to Laois Co. Co. to construct an extension to an existing registered sand and gravel pit (QY05/38) consisting of 5.64 Ha. located at Lower Grennan, Attanagh which is approximately 3.5km southeast of the town of Durrow in County Laois.

The development consisted of the dry screening and extraction of sand and gravel from the site, all necessary ancillary works and reinstatement of lands afterwards. An environmental impact statement and Natura Impact Statement was submitted with the planning application.

The planning application was refused by Laois Co. Co. and An Bord Pleanála as they were not satisfied that the proposed development individually, or in combination with other plans or projects would not adversely affect the integrity of the River Barrow and River Nore

Special Area of Conservation (Site Code: 002162). The application was also refused to due to the deficiencies in the road network serving the site.

Option D

A previous planning application was submitted to Laois Co. Co. to extract sand and gravel from an area of approximately 8 Ha. located in the townland of Fermoyle located approximately 2.5 km northeast of Durrow, Co. Laois.

The Planning Authority refused permission due to the proximity of the proposed development to Durrow and Ballinakill Public Water Supply wells and the potential for the proposed development to impact on the quality of the water supply.

Option E

This option consisted of securing a site at a location within a 5km radius or closer to the manufacturing facility. This would involve sourcing a site and submitting a planning application to extract the available resource and process into various grades of aggregate. The processed material would be transported to the manufacturing facility for production of ready-mix concrete and precast concrete products.

Advantages

- If a suitable area was secured, a planning permission for a long-term reserve of material could be applied for.
- The applicant would have a guaranteed source of material to extract and not have to rely on third party pits and quarries for a resource.

Disadvantages

- It may involve introducing a different land use to the alternative area if the site is a greenfield site and no extraction is being undertaken.
- Suitable sites with a quality resource of sand and gravel are difficult to identify and acquire.
- Material from the site would have to be transported through Abbeyleix to get to the manufacturing facility as is currently the case as it is unlikely that an alternative site would be sourced within as close proximity to the manufacturing facility as Options A and B.

2.5.2 Preferred Option

Option A was the preferred option as it had a number of advantages over the alternative options which are listed and include it being located in proximity to the manufacturing facility. A quality source of material has been proven to exist at the site. The proposal would supply a medium to long term reserve of material with only a short to medium term reserve located at Option B. Also, the additional areas associated with Option A would result in the removal of 0.5 Ha. of woodland and vegetation.

Option A will result in a significant additional volume of material when compared to Option B as the depth of material increases to the east of the site. The sourcing of material closer to the manufacturing area would reduce the distance that material is transported thereby

reducing climate emissions. Due to the short distance between the proposed site and the manufacturing area, it would be possible to invest in electric trucks to transport the material. The existing employment will be secured on a medium to long term basis.

2.5.3 Alternative Processes

The application site will be subject to extraction and processing of sand and gravel into various grades of aggregate. The method of extraction will be mechanical with material being removed using an excavator. There is no other reasonable alternative to an excavator. Drag line are more suited to extracting material from below the water table.

It was previously proposed to process material at the application site under planning application P207 using dry screening methods with mobile plant being used. The material will then be sold to market or transported to the manufacturing facility for further processing into various grades which will be sold to market or used to manufacture various concrete products. It is not proposed to carry out any processing on the site in order to reduce the activity and plant that will be located at the application site.

2.5.4 Do Nothing Scenario

If the applicant considered not applying for planning permission they would continue to source material for the manufacturing facility from quarries and sand & gravel pits in the locality. This would result in material being transported over long distances to the concrete manufacturing facility.

2.5.5 Alternative Source of Aggregates

As of yet there is no end of waste criteria with regards to construction and demolition waste namely concrete, bricks, soil and stone etc. therefore this material cannot be relied on as a source of material. The availability of this material also depends on the degree of demolition activity in the area leading to this product been formed.

2.6 Rationale for the Application

The applicant is applying for planning permission in order to secure a reserve of material to extract into the future to supply the existing concrete manufacturing facility in Ballymullen. Granting of the planning permission for the proposed development will ensure that the applicant has a guaranteed source of material within proximity of the concrete manufacturing facility.

As detailed in Chapter 1.0, currently a large percentage of the raw material being processed at the manufacturing facility is hauled from sources outside the area. Availability of material requires material to be transported from source sites which are located a considerable distance away from the manufacturing. The location of application site, manufacturing area

and source site are detailed on Plate 2.3. Material is transported through the towns of Abbeyleix and Ballinakill which contributes to traffic congestion in these towns. The proposal will result in raw material being sourced closer to the manufacturing facility thereby reducing HGV traffic on the roads through Abbeyleix, Ballinakill and the upper part of the L5731-25 (Ballymullen Road) as material will be sourced closer to site.

If the proposed development was not to proceed, the application site would remain as a greenfield site subject to agricultural use and material will continue to be imported to the manufacturing facility from third party sites not under the control of the applicant.

The applicant also operates a concrete batching plant located in Clonminam Industrial Estate in Portlaoise which produces ready-mix concrete. The site is rented from a third party and is authorised by short term permissions with the most recent granted in February 2021 for a 12 year period. Due to the site being secure by a lease agreement and authorised by short term permissions, the site was not considered as an alternative option. The site will continue to import material from third party sites.

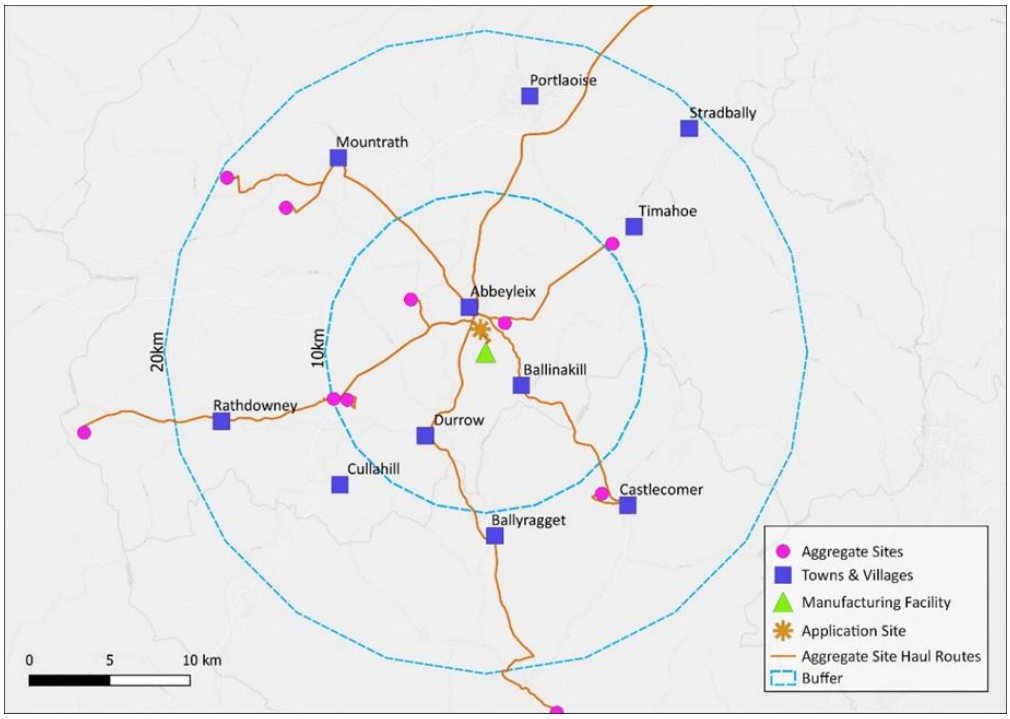


Plate 2.3: Source Sites

2.7 References

Advice notes on current practice in the preparation of Environmental Impact Statements (EPA, 2003).

Draft Advice Notes for Preparing Environmental Impact Statements (EPA September 2015).

Draft Revised Guidelines on the Information to be contained In Environmental Impact Statements (EPA September 2015).

Environmental Impact Assessment of Projects Guidance on Scoping (Directive 2011/92/EU as amended by 2014/52/EU) (European Union, 2017).

Environmental Impact Assessment of Projects Guidance on Screening (Directive 2011/92/EU as amended by 2014/52/EU) (European Union, 2017).

Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU) (European Union, 2017).

Environmental Management Guidelines – Environmental Management in the Extractive Industry (Non – Scheduled Minerals) (EPA, 2006).

European Communities (Environmental Impact Assessment) (Amendment) Regulations, 1999 (S.I. No. 93/1999).

European Communities (Environmental Impact Assessment) (Amendment) Regulations, 2001 (S.I. No. 538/2001).

European Communities (Environmental Impact Assessment) (Amendment) Regulations, 2006 (S.I. No. 659/2006).

European Communities (Environmental Impact Assessment) Regulations, 1989 (S.I. No. 349/1989).

European Union (Planning and Development)(Environmental Impact Assessment) Regulations 2018, (S.I. No. 296/2018).

Guidance for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (DECLG, 2013).

Guidance for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of the Environment, Community and Local Government, 2013).

Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (DHP&LG, August 2018).

Guidelines on the information to be contained in Environmental Impact Statements, Environmental Protection Agency (EPA, 2002).

Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR) (EPA, May 2022).

Local Government (Planning & Development) Regulations, 2001 (S.I. No. 600 of 2001 as amended).

Planning and Development Act, 2000 (As Amended).

APPENDIX 2.1: Scoping Responses.

Roinn Cumarsáide, Gníomhaithe ar son na hAeráide & Comhshaoil
Department of Communications, Climate Action & Environment

Geological Survey
Suirbhéireacht Gheolaíochta
Ireland | Éireann

Earth Science Partnership (Ire.) Ltd
Tonranny
Westport
F28 XH29
County Mayo

27 November 2019

Re: Screening and scoping document for Planning Application for a Sand and Gravel pit located in Knocknamoe and Ballymullen townlands, Abbeyleix, Co. Laois

Your Ref:
Our Ref: 19/251

A chara,

With reference to your letter received on 07 November 2019, concerning the screening and scoping document for the Planning Application for a sand and gravel pit location in Knocknamoe and Ballymullen townlands, Abbeyleix, Co. Laois, Geological Survey Ireland (a division of Department of Communications, Climate Action and Environment) would like to make the following comments:

Geological Survey Ireland is the national earth science agency and has datasets on Bedrock Geology, Quaternary Geology, Geological Heritage Sites, Mineral deposits, Groundwater Resources and the Irish Seabed. These comprise maps, reports and extensive databases that include mineral occurrences, bedrock/mineral exploration groundwater/site investigation boreholes, karst features, wells and springs. Please see our website for data availability and we recommend using these various data sets, when undergoing the planning and scoping processes. Geological Survey Ireland should be referenced to as such and should any data or geological maps be used, they should be attributed correctly to Geological Survey Ireland.

Geoheritage

Geological Survey Ireland (GSI) is in partnership with the National Parks and Wildlife Service (NPWS, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs) to identify and select important geological and geomorphological sites throughout the country for designation as geological NHAs (Natural Heritage Areas). This is addressed by the Irish Geoheritage Programme (IGH) of GSI, under 16 different geological themes, in which the minimum number of scientifically significant sites that best represent the theme are rigorously selected by a panel of theme experts.

County Geological Sites (CGS), as adopted under the National Heritage Plan are now included in County Development Plans and in the GIS of planning departments, to ensure the recognition and appropriate protection of geological heritage within the planning system. CGSs can be viewed online under the Geological Heritage tab on the online Map Viewer. The audit for Co. Laois was completed in 2016 and full details of the report can be found here. **Our records show that there is a CGS located within 200m of the edges of the proposed planning application:**

Abbeyleix Bog, Co. Laois (GR 643300 682700), under IGH themes 7 & 16: Quaternary and Hydrogeology

While today a generally flat and open landscape, the locality of Abbeyleix Bog was covered by bog, marsh, quicksand, and ponds thousands of years ago as the bog formed. At that time the marshy ground would have been surrounded by dense woodlands of birch, willow, hazel and alder. Today, the bog is also surrounded around its perimeter by broadleaf forestry, recently planted after the peat was cut. The bog itself comprises partially decomposed vegetation, which sank into marshland within the wide, wet basin. This material was laid layer upon layer for thousands of years, as the fibrous peat formed and eventually decayed into amorphous organic material over time. The locality was therefore gradually covered by the rising bogland, which formed a domeshaped, 'raised' bog. The site has had a boardwalk built across it recently, as a number of walks have been developed across the site. Other features of peat interest are included within the site boundary, such as intact and drained peat, small pockets of industrially-cutover peat, peat cut by locals, wetlands, and recovering peat. (Site Report from the County Audit is attached).

With the current plans, there are no envisaged impacts on the integrity of this CGS. However, if the proposed planning application changes, please contact myself or my colleague, Clare Glanville at Clare.Glanville@gsi.ie, for further information and possible mitigation measures if applicable.

Our aim is not to prevent further quarrying, as the very process of extraction provides Geological Survey Ireland with much valuable data that can be added to our national databases, but our purpose in protecting and promoting geological heritage is partly educational both for the public and the geologist. The IGH programme has numerous working quarries on its database where there are significant geological sections or features exposed within the quarry. In fact, new exposures through quarrying may reveal new features of interest to the geologist, and we have in the past requested that periodic monitoring of the new faces be permitted. In this respect, Geological Survey Ireland would appreciate notification of commencement from the applicant.

We also encourage discussion on end-of-life plans for the quarry and would be happy to recommend ways to promote the geology to the public or develop tourism or educational resources if appropriate. Geological Survey Ireland would like to offer help with interpretative signs where interesting geological features have been exposed, if appropriate.

The Geoheritage Programme tries to promote a partnership between geological heritage and active quarrying, with such measures as those outlined in the 'Geological Heritage Guidelines for the Extractive Industry', which can be downloaded here. This document, written in association with Irish Concrete Federation, acts as a comprehensive guide in the sustainable extraction of natural resources while preserving the geological heritage of Ireland.

Groundwater

Groundwater is important as a source of drinking water, and it supports river flows, lake levels and ecosystems. It contains natural substances dissolved from the soils and rocks that it flows through, and can also be tainted by human actions on the land surface. As a clean, but vulnerable, resource, groundwater needs to be understood, managed and protected. Through our Groundwater Programme, Geological Survey Ireland provides advice and maps to members of the public, consultancies and public bodies about groundwater quality, quantity, distribution and vulnerability. Geological Survey Ireland monitors groundwater nationwide by characterising aquifers, investigating karst landscapes and landforms and by helping to protect public and group scheme water supplies. With regard to Flood Risk Management, there is a need to identify areas for integrated constructed wetlands. We recommend using the GSI's National Aquifer and Recharge maps on our Map viewer to this end.

Geohazards

Geohazards can cause widespread damage to landscapes, wildlife, human property and human life. In Ireland, landslides are the most prevalent of these hazards. Geological Survey Ireland has information available on past landslides, for viewing on our website and as a layer on our Map Viewer. Geological Survey Ireland also engages in national projects such as Landslide Susceptibility Mapping and GWFlood Groundwater Flooding, and in international projects, such as the Tsunami Warning System, coordinated by the Intergovernmental Oceanographic Commission of UNESCO. We recommend that geohazards be taken into consideration, especially when developing areas where these risks are prevalent, and we encourage the use of our data when doing so.

I hope that these comments are of assistance, and if we can be of any further help, please do not hesitate to contact me, or my colleague Clare Glanville (Clare.Glanville@gsi.ie).

Le meas,

Amrine Dubois Gafar
Geoheritage Programme

LAOIS - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	**Abbeyleix Bog**
Other names used for site	Killamuck Bog, Collin's Bog
IGH THEME	**IGH7 Quaternary, IGH16 Hydrogeology**
TOWNLAND(S)	**Tullyroe, Abbeyleix Demesne, Killamuck, Clonkeen, Granafallow, Ballymullen, Knocknamoe**
NEAREST TOWN/VILLAGE	**Abbeyleix**
SIX INCH MAP NUMBER	**23, 29**
ITM CO-ORDINATES	**643300E 682700N (centre of bog)**
1:50,000 O.S. SHEET NUMBER	**60 GSI BEDROCK 1:100,000 SHEET NO. 15, 18**

Outline Site Description
Abbeyleix Bog comprises an extensive area of peatland extending in a low-lying hollow, north to south, for approximately 3 kilometres south of Abbeyleix Town.

Geological System/Age and Primary Rock Type
Abbeyleix Bog is situated within an area dominated by bedrock of Lower Carboniferous limestone. The bog peat is Quaternary in age, having formed in marshy conditions as an extensive envelope of the landscape in the area since deglaciation, and mostly from about 7,000-10,000 years ago.

Main Geological or Geomorphological Interest
While today a generally flat and open landscape, the locality of Abbeyleix Bog was covered by bog, marsh, quicksand, and ponds thousands of years ago as the bog formed. At that time the marshy ground would have been surrounded by dense woodlands of birch, willow, hazel and alder. Today, the bog is also surrounded around its perimeter by broadleaf forestry, recently planted after the peat was cut.

The bog itself comprises partially decomposed vegetation, which sank into marshland within the wide, wet basin. This material was laid layer upon layer for thousands of years, as the fibrous peat formed and eventually decayed into amorphous organic material over time.

The locality was therefore gradually covered by the rising bogland, which formed a dome-shaped, 'raised' bog. The site has had a boardwalk built across it recently, as a number of walks have been developed across the site. Other features of peat interest are included within the site boundary, such as intact and drained peat, small pockets of industrially-cutover peat, peat cut by locals, wetlands, and recovering peat.

Site Importance – County Geological Site
As the various forms of peat are all accessible within a small locality, and as the bog and its amenity walks exist due to the geological and hydrogeological process of peat growth, the locality is ranked as a County Geological Site.

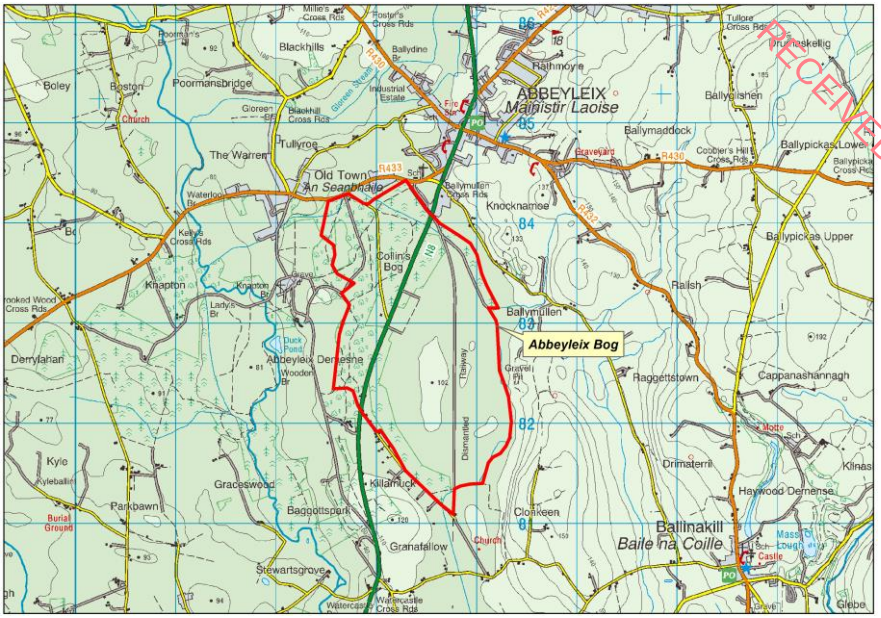
Management/promotion issues
Abbeyleix Bog has a number of walkways within, which were developed by local interests in conjunction with Bord na Móna. The geological aspects of the feature could be highlighted more in some of the promotional material.

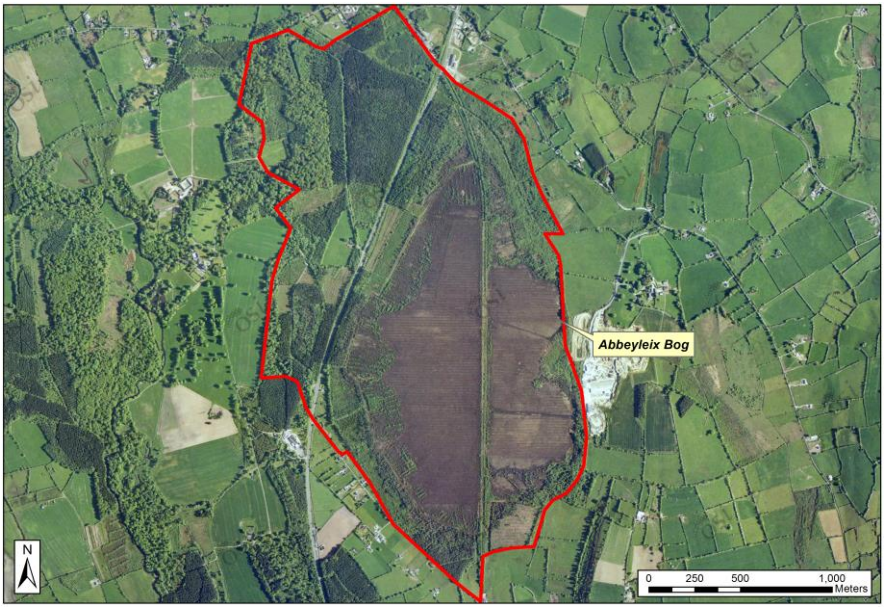
The main dome of Abbeyleix Bog, with the boardwalk across the feature also visible.

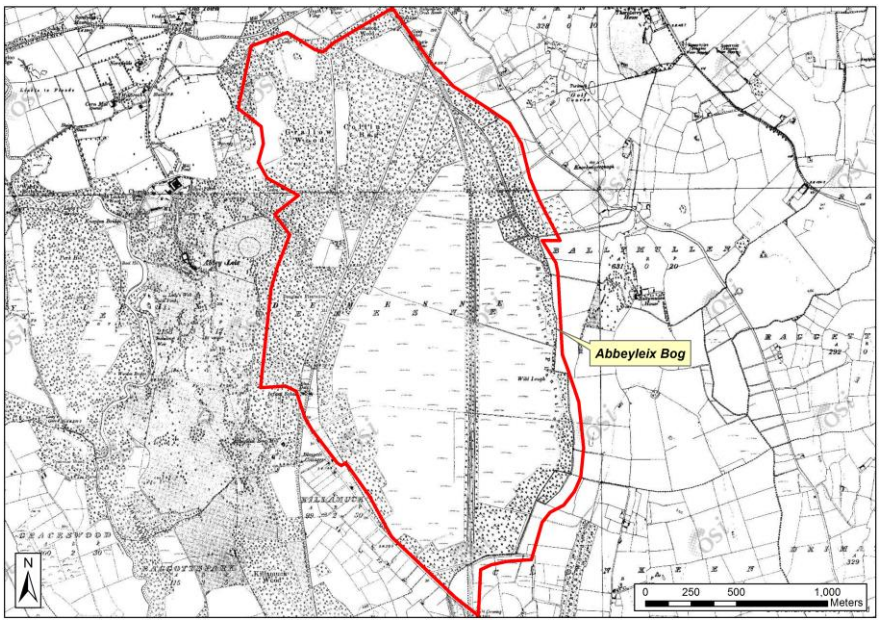
One of the drainage channels exiting the northern side of the bog.

A signboard detailing the flora and fauna of the bogland.

Some of the narrow borardwalk through birch woodland at the edge of the feature.







Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Laois-Offaly Environmental Health Service,
St. Fintans Campus,
Dublin Road,
Portlaoise,
Co. Laois.
Tel: 057 86 92675 Fax: 057 86 92682

Date: 9 December 2019

Name: Mr Patrick O'Donnell
Earth Science Partnership (Ire) Ltd
Tonranny
Westport
Co. Mayo

Re: Scoping Report

Proposed Development: Sand and gravel pit located at Knocknamoe and Ballymullen, Abbeyleix, Co. Laois

Applicant: Booth Precast Products Ltd

EHIS reference: 1040

Dear Mr O'Donnell

Please find enclosed the HSE Consultation Report in relation to the above proposal. If you have any queries regarding this report, the initial contact is Mr Declan Mulhare, Principal Environmental Health Officer, who will refer your query to the appropriate person.
The following HSE departments were made aware of the consultation request for the proposed development on 11 November 2019

- Emergency Planning – Brendan Lawlor
- Estates – Helen Maher
- Assistant National Director for Health Protection – Kevin Kelleher /Laura Murphy
- CHO – Pat Bennett

Yours sincerely

Declan Mulhare
Principal Environmental Health Officer

Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Laois-Offaly Environmental Health Service,
St. Fintans Campus,
Dublin Road,
Portlaoise,
Co. Laois.
Tel: 057 86 92675 Fax: 057 86 92682

Mr Patrick O'Donnell
Earth Science Partnership (Ire) Ltd
Consulting Engineers, Geologists & Environment
Tonranny
Westport
Co. Mayo

HSE EIAR Consultation Report
Environmental Health Service Submission Report

Date:	9 December 2019
Our reference:	1040
Report to:	Earth Science Partnership (Ire) Ltd Tonranny, Westport, Co. Mayo
Type of Consultation:	EIA Scoping
Applicant:	Booth Precast Products Ltd
Proposed development:	Sand and gravel pit located at Knocknamoe and Ballymullen, Abbeyleix, Co. Laois
Nature of Activity:	The proposed extraction and processing of sand and gravel material and transport of the material to the applicants existing manufacturing facility located approximately 1.3km to the south of the application site or directly to market. The material transported to the existing manufacturing facility will be further processed into various grades of aggregate which will be sold to market or used to manufacture a range of concrete products. The application site will be landscaped and restored during the life of the permission.

The EIAR should identify the nearest sensitive receptors and consider the impact of the proposed development on them. Sensitive receptors include, but are not limited to occupied houses, farms, (including facilities for racehorses and for the production of vegetables and crops) schools, childcare facilities, medical facilities and nursing homes, sports and community facilities and food premises.

General
The Environmental Health Service (EHS) considers the following should be assessed in the Environmental Impact Assessment (EIA)

- Any potentially significant emissions to surface water
- Any potentially significant emissions to ground water
- Any potentially significant emissions to air, including noise, vibration and dust

Other areas for consideration in the EIA include

- Staff welfare facilities
- Public consultation
- Potential for future health gain from the restoration of the proposed development
- Cumulative impacts of developments in the locality

In considering the measures to be employed by the developer to minimise the potential impacts of the proposed development to human health, reference was made by the EHS to the EPA's 'Environmental Management Guidelines on the Environmental Management in the Extractive Industry (Non-Scheduled Minerals) 2006'

It is recommended that an Environmental Management System (EMS) is put in place, with training of all site staff. There should be on-going review of the effectiveness of the EMS. The EMS should be devised in accordance with international standards such as ISO 14001 2015 and EU EMAS (1993).

When assessing the above potential impacts, the existing environment, the assessment methodology and evaluation criteria should be clearly reported in the EIAR. Existing baseline assessments (noise, dust, ground and surface water quality) should be included. Any mitigation proposed should be identified and the predicted residual impact clearly stated. Assessment should be carried out for both the operation phase and the remedial phase of the proposed development.

Emissions to surface water
Should any proposed activities result in potential discharges to surface water, these activities must comply with the provisions of the Local Government (Water Pollution) Acts 1977 and 1990 and the Water Services Acts 2007-2013. If a discharge licence is required, it is recommended that the developer undertake a surface water quality baseline study to assess the existing water quality and its assimilative capacity.

Where it is proposed that there will be discharges of treated effluent from the sand and gravel pit into nearby watercourses, the following Emission Limit Values (ELVs) are recommended

- pH less than 9
- BOD 25mg/l
- Total Suspended Solids 35mg/l
- NO_3 50mg/l
- Chemical Oxygen Demand 100mg/l O_2

The EIA should include details as to how these ELVs will be achieved.
A suitable drainage system should be provided which minimises surface water run-off into the sand and gravel extraction pit workings. This system can be by means of open channels that drain to a central storage settlement lagoon with narrow bore discharge pipes to limit flow. Lagoons should be of sufficient size to cope with flooding and periods of heavy rain and should be adequately sealed with an impermeable material to prevent leaching to groundwater.
Hard standing areas used for refuelling vehicles should drain to hydro carbon interceptors prior to discharge.
Details of the fuels and chemicals used and stored on site and the method proposed for the bunding of fuel and chemical storage tanks should be provided in the EIA. Provision should be made for the inspection and monitoring of bunding structures.
In order to minimise the wastage of water, surface water should be used for activities such as wheel washing and dust suppression.

Emissions to Groundwater

From information provided by the local Environmental Health office, it is noted that the source of the Abbeyleix Town Water Supply is located in the adjoining townland to the proposed sand and gravel extraction facility. Potential impacts of the proposed development on the source of the water supply should be identified and details provided of measures to mitigate these impacts should be included in the EIAR.

It is recommended that detailed information is gathered on the location of private wells serving properties within a 2km radius of the proposed facility. The EIA should include proposals for sampling private wells before work commences, at least biannually during the operation of the quarry and twice within the first year following cessation of operations at the site. These wells should be assessed against the parameters specified in the Drinking Water Regulations (S.I No. 122 of 2014).
Reference should be made in the EIA to the Geological Survey of Ireland's (GSI) Groundwater Protection Scheme for Co. Laois to determine if there are vulnerable groundwater sources or aquifers in the vicinity of the proposed development.

Emissions to air, including noise, vibration and dust
The EHS recommends that the developer notes the limit values specified in the Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011) which apply to ambient air quality in the vicinity of developments such as sand and gravel extraction facilities.
The EIAR should include background air quality monitoring at the nearest occupied dwellings prior to the commencement of operations and throughout the operation of the site using the Bergerhoff Method as specified in the German TA Luft Air Quality Standards (TA Luft 1986). Total dust deposition should not exceed 350mg/m^2/day when averaged over a thirty day period. This is a maximum limit and the EMS should be such that dust depositions seldom reach this level.
The Environmental Management System should include dust minimisation and suppressions measures to be employed to minimise the impact of dust emissions from the development. Methods can include, but are not limited to

- Wheel washing of every vehicle leaving the site
- Covering every load on vehicles leaving the site
- Protect and replace vegetation on site
- Where possible, use enclosed conveyors rather than trucks within the site

- Cover stockpiles to prevent windblown dust
- Spray and wash access and haul roads frequently to suppress dust
- Provide screening berms of adequate height
- Undertake regular plant and vehicle maintenance
- Undertake regular monitoring and inspection of access and haul roads to identify and attend to accidental spillages and structural defects to roads (i.e. potholes). Proposals for an agreement between the local roads authority and the applicant for the on-going maintenance of haul roads during the operation of the proposed development should be outlined.

- considering meteorological conditions (wind speed and wind direction) when siting stockpiles

If it is proposed to undertake blasting on site, the EHS recommends that a Vibration Monitoring Report is included in the EIA which includes blasting methods to be employed during the operation of the proposed quarry. An advanced notification system, advising occupants in the locality of the date and time of proposed blasting, should be included in the EIA. Blasting should not occur during hours of darkness or at weekends.

Consideration should be given to adopting noise reduction measures recommended in the EPA's 'Environmental Management Guidelines on the Environmental Management in the Extractive Industry (Non-Scheduled Minerals) 2006' in particular those relating to adequate screening of the site, maintenance of plant and machinery, reducing truck movements within the site and efficient methods of blasting. Details of the proposed noise mitigation measures to be employed should be included in the EIA.

The EHS recommends that reference is made by the developer to the EPA's 'Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities NG4' (January 2016). The existing background noise level should be considered when assessing the impact of noise from the proposed development on local receptors and when setting ELVs.
Details of the location and frequency of noise monitoring should be included in the EIA to be submitted as part of the Planning Application.

Staff Welfare Facilities

If it is proposed to provide staff welfare facilities details must be provided in the EIAR as to how it is proposed to dispose of any waste and effluent generated from such facilities.

Public consultation

The EHS emphasises the need for early and meaningful public consultation in the development process. Accurate information should be obtained regarding the location of sensitive receptors referred to above. There should be on-going engagement with these receptors during the EIA process and the EAIR should detail proposals for keeping sensitive receptors informed and any measures to be employed during the operational phase for dealing with enquiries and/or complaints from members of the public.

The future use of the restored site should be included in the public consultation process.

Site operation times should be agreed as part of the consultation process with local residents.

Potential for future health gain from the restoration of the proposed development

A Decommissioning and Site Restoration Plan for the proposed extraction facility should be put in place. The potential to provide a facility on site which will provide an opportunity for health gain for the wider community should be considered, for example, walkways, cycle paths, woodland paths, pitch and putt course or an amenity park including a number of these options.

Cumulative impacts of developments in the locality

It is noted from information contained in the scoping report that Booth Precast Products Ltd has a manufacturing facility which is located 1.3km from the proposed sand and gravel pit.

Other extraction and quarrying facilities within a 5km radius of the proposed facility should be identified and assessed when considering the potentially significant cumulative impacts from the proposed development. The EIA should include cumulative traffic, noise, dust and hydrological impacts.

Any queries in respect of this scoping report should be forwarded to Mr Declan Mulhare Principal Environmental Health Officer at the above address

Mary Kate Holohan
Environmental Health Officer
Child and Family Centre
St. Fintan's Campus
Dublin Road
Portlaoise
Co. Laois

Caroline Hueston
Environmental Health Officer
Environment Operational Unit
Ennistymon Health Centre
Ennistymon
Co. Clare

Bonneagar Iompair Éireann
Transport Infrastructure Ireland

Mr. Patrick O'Donnell
Earth Science Partnership (Ire) Ltd.
Tonranny
Westport
Co. Mayo

Dáta | Date	Ár dTag | Our Ref.	Bhur dTag | Your Ref.
10 December 2019	**TII19-107854**	

Re: EIAR Scoping Request: Sand & Gravel Pit, Knocknamore and Ballymullen, Abbeyleix, Co. Laois on behalf of Booth Concrete.

Dear Mr. O'Donnell,

Transport Infrastructure Ireland (TII) acknowledges receipt of your EIAR scoping consultation in respect of the above proposed project, received by post 7 November 2019 and on request by post received 4 December 2019.

National Strategic Outcome 2 of the National Planning Framework includes the objective to maintain the strategic capacity and safety of the national roads network. It is also an investment priority of the National Development Plan, 2018 – 2027, to ensure that the extensive transport networks which have been greatly enhanced over the last two decades, are maintained to a high level to ensure quality levels of service, accessibility and connectivity to transport users.

The issuing of this correspondence is provided as best practice guidance only and does not prejudice TII's statutory right to make any observations, requests for further information, objections or appeals following the examination of any valid application referred.

The approach to be adopted by TII in making such submissions or comments will seek to uphold official policy and guidance as outlined in the Spatial Planning and National Roads Guidelines for Planning Authorities (2012). Regard should also be had to other relevant guidance available at www.TII.ie.

With respect to application and EIAR Scoping issues, the recommendations indicated below provide only general guidance for the preparation of EIAR, which may affect the national road network. The developer should have regard, *inter alia*, to the following;

1. As set down in the Spatial Planning and National Roads Guidelines, it is in the public interest that, in so far as is reasonably practicable, that the national road network continues to serve its intended strategic purpose. The EIAR should should identify the methods/techniques proposed for any works traversing/in proximity to the national road network in order to demonstrate that the development can proceed complementary to safeguarding the capacity, safety and operational efficiency of that network.

Bonneagar Iompair Éireann
Ionad Gnó Gheata na Páirce
Sráid Gheata na Páirce
Baile Átha Cliath 8
Éire, D08 DK10

Transport Infrastructure Ireland
Parkgate Business Centre
Parkgate Street
Dublin 8
Ireland, D08 DK10

info@tii.ie
www.tii.ie
+353 (0)1 646 3600
+353 (0)1 646 3601

2. Consultations should be had with the relevant local authority/National Roads Design Office with regard to locations of existing and future national road schemes.

3. Clearly identify haul routes proposed and fully assess the network to be traversed. Separate structure approvals/permits and other licences may be required in connection with the proposed haul route and all structures on the haul route should be checked by the applicant/developer to confirm their capacity to accommodate any abnormal load proposed.

4. Where appropriate, subject to meeting the appropriate thresholds and criteria and having regard to best practice, a Traffic and Transport Assessment (TTA) be carried out in accordance with relevant guidelines, noting traffic volumes attending the site and traffic routes to/from the site with reference to impacts on the national road network and junctions of lower category roads with national roads. TII's TTA Guidelines (2014) should be referred to in relation to proposed development with potential impacts on the national road network. The scheme promoter is also advised to have regard to Section 2.2 of the TII TTA Guidelines which addresses requirements for sub-threshold TTA.

5. TII Standards should be consulted to determine the requirement for Road Safety Audit (RSA) and Road Safety Impact Assessment (RSIA).

6. Assessments and design and construction and maintenance standards and guidance are available at TII Publications that replaced the NRA Design Manual for Roads and Bridges (DMRB) and the NRA Manual of Contract Documents for Road Works (MCDRW).

7. The developer, in conducting Environmental Impact Assessment, should have regard to TII Environment Guidelines that deal with assessment and mitigation measures for varied environmental factors and occurrences. In particular;
   a. TII's Environmental Assessment and Construction Guidelines, including the *Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes* (National Roads Authority, 2006),
   b. The EIAR should consider the Environmental Noise Regulations 2006 (SI 140 of 2006) and, in particular, how the development will affect future action plans by the relevant competent authority. The developer may need to consider the incorporation of noise barriers to reduce noise impacts (see *Guidelines for the Treatment of Noise and Vibration in National Road Schemes* (1st Rev., National Roads Authority, 2004)).

Notwithstanding, any of the above, the developer should be aware that this list is non-exhaustive, thus site and development specific issues should be addressed in accordance with best practice.

I hope that the above comments are of use in your EIAR preparation.

Yours sincerely,

pp

Michael McCormack
Senior Land Use Planner

3.0 PROJECT DESCRIPTION

3.1 Introduction

This section of the EIAR provides supporting information in relation to the activities that will be undertaken at the proposed development as part of the enabling phase, operational phase and decommissioning phase.

As stated in Chapter 1.0, this EIAR has been prepared following the withdrawal of a planning application for a very similar development on the same site (Reg. Ref. 21/694). The Local Authority issued a Request for Further Information (RFI) in relation to that planning application; however, due to time constraints in preparing a full response to the RFI, the applicant decided to withdraw that planning application.

The development proposed in the subject application differs from that lodged under Reg. Ref. 21/694 in that the area of proposed Phase 4 of the extraction plan has been reduced in size, thus omitting a section of the landholding from the proposed quarry development i.e. the portion directly upslope/upstream of the petrifying springs located in Abbeyleix Bog. This is discussed in Chapter 7.0 (Water).

Considering buffer areas around the boundary of the application site, the removal of this section of Phase 4 will reduce the area proposed from extraction from approximately 6.5ha to approximately 6.1ha compared to that originally proposed. Due to the revised extraction plan (i.e. reduced area at Phase 4) there is now no proposed aggregate extraction directly up-gradient of the spring location. It is proposed to plant this area with wildflower to increase the biodiversity of the area.

The removal of part of Phase 4 of the extraction plan has resulted in a reduction in the extractable reserve from 1.58 million tonnes to 1.53 million tonnes.

An additional three monitoring wells have been drilled and installed along the northeastern boundary of Abbeyleix Bog in July 2022 between the proposed site and the petrifying spring.

The installation consists of 3 no piezometer couples/sets (3 no. deep sub peat piezometers, and 2 no. shallow standpipes). Water level monitoring in these piezometers, and all 5 no. on-site monitoring wells, was completed during July and August 2022.

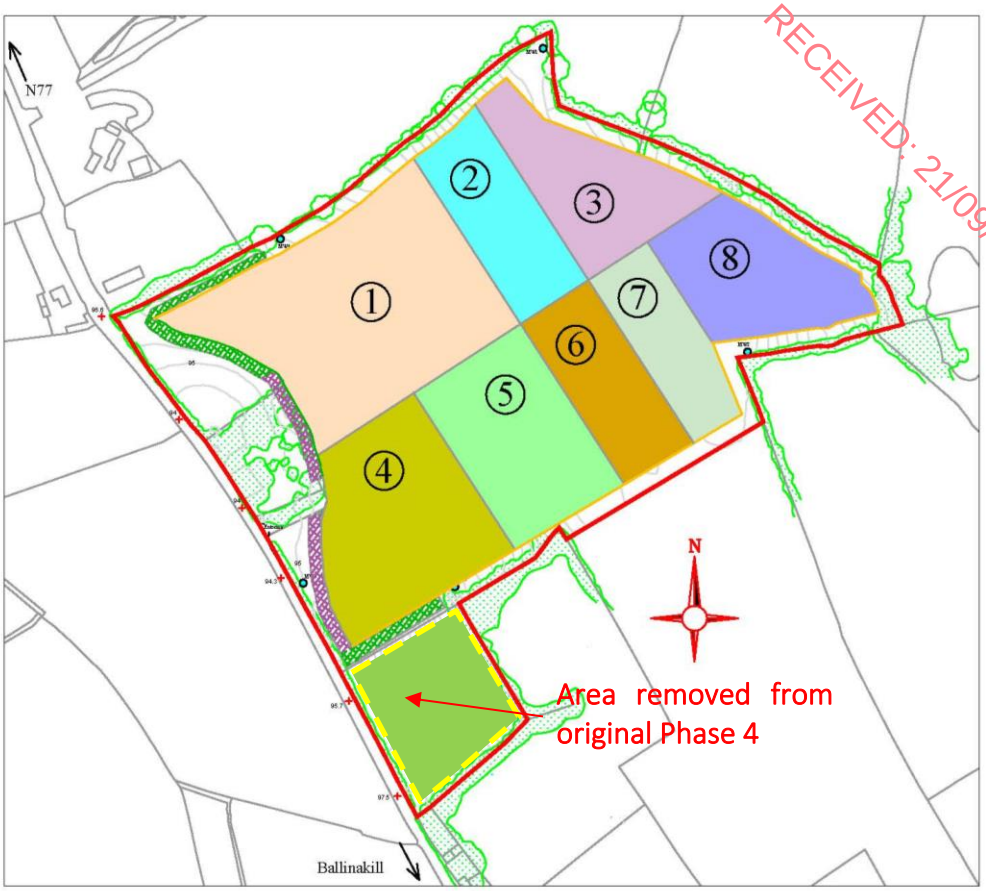


Plate 1.1: Revised Phased Extraction Plan

3.2 The Existing Environment

The application site is approximately 8.5ha. in area and is situated in the townlands of Knocknamoe and Ballymullen which is located approximately 1km south of Abbeyleix town. The site comprises mainly grassland with some woodland and scrub in the central area of the site. It is bordered by agricultural grassland to the north, east and south and by a local public road to the west which defines the western site boundary. West of the local public road, the land is low-lying and slightly boggy before it transitions into peatland.

The site is made up of several grazing fields which are separated by hedgerows. Access to the site is from the public road to the west. Landuse in the surrounding area is largely agricultural with scattered rural pattern of residential dwellings along the local roads to the west. The density of housing increases on approach to Abbeyleix.

The site has an elevation range of between approximately 92mOD and 130mOD (Ordnance Datum) and is located on a hillside that steadily slopes in a westerly direction towards the lower lying and flatter peatlands of Abbeyleix Bog that exists to the west of the site. There is a number of existing sand and gravel pits in the area, the closest one is a small disused pit located approximately 500m to the southeast of the site. This is currently used as a Defence Forces and An Garda Síochána Shooting Range.

3.3 The Proposed Development

The applicant proposes to extract the sand and gravel material and transport the material to the applicant's existing manufacturing facility located approximately 1.3km to the south of the application site. There will be no processing of the material on site and there will be no direct transport of material from the application site to market.

The proposal will include an enabling phase associated with installing a haul road from the entrance to the proposed infrastructure consisting of a wheelwash and refuelling area. The operational phase will include the day-to-day activities that will be undertaken at the proposed development which will include vegetation and overburden removal, extraction of material and transport of the material to the manufacturing facility where it will be processed into various grades of aggregate which will be sold to market or used to manufacture a range of concrete products.

Berm construction along the western boundary will be undertaken in tandem with vegetation and overburden removal from Phase 1 of the extraction plan during the operational phase therefore assessed under the operational phase of the proposed development.

Once the available resource has been extracted final restoration works and decommissioning of the infrastructure will be undertaken as per the landscape, restoration, and decommissioning plan. The enabling, operational and restoration/decommissioning phases are described under the respective heading. The existing and proposed layouts and sections through the application site are illustrated on Figures 3.1 to 3.4 located at the end of this section.

3.3.1 Enabling Phase

It is proposed to install a short haul road from the entrance of the site to the proposed infrastructure consisting of a wheel wash bath and refuelling area which will be situated close to the entrance to the site. The proposed infrastructure is relatively simple in design and will be in place within a short time period of time of approximately 4 to 6 weeks. The run-off from the refuelling area and overflow from the wheel wash will discharge to ground via a full retention oil interceptor. Once the infrastructure is in place the operational phase will commence.

3.3.2 Operational Phase

The operational phase will consist of the day-to-day activities which will be undertaken associated with the removal of overburden and vegetation, extraction of material and transport off-site. Plate 3.1 below gives a summary of the activities that will be undertaken as part of the operational phase of the proposed development.

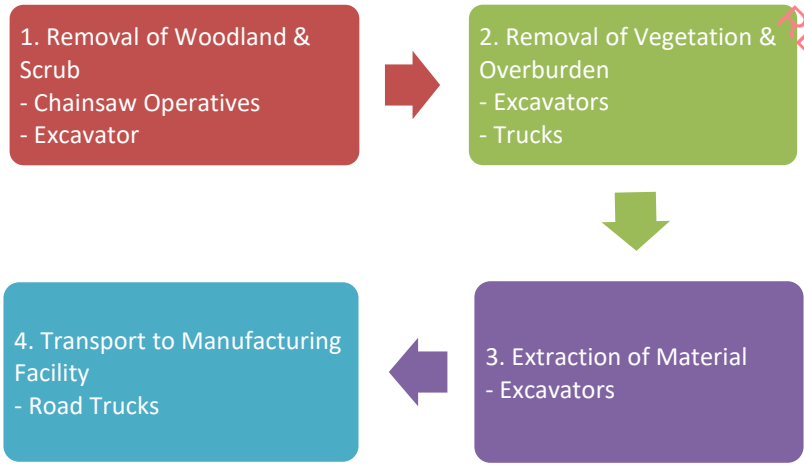


Plate 3.2: Flowchart Describing Activities that will be Undertaken at the Application Site

The extraction of material from the application site will be undertaken in line with a phased extraction and restoration plan consisting of 8 phases as shown on Figure 3.3 with each phase ranging from 7 to 19 months or an average of 12 months of sand and gravel material depending on the level of extraction. The maximum rate of extraction will be in the region of 200,000 tonnes/annum; however, this will depend on the demand for material.

Prior to extracting the underlying sand and gravel material from each phase, trees and vegetation will be removed and overburden will stripped. The overburden and some of the sand and gravel material from Phase 1 will be used to construct the berm along the western boundary. When all sand and gravel material has been extracted from Phase 1 work will commence on Phase 2 with the removal of trees and vegetation and stripping of overburden which will be used to restore Phase 1. The extraction and restoration on a rolling phased basis will ensure that only a minimal area of the site is operational at any one time with continuous restoration being undertaken.

3.3.2.1 Removal of Woodland

The existing hedgerow along the western boundary will be removed and a new hedgerow planted set back from the road in order to improve site lines. The woodland in the centre of the site will be removed in phases using excavators and chainsaw operatives. The wood has no commercial value and will be used for firewood with smaller branches chipped on site. This will be undertaken on an intermittent basis outside the bird breeding season.

Mr. John Morgan of Independent Tree Surveys was commissioned to provide a Tree Survey of the site and prepare an Arboricultural Impact Assessment, Method Statement and Tree Protection Plan in accordance with BS5837. The report concluded that the re-vegetation of the site will involve the phased planting of large numbers of trees that in time will establish and develop into mature woodland to replace those trees removed to facilitate the pit. With good planting stock and proper aftercare, along with improved hedgerow management of the surrounding hedges, these post-quarrying landscape works should see the loss of trees and woodlands mitigated in the longer term. A copy the report is attached to the landscape and restoration plan located in Appendix 12.1.

3.3.2.2 Removal of Vegetation & Overburden

Overburden consisting of topsoil and subsoil will be removed in phases prior to excavating the underlying sand and gravel material. Overburden removal will be an intermittent operation which will be undertaken during periods of suitable weather.

Overburden material from Phase 1 will be stored in constructed berms along the western boundary of the pit adjoining the local road and will be used for final restoration of the site on completion of extraction of material. Sand and gravel material extracted from Phase 1 will be used to supplement berm construction. As extraction proceeds into various phases, overburden removed from the working phase will be used to restore the previous phase where material has been extracted. This will be undertaken on a rolling basis to minimise the uncovered area of the site.

3.3.2.3 Extraction of Material

Once the overburden has been removed the sand and gravel material will be extracted using a tracked excavator. The material will be loaded directly onto road trucks and transported to the manufacturing facility. The extraction of material from the application site will be undertaken in line with a phased extraction and restoration plan consisting of 8 phases as shown on Figure 3.3 with each phase corresponding to approximately 12 months of sand and gravel material. Material will be extracted in phases with all material being removed from one phase before extraction begins in the next phase. The material transported to the manufacturing facility will be processed into various grades of aggregate which will be sold to market or used to manufacture a range of concrete products.

The maximum time scale for the proposed development is for 10 years, including complete restoration of land for agriculture use. This will depend on the economy and the levels of construction activity. The application site will be landscaped and restored, on a phased basis, during the life of the permission.

3.3.2.4 Transport to Manufacturing Facility or Market

The material will be transported off site by road trucks to the manufacturing facility located approximately 1.3km south of the application site. Vehicles will pass through the wheel

wash facility prior to exiting the site to ensure no dirt or debris is transported onto the L5731 local road. The road is visually assessed daily and a road sweeper is deployed on a regular basis. The frequency of deployment will be reviewed as part of the proposed development. There will be no processing of material on site and there will be no direct transport of material from the application site to market.

3.3.2.5 Description of Plant On-Site

As the application site will consist only of an extraction and haul operation, the plant and machinery which will be required to operate at the application site will be minimal and will consist of the following:

- Excavators
- Road Trucks
- Water Bowser

3.3.2.6 Fuel & Chemical Storage

For security reasons no fuel will be stored at the pit. Excavators will be refuelled by an authorised distributor which will deliver fuel to the pit and dispense directly into plant as required. Plant will be refuelled on the proposed refuelling area. Procedures will be put in place for dispensing fuel into plant. Road trucks will be refuelled at fuel stations located in the vicinity of the pit or at the manufacturing facility. The location of the proposed refuelling area is located on Figure 3.4. It will consist of a concrete pad which will drain into the oil interceptor before discharging to a soakaway.

3.3.2.7 Surface Water & Groundwater

As all excavations will be undertaken above the groundwater table, there will be no requirement to manage groundwater. A minimum of a 3m buffer is proposed between the final excavation level and the highest winter groundwater level in order to protect groundwater quality. Precipitation falling on the pit will percolate to ground or evaporate. The assessment of both the surface water and groundwater environment is detailed in Section 7.0.

Four monitoring wells are located on the application site and a further three monitoring locations have been drilled in the field located to the west of the application site on the opposite side of the L5731 local road. These wells will be used to monitor groundwater quality and levels during the operational and decommissioning phases.

3.3.2.8 Working Hours & Employment

The pit will operate between the hours of 0700 hours and 2000 hours Monday to Friday and 0800 to 1800 hours on Saturday. However, it is unlikely that the pit will operate to these maximum operating hours as the activities will be mainly confined to daylight hours. The pit will not operate on Sundays or Public Holidays. All works proposed as part of the development will be undertaken during these operating hours. These proposed times coincide with the operating hours of the manufacturing facility. The applicant provides employment at the main plant for approximately 35 people directly with a further 25 people employed indirectly. The application site will provide employment for approximately 2 additional people.

3.3.2.9 Utilities & Services

At present the pit does not require any connection to the relevant utilities. Should a connection be required, the relevant utility companies will be contracted.

3.3.2.10 Water Supply & Wastewater

An existing on-site well will be used to top up the water required for the wheel wash and for dust suppression when required.

3.3.2.11 Energy Usage

Plant and machinery which will operate at the pit will be diesel powered with fuel supplied by a local authorised distributor.

3.3.2.12 Transport & Access

The site will be accessed via a gated entrance off the L-5731-25 local road. The gate will be locked outside operating hours. Material from the pit will be transported along the L-5731-25 local road for a distance of approximately 1 kilometre before turning down a private road for a further 0.6 kilometres to the existing manufacturing facility located approximately 1.3km south of the application site.

Each load will be inspected by the driver of the lorry prior to leaving the site to ensure that the lorry has been loaded correctly with no loose or overhanging debris present on the load. Once the load has been cleared for transport, the vehicle will pass through the wheel wash facility prior to exiting the site to ensure no dirt or debris is transported onto the public road.

The maximum anticipated traffic from the proposed development is 29 loads/day with all loads going directly to the manufacturing area. At present a large percentage of the raw material being processed at the existing plant is hauled from sources outside the area and transported through the towns of Abbeyleix and Ballinakill. The proposal will result in raw material being sourced closer to the manufacturing facility thereby reducing HGV traffic on the roads through Abbeyleix, Ballinakill and the upper section of the L-5731-25 local road between the application site and the junction of the of the N83 which will have a positive impact. There will also be traffic generated by the two employees working at the site.

Warning signs will be erected on the L-5731-25 road to warn drivers of the presence of a sand and gravel pit and HGV traffic movements. The proposed signage will be subject to agreement with Laois Co. Co. Traffic is dealt with in more detail in Chapter 11.0.

3.3.2.13 Offices & Facilities

There will be no canteen, office, toilet facilities etc. located at the application site. These facilities are located at the manufacturing facility where sand and gravel material will be transported to. The only infrastructure to be constructed on the site is a wheel wash facility and refuelling area which can be easily removed from the site on completion of excavation of the available material. Plant and machinery will be serviced at the workshop located at the manufacturing facility. There will be no lighting required at the application site as it is unlikely that the site will operate outside daylight hours.

3.3.2.14 Waste Management

All waste generated at the pit will be properly recovered, recycled and or disposed of at the main facility in an environmentally friendly and sustainable manner. The applicant will comply with all existing environmental legislation and guidelines in relation to waste management.

3.3.2.15 Safety & Security

Security fencing and stock proof post and wire fencing will be erected around the boundary of the pit to prevent unauthorised access. A berm will be constructed close to the western boundary of the pit in order to provide visual screening. A hedge will be planted along the western boundary set back from the road boundary to achieve the necessary site lines. The gate located at the entrance to the pit will be locked outside working hours.

Side slopes will be inspected on a regular basis to ensure they are stable. Warning signs will be put in place around the pit to inform personnel of potential hazards. All staff and visitors will be required to wear appropriate Personal Protective Equipment (PPE).

All staff will attend the Solas Safe Pass Health and Safety Awareness Training Programme and attend regular toolbox talks in relation to safety. All visitors to the site will be required to report to the main office at the processing plant and will not be authorised to enter the proposed extraction site unsupervised.

3.3.2.16 Ecological Sensitive Areas

Areas of conservation interest located within 15km of the development site are outlined in Table 3.1. There are three SACs, one SPA and 11 pNHAs located within a 15km radius of the quarry.

Table 3.1: Conservation Sites within 15km of the Proposed Development

Site Code	Site Name	Distance from Site (Km)	Designation
002162	River Barrow and River Nore	2.2km W	SAC
000869	Lisbigney Bog	4.4km S	SAC
002333	Knockacoller Bog	14.5 km NW	SAC
004233	River Nore	2.3km W	SPA
000417	Grantstown Wood and Lough	11km SW	pNHA
000418	Cuffsborough	9.2km SW	pNHA

000419	Knockacoller Bog	14.2km NW	pNHA
000420	The Curragh and Goul River Marsh	8.7km SW	pNHA
000421	Timahoe Esker	10.6km NE	pNHA
000862	Coolacurragh Wood	11.7km SW	pNHA
000869	Lisbigney Bog	4.4km S	pNHA
000874	Forest House Wood	10.9km NW	pNHA
000876	Ridge of Portlaoise	12.7km N	pNHA
001923	Shanahoe Marsh	5.4km NW	pNHA
002076	River Nore/Abbeyleix Woods Complex	2.2km W	pNHA

Abbeyleix Bog encompassing an area of almost 500 acres of diverse habitats including degraded (but recovering) raised bog, lagg, cutaway, wet carr woodland and meadows is located to the west of the application site.

The various assessments of the EIAR will take into account the requirements of the Abbeyleix Bog Project as expressed through their aims and objectives as stated in their Conservation Management Plan (CMP) which promote guidelines for the protection and enhancement of the wildlife and habitat diversity of the bog. Full details of the ecological assessment are given in Section 5.0 (Biodiversity) of the EIAR. A Natura Impact Statement (NIS) has been compiled and assesses the potential impacts of the proposed development on Natura Sites. The NIS accompanies the application as a separate document.

3.3.2.17 Dust Generation & Control

The excavation and transport of material has the potential to generate windblown dust if not managed effectively. Various measures will be adopted at the pit to prevent dust at source. These include dust suppression which will be undertaken on an as required basis using a tractor and bowser. Dust generation and control is dealt with in Section 9.0 of the EIAR.

3.3.2.18 Noise & Vibration Generation & Control

Noise will be generated due to the activities being undertaken at the application site. All necessary precautions will be put in place to ensure that the operation of the application site will not lead to elevated noise levels. Monitoring will be undertaken at nearest noise sensitive locations to ensure compliance with levels. Noise is discussed further in Section 10.0 of the EIAR.

3.3.2.19 Extraction Duration & Phases of Extraction

A topographical survey of the site was carried out using a fixed wing drone and GPS surveying unit to establish the existing ground levels at the site. The survey was transferred into AutoCAD Civil 3D and multiple cross sections were drawn to calculate the volume of material between the existing ground level and the proposed maximum extraction level.

Due to the removal of part of Phase from the extraction plan, the estimated volume of material available for extraction from the application site is approximately 787,310m3 of which 23,500m3 consists of overburden which will be used to construct berms and restore the site. An average depth of 0.3m of overburden was used to calculate the volume of overburden. Therefore, the volume of material to be transported to the manufacturing facility is approximately 763,810m3 or approximately 1.53 million tonnes using a conversion factor of 2m3/tonne. The removal of part of Phase 4 of the extraction plan has resulted in a reduction in the extractable reserve from 1.58 million tonnes to 1.53 million tonnes.

Figure 3.3 details the proposed 8 Phase extraction plan and existing and proposed sections through the application site. Figure 3.4 details the final extraction plan levels and sections through proposed berms. As it is proposed to keep a 3m buffer between the final excavation level and the highest winter groundwater level, the final excavation level will range between approximately 97mOD on the western boundary and 103mOD on the eastern boundary.

The maximum rate of extraction will be in the region of 200,000 tonnes/annum; however, this will depend on the demand for material. Therefore, the applicant is seeking a 10 year permission in order to extract the available reserve allowing for years when the anticipated extraction rate will not be achieved and to allow time to restore the pit in line with the restoration plan.

3.3.2.20 Environmental Monitoring

Environmental monitoring including noise, dust deposition, groundwater level and quality monitoring will be undertaken during the enabling, operational and decommissioning phase of the proposed development. An Environmental Management Plan will be compiled and agreed with Laois Co. Co. on granting of planning permission.

3.4 Landscaping, Restoration, Decommissioning & Aftercare

Landscaping and restoration works will be undertaken during the operational phase of the proposed development with final restoration works and decommissioning undertaken on completion of extraction of the available resource. A Landscape and Restoration plan for the site has been compiled and is attached in Appendix 12.1. A summary of the landscape restoration and decommissioning of the site is provided below:

3.4.1 Removal of Existing Roadside Hedgerow

The existing roadside hedgerow along the western boundary of the application site will be removed to improve sight lines for traffic safety. Security fencing/stock proof post and wire fencing will be erected set back from the road edge and a new hedge will be planted on the inside.

3.4.2 Berm Construction

A berm will be constructed along the western boundary of the pit to screen the pit from the local road. Overburden and sand and gravel material removed from Phase 1 of the development will be used to construct the berm.

3.4.3 Restoration Measures

The site will be extracted and restored on a rolling basis as part of an 8 Phase extraction plan. A strip of land between the existing boundary hedgerows and the edge of the quarry face will be left unplanted and kept clear to allow for maintenance works to the hedgerows. The side slope and strip of land left intact along the edge of the quarry cutting will be planted up with a mix of tree species. When completed, the new woodland planting will cover an area somewhat greater than the area cleared of tree cover to facilitate the quarry works. A layer of topsoil overburden will be applied to exposed surfaces and seeded with grass seed to return the area to agricultural grassland.

3.4.4 Removal of Berm

Once all phases have been extracted, the berm will be removed and the overburden will be used to restore Phase 8 and other areas of the pit where overburden is required.

3.4.5 Decommissioning

When extraction activity has ceased at the site, all plant and infrastructure present will be removed and reused at a different location. Plant and infrastructure on site will not pose any environmental concern during the decommissioning phase. After plant equipment and unused structures are removed from the site an inspection will be undertaken.

3.5 Other Development

A search of other development located within a 5km radius of the application site which could potentially lead to a cumulative impact was undertaken. The location of the sites identified is illustrated in Plate 3.2 with details tabulated in Table 3.2. These developments have been assessed for cumulative impacts against the proposed development in the various chapters of the EIAR.

The RFI for the withdrawn planning application for quarry development on the subject site (Reg. Ref. 21/694) requested that planning application reference number Reg. Ref. 21/700 be assessed as part of the cumulative assessment of the EIAR submitted with the development. At the time of writing of the subject EIAR, Reg. Ref. 21/700 is still a 'live' application and under appeal to An Bord Pleanála (Ref. ABP-314760-22) following a *Notification of Decision to Grant* by Laois County Council. The development is located approximately 9km to the east of the application site and is thus outside the 5km radius used for projects to be assessed in-combination with the subject proposal. Due to the distance between both sites the cumulative impact is assessed to be neutral.

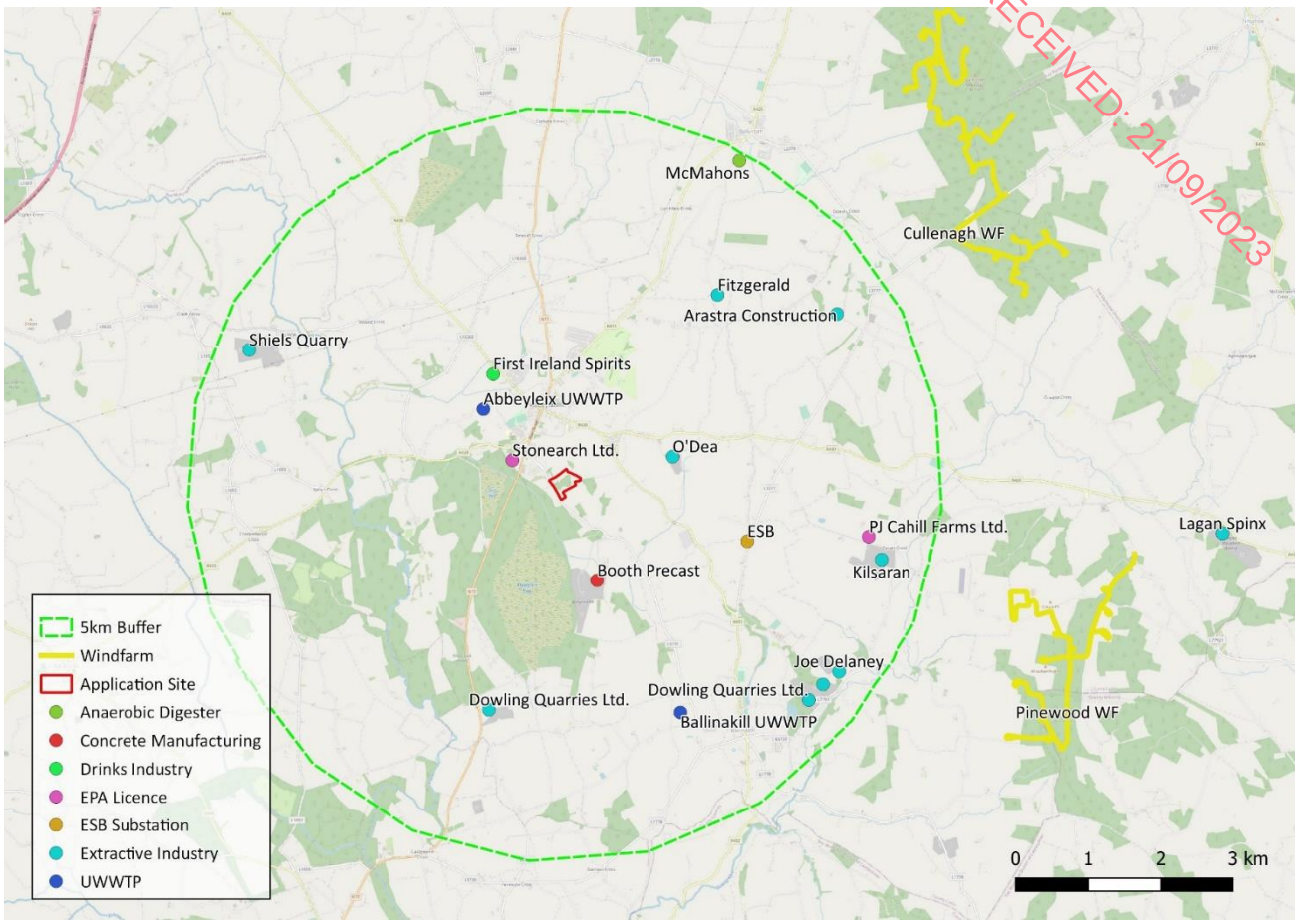


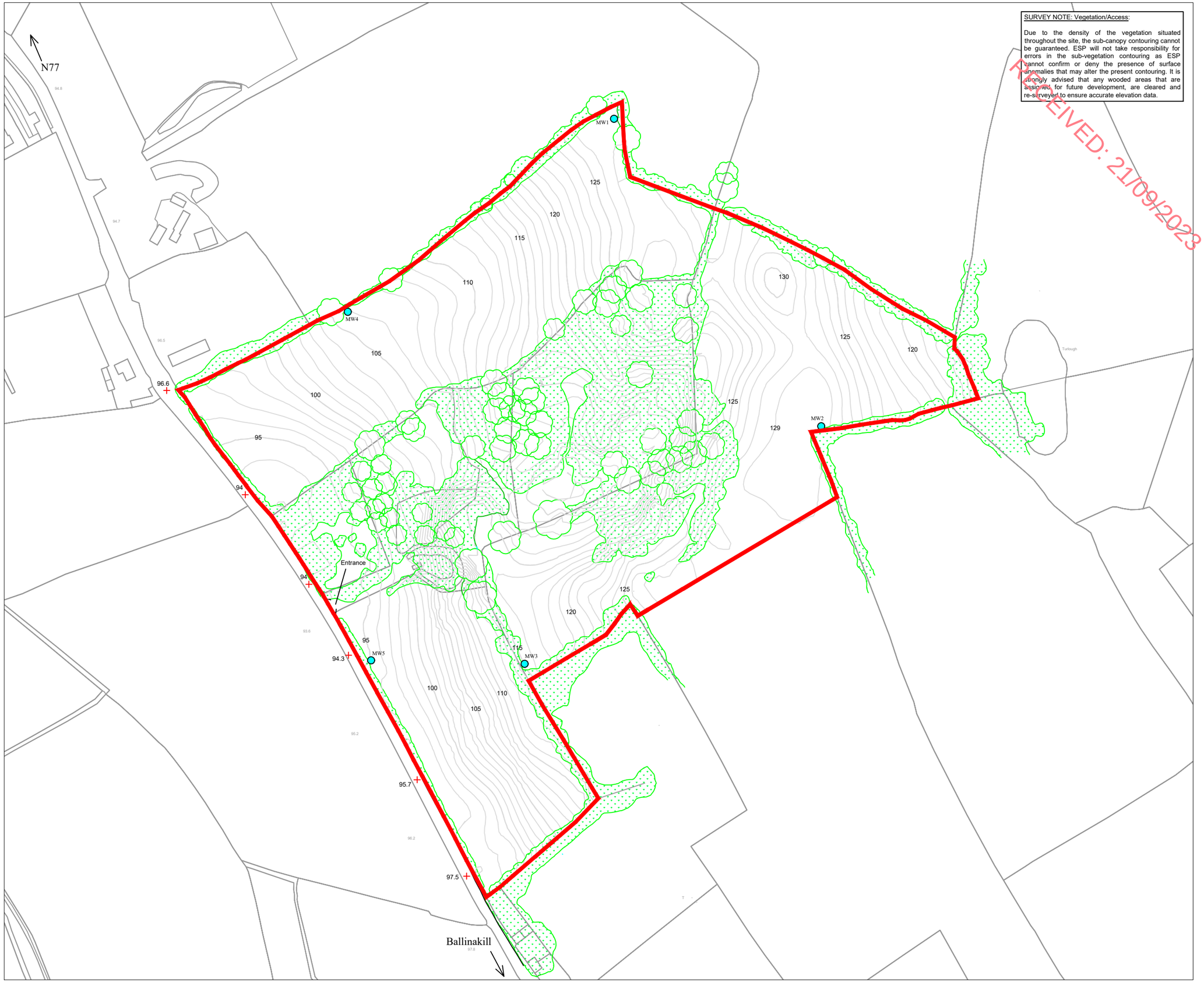
Plate 3.3: Developments Located Within 5km Radius of the Application Site.

Table 3.2: Developments Located Within 5km Radius of the Application Site.

Ref.	Applicant/Operator	Type	Address	Status	Distance to Site
Windfarms					
LCC: 13/268 ABP: 242626	Coillte Teoranta Cullenagh Wind Farm	18 Turbine Windfarm	Ballinaclogh Upper, Garryglass, Clarabarracum, Clontycoe, Dooary, Cloncullane, Crubeen, Cullenagh, Rahanavanagh and Raheenduff Big, all located to the east of Ballyroan	Permission Granted Not constructed	6.1km NE

			Village and to the South West of Timahoe Village Co. Laois.		
LCC: 16/260 ABP: 248518 ABP: 309780	Pinewood Wind Ltd.	11 Turbine Windfarm	Knockardugar, Boleybawn, Garrintaggart, Ironmills (kilrush) and Graiguenahown,	Permission Granted Not constructed	6.3km E
KCC 17/62 ABP: 248392		Site access tracks, underground cabling and drainage works	Crutt, Co. Kilkenny		
ABP: 308448		A 110kv 'loop in/loop-out' Air-Insulated Switchgear substation, electricity lines, on-site access tracks	Knockardagur, Ballinakill, Co. Laois		
EPA Licenced Facilities					
EPA: P0332	Randstone Limited T/A Stonearch	Manufactured Vitamin K3	Tullyroe, Abbeyleix	Licenced but not operational	500m NE
EPA: P0710	PJ Cahill Farms	Pig rearing facility	Graigue, Ballinakill	Operational	4km E
Quarries					
QY05.16 P10/361 P18/124	Dowling Quarries Ltd.	Sand & Gravel Pit	Granafallow, Abbeyleix, Co. Laois	Operational	2.8km SW
P97/802 QY05.49 P12/482 P13/190	Kilsaran	Extractive	Moat, Ballinakill, Co. Laois	Operational	4.3km E
QY05.50 P93/439	Cemex	Pit	Kilnashane, Ballinakill	Not operational	4.1km SE
QY05.19	Dowling Quarries Ltd.	Pit	Kilnashane, Ballinakill	Not Operational	4.4km SE
P20/275	ESB	ESB Substation	Raggetstown, Abbeyleix		

P93/567 P01/882 P04/758 P05/1172 P10/372 P15/207 P22/296	First Ireland Spirits	Alcoholic Drinks Manufacturing	Tullroe, Mountrath Road, Abbeyleix	Operational	1.6km NW
P10/360 P13/29	McMahons	Anaerobic Digester	Rockbrook, Ballyroan	Operational	4.8km NE
QY05.77 P95/275	Arastra Construction	Pit	Rahanavanagh, Ballyroan	Not Operational	4.6km NW
P95/300 QY05.76 P07/1451 P12/46	Booth Precast	Concrete Products Manufacturing Facility	Ballymullen, Abbeyleix	Operational	1km S
P2248	Fitzgerald	Pit	Redhill, Abbeyleix	Further Information	3.1km NE
QY05.01	O'Dea Pit	Quarry	Ballymaddock, Abbeyleix	Operational	1.2km E
QY05.15	Joe Delaney	Quarry	Kilnashane, Ballinakill	Restored	4.5km SE
QY05.48	Shiels	Quarry	Boley Lower, Abbeyleix	Operational	4.5kmNW
QY05.50	Cemex	Pit	Kilnashane, Ballinakill	Not Operational	4.4km SE
QY05.17	Dowling	Pit	Kilrush, Ballinakill, Co. Laois	Not Operational	7.1km SE
Urban Wastewater Treatment Plant					
D0156	Abbeyleix WWTP	WWTP	Tullyroe, Abbeyleix	Operational	1.3km NW
D0685	Ballinakill WWTP	WWTP	Drimaterril, Ballinakill	Operational	3.3km SE



SURVEY NOTE: Vegetation/Access:

Due to the density of the vegetation situated throughout the site, the sub-canopy contouring cannot be guaranteed. ESP will not take responsibility for errors in the sub-vegetation contouring as ESP cannot confirm or deny the presence of surface anomalies that may alter the present contouring. It is strongly advised that any wooded areas that are assigned for future development, are cleared and re-surveyed to ensure accurate elevation data.

Legend

Application Area

Area = 8.5 Ha

Vegetation

MW2 Monitoring Well (MW1 - MW5)

Trees

94 Spot Levels

N

OSI Ref. No. 4233-B, 4175-D, 4176-C, 4234-A

ITM Coordinates E 644042, N 683951

All Levels Relative to Ordnance Datum

EARTH SCIENCE PARTNERSHIP
CONSULTING ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS
Tonranny Westport Co. Mayo
tel.:- +353(098) 28999 fax:- +353(098) 24727
e-mail: earthsciencepartnership@gmail.com

Client: Booth Precast Products Ltd.

Project: Environmental Impact Assessment Report to Accompany a Planning Application for a Sand & Gravel Pit at Knocknamoe & Ballymullen, Abbeyleix, Co Laois

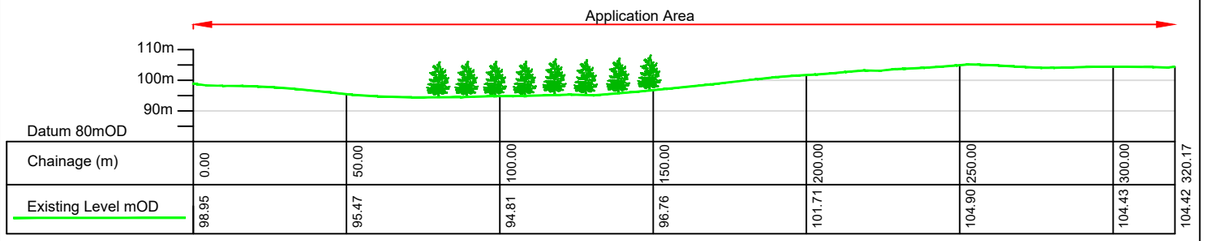
Title: Existing Site Layout Map

Drawn By: Sean O' Donnell

Checked By: Patrick O' Donnell

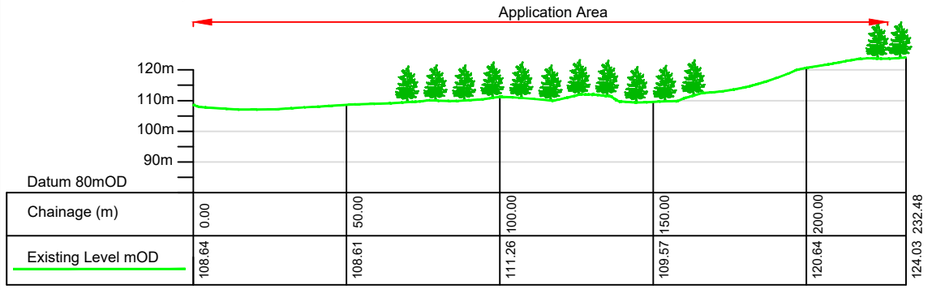
Scale: 1:2,000 @ A3	Date: July 2022
Job No: EI 185A	Rev: A

Figure 3.1



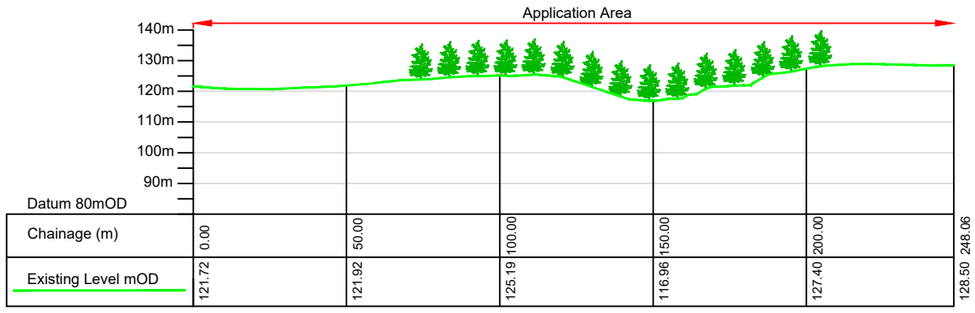
Chainage (m)	0.00	50.00	100.00	150.00	200.00	250.00	300.00	320.17
Existing Level mOD	98.95	95.47	94.81	96.76	101.71	104.90	104.43	104.42

Section A - A Scale 1:2,000



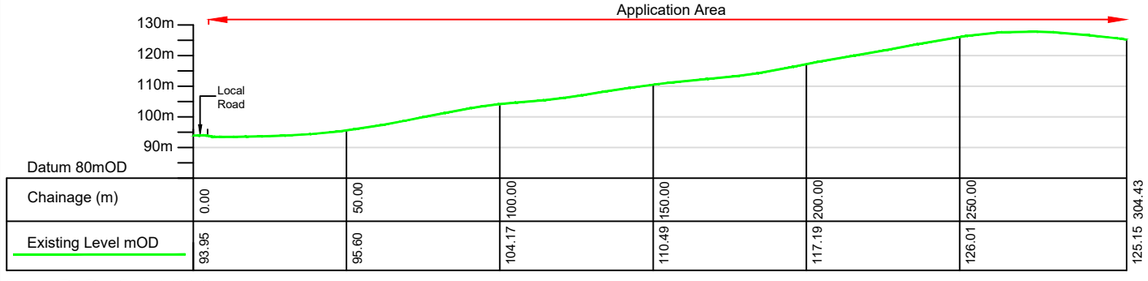
Chainage (m)	0.00	50.00	100.00	150.00	200.00	232.48
Existing Level mOD	108.64	108.61	111.26	109.57	120.64	124.03

Section B - B Scale 1:2,000



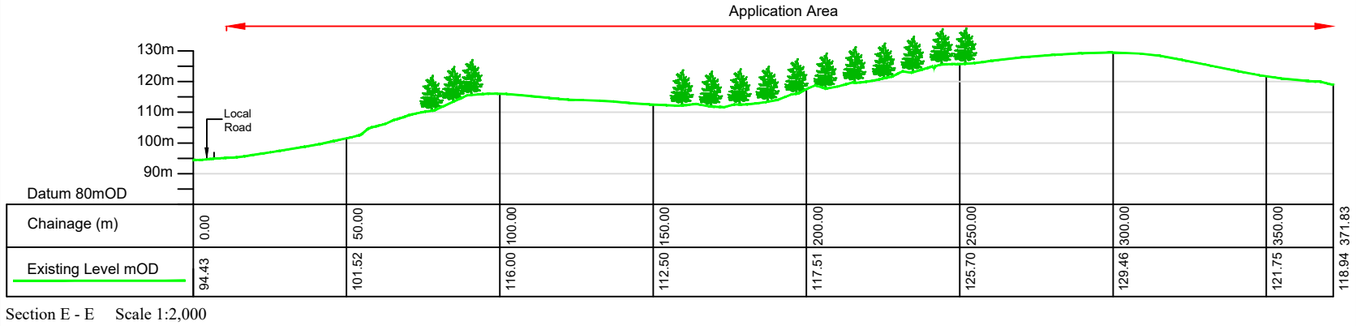
Chainage (m)	0.00	50.00	100.00	150.00	200.00	248.06
Existing Level mOD	121.72	121.92	125.19	116.96	127.40	128.50

Section C - C Scale 1:2,000



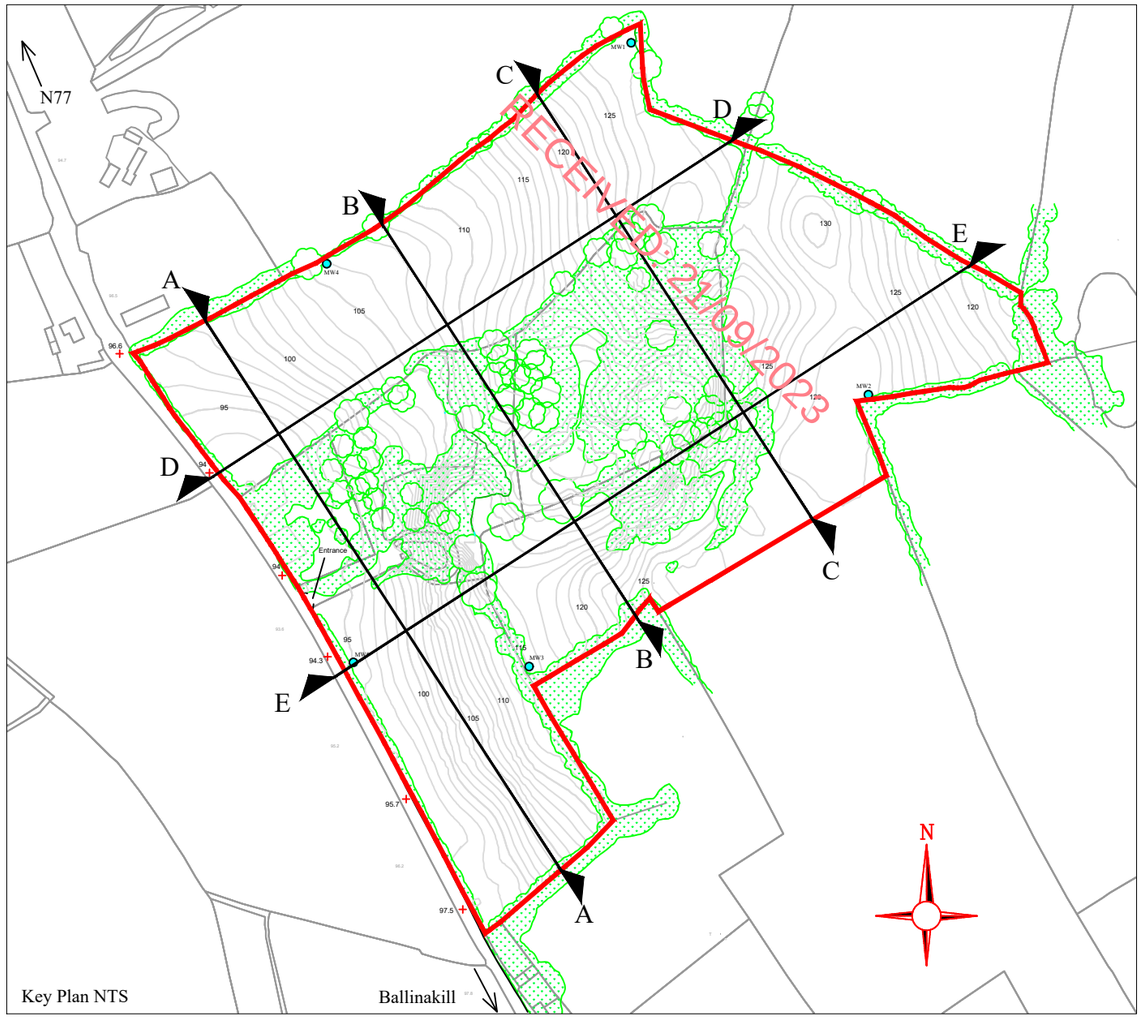
Chainage (m)	0.00	50.00	100.00	150.00	200.00	250.00	304.43
Existing Level mOD	93.95	95.60	104.17	110.49	117.19	126.01	125.15

Section D - D Scale 1:2,000



Chainage (m)	0.00	50.00	100.00	150.00	200.00	250.00	300.00	350.00	371.83
Existing Level mOD	94.43	101.52	116.00	112.50	117.51	125.70	129.46	121.75	118.94

Section E - E Scale 1:2,000



Legend

Vegetation

Trees

94 Spot Levels

Application Area

Area = 8.5 Ha

Existing Level

OSI Ref. No. 4233-B, 4175-D, 4176-C, 4234-A

ITM Coordinates E 644042, N 683951

All Levels Relative to Ordnance Datum

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Client: Booth Precast Products Ltd.

Project: Environmental Impact Assessment Report to Accompany a Planning Application for a Sand & Gravel Pit at Knocknamoe & Ballymullen, Abbeyleix, Co Laois

Title: Existing Site Sections (A-E)

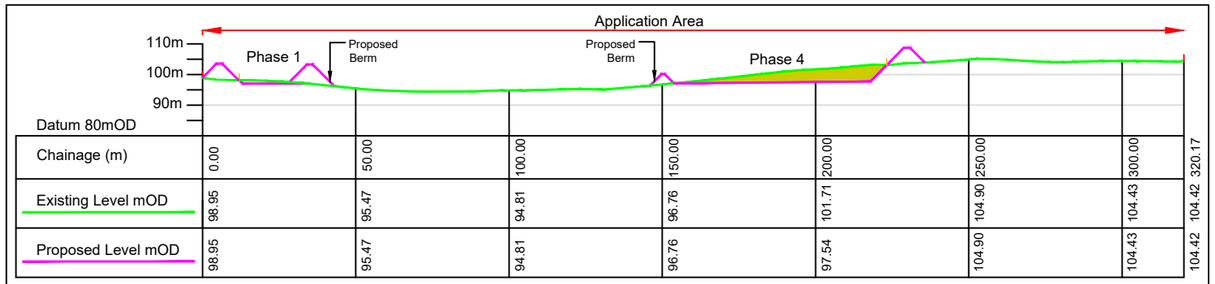
Drawn By: Sean O' Donnell

Checked By: Patrick O' Donnell

Scale: 1:2,000 @ A3 | Date: July 2022

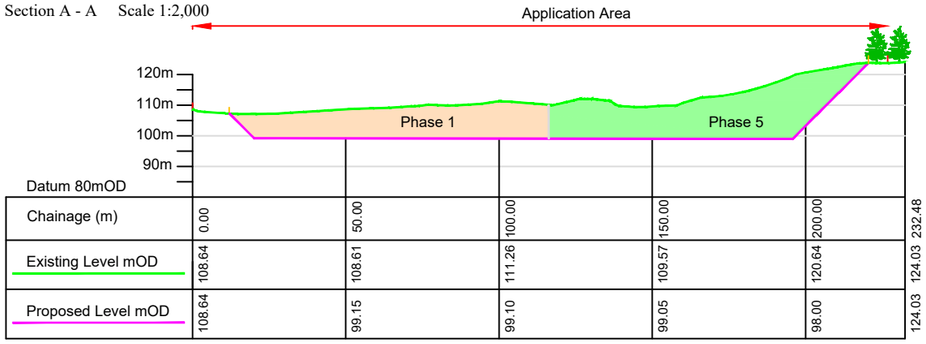
Job No: EI 185A | Rev: A

Figure 3.2



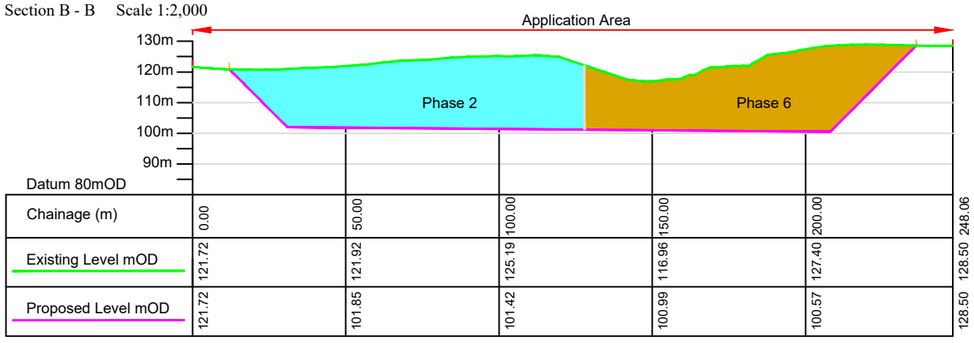
Chainage (m)	0.00	50.00	100.00	150.00	200.00	250.00	300.00	320.17
Existing Level mOD	98.95	95.47	94.81	96.76	101.71	104.90	104.43	104.42
Proposed Level mOD	98.95	95.47	94.81	96.76	97.54	104.90	104.43	104.42

Section A - A Scale 1:2,000



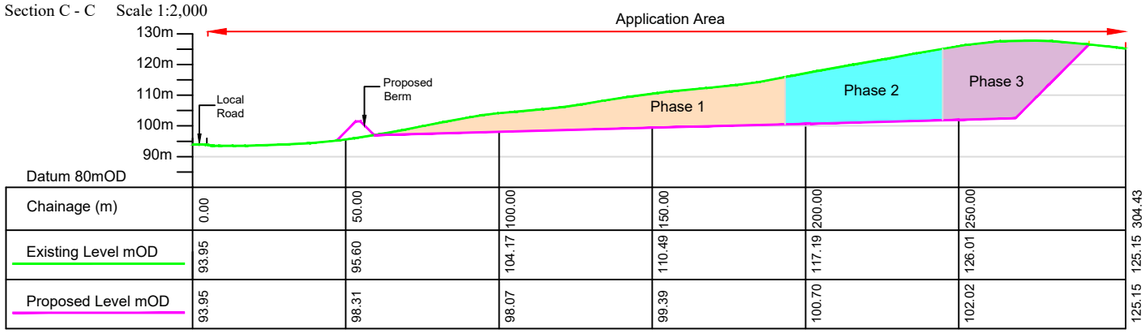
Chainage (m)	0.00	50.00	100.00	150.00	200.00	232.48
Existing Level mOD	108.64	108.61	111.26	109.57	120.64	124.03
Proposed Level mOD	108.64	99.15	99.10	99.05	98.00	124.03

Section B - B Scale 1:2,000



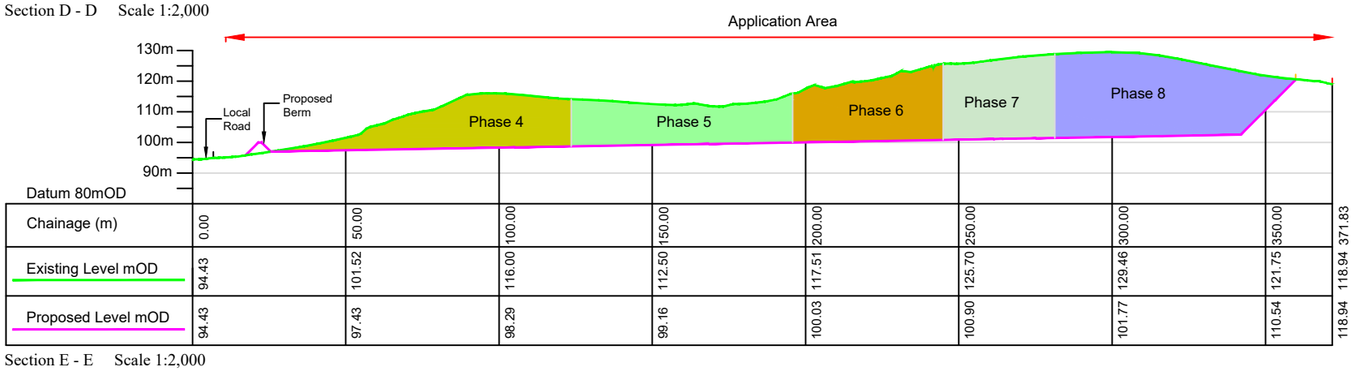
Chainage (m)	0.00	50.00	100.00	150.00	200.00	248.06
Existing Level mOD	121.72	121.92	125.19	116.96	127.40	128.50
Proposed Level mOD	121.72	101.85	101.42	100.99	100.57	128.50

Section C - C Scale 1:2,000



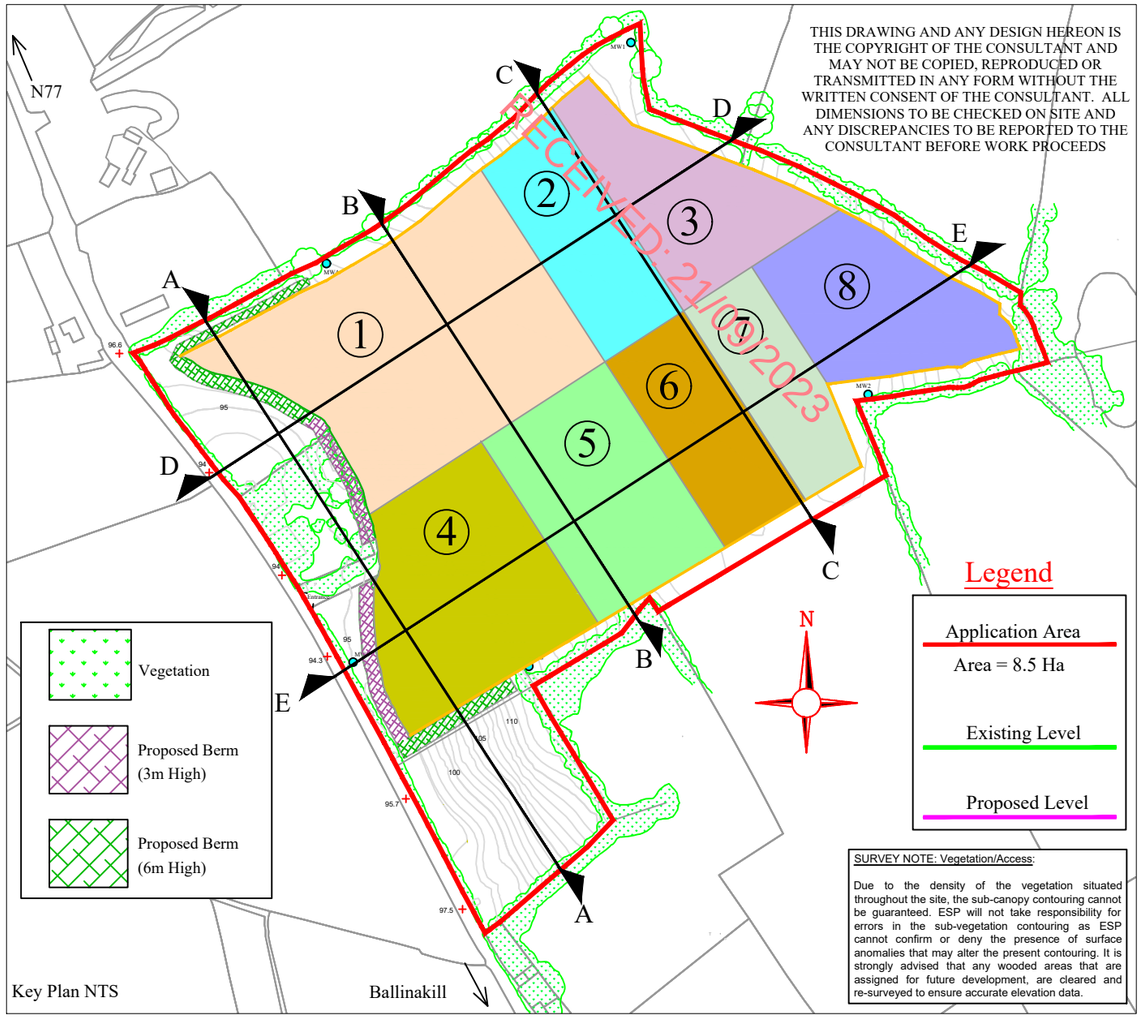
Chainage (m)	0.00	50.00	100.00	150.00	200.00	250.00	304.43
Existing Level mOD	93.95	95.60	104.17	110.49	117.19	126.01	125.15
Proposed Level mOD	93.95	98.31	98.07	99.39	100.70	102.02	125.15

Section D - D Scale 1:2,000



Chainage (m)	0.00	50.00	100.00	150.00	200.00	250.00	300.00	350.00	371.83
Existing Level mOD	94.43	101.52	116.00	112.50	117.51	125.70	129.46	121.75	118.94
Proposed Level mOD	94.43	97.43	98.29	99.16	100.03	100.90	101.77	110.54	118.94

Section E - E Scale 1:2,000



SURVEY NOTE: Vegetation/Access:

Due to the density of the vegetation situated throughout the site, the sub-canopy contouring cannot be guaranteed. ESP will not take responsibility for errors in the sub-vegetation contouring as ESP cannot confirm or deny the presence of surface anomalies that may alter the present contouring. It is strongly advised that any wooded areas that are assigned for future development, are cleared and re-surveyed to ensure accurate elevation data.

Extraction Phases				
Phase	Color	m3	Tonne	Months
1		82,396	164,792	11
2		99,687	199,374	12
3		99,443	198,886	12
4		54,074	108,148	6.4
5		158,400	316,800	19
6		96,953	193,906	12
7		96,952	193,904	12
8		99,405	198,810	12
		787,310	1,574,620	

Conversion used from m3 to tonne is 2.0
Estimated extraction rate of 200,000 tonnes per year

OSI Ref. No. 4233-B, 4175-D, 4176-C, 4234-A

ITM Coordinates E 644042, N 683951

All Levels Relative to Ordnance Datum

EARTH SCIENCE PARTNERSHIP
CONSULTING ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS
Tonranny Westport Co. Mayo
tel.:- +353(098) 28999 fax:- +353(098) 24727
e-mail: earthsciencepartnership@gmail.com

Client: Booth Precast Products Ltd.

Project: Environmental Impact Assessment Report to Accompany a Planning Application for a Sand & Gravel Pit at Knocknamoe & Ballymullen, Abbeyleix, Co Laois

Title: Operational Phasing Site Sections

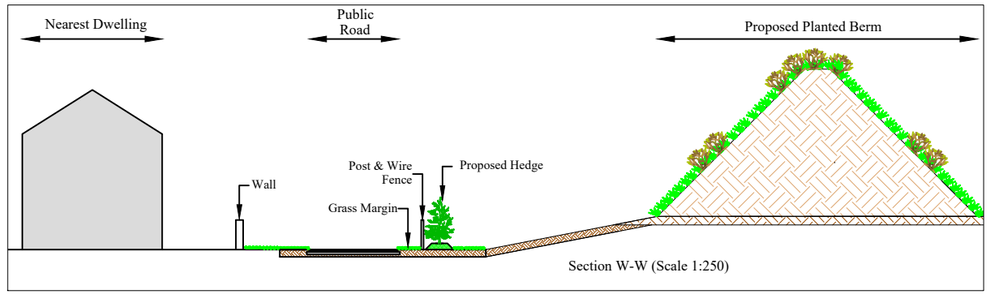
Drawn By: Sean O' Donnell

Checked By: Patrick O' Donnell

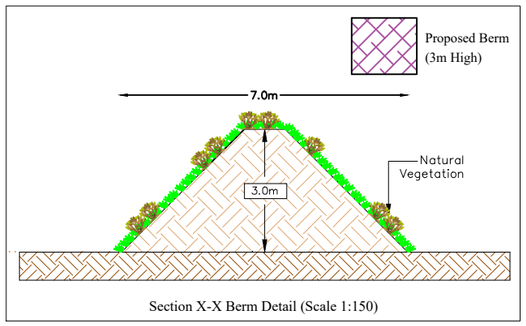
Scale: 1:2,000 @ A3 | Date: July 2022

Job No: EI 185A | Rev: A

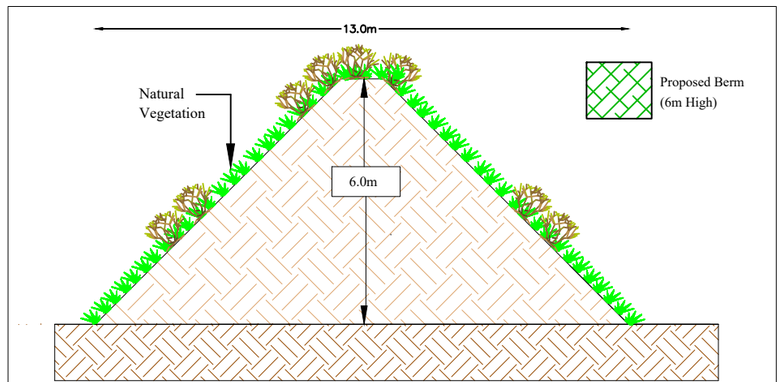
Figure 3.3



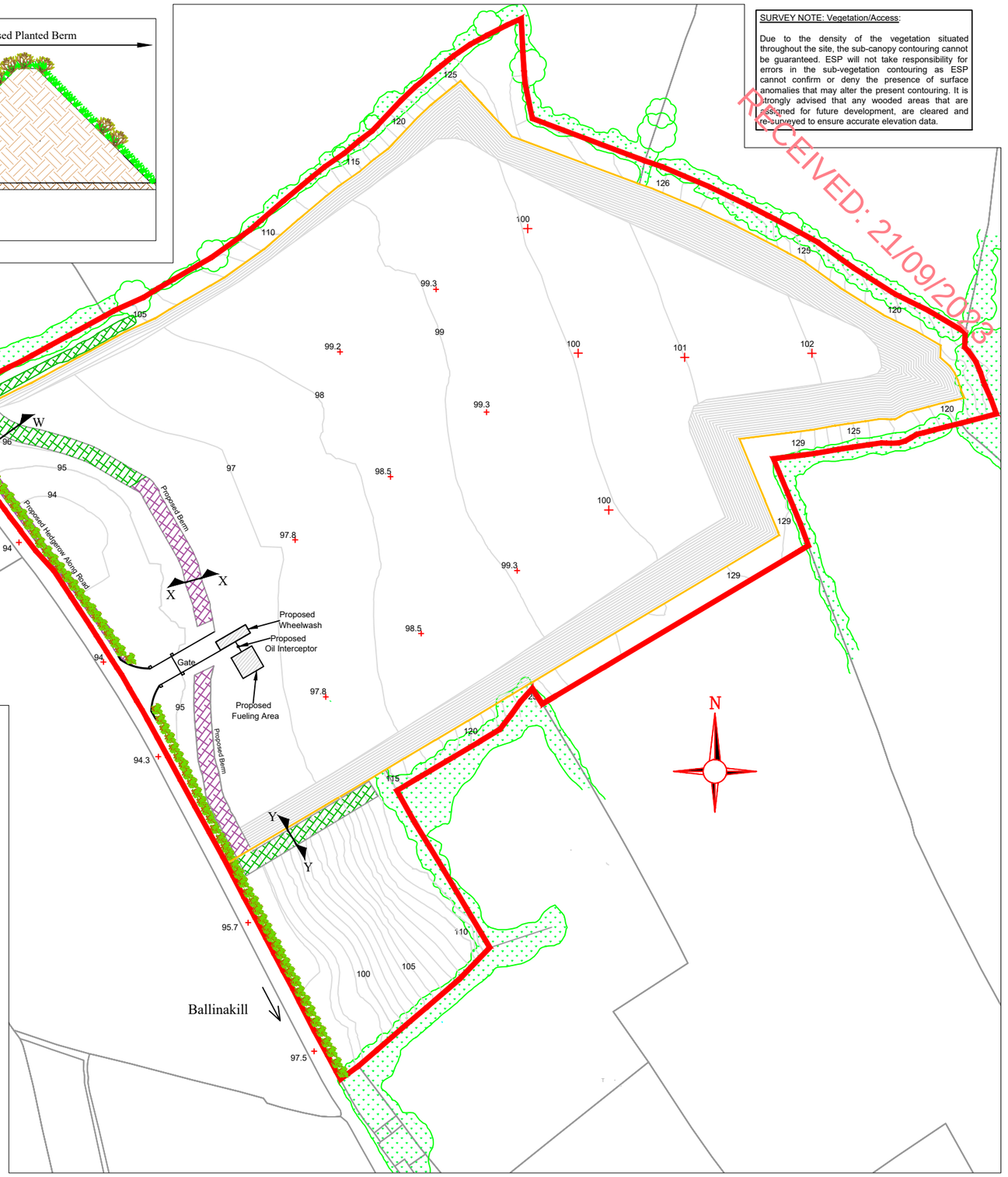
Section W-W (Scale 1:250)

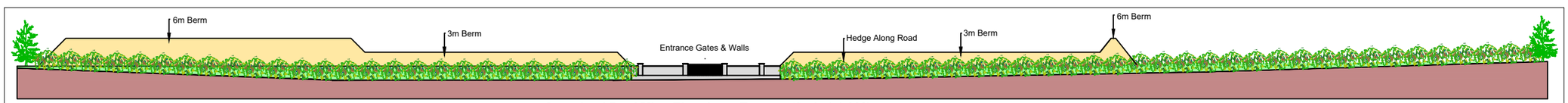


Section X-X Berm Detail (Scale 1:150)



Section Y-Y Berm Detail (Scale 1:150)





Operational Road View Elevation at Entrance (Scale 1:1,000)

SURVEY NOTE: Vegetation/Access:

Due to the density of the vegetation situated throughout the site, the sub-canopy contouring cannot be guaranteed. ESP will not take responsibility for errors in the sub-vegetation contouring as ESP cannot confirm or deny the presence of surface anomalies that may alter the present contouring. It is strongly advised that any wooded areas that are assigned for future development, are cleared and re-surveyed to ensure accurate elevation data.

Legend

Application Area

Area = 8.5 Ha

Extraction Area

Vegetation

Proposed Wheelwash & Fueling Area

Trees

94 Spot Levels

Hedgerow

OSI Ref. No. 4233-B, 4175-D, 4176-C, 4234-A

ITM Coordinates E 644042, N 683951

All Levels Relative to Ordnance Datum

EARTH SCIENCE PARTNERSHIP
CONSULTING ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS
Tonranny Westport Co. Mayo
tel.:- +353(098) 28999 fax:- +353(098) 24727
e-mail: earthsciencepartnership@gmail.com

Client: Booth Precast Products Ltd.

Project: Environmental Impact Assessment Report to Accompany a Planning Application for a Sand & Gravel Pit at Knocknamoe & Ballymullen, Abbeyleix, Co Laois

Title: Operational Site Layout, Elevation & Berm Detail

Drawn By: Sean O' Donnell

Checked By: Patrick O' Donnell

Scale: 1:2,000 @ A3	Date: July 2022
Job No: EI 185A	Rev: A

Figure 3.4

4.0 POPULATION & HUMAN HEALTH

4.1 Introduction

This Chapter assesses the existing environment in addition to the potential effects on population and human health arising from the proposed development.

Section 4.2 focuses on Population including potential direct and indirect effects of the development with regard to principal socio-economic indicators, including population, land use, employment, tourism and residential amenity.

Section 4.3 assesses the potential effects on human health associated with the proposed development. Other aspects of potential direct and indirect effects on human beings are also considered in the other Sections of this EIAR which include the following:

- Section 7.0 - Water
- Section 9.0 - Air
- Section 10.0 - Noise
- Section 11.0 - Traffic
- Section 12.0 – Landscape

4.2 Population

The assessment of impacts on 'population' entails the identification of key populations that are most likely to be impacted on by day to day activities that will be undertaken at the pit with regards to principal socio-economic indicators, including population, land use, employment, tourism and residential amenity.

4.2.1 Methodology

The assessment of impacts on human beings entails the identification of key populations that have the potential to be impacted on by the proposed development.

Key populations have been identified as persons residing and engaging in activities in close proximity to the pit, persons with a stake in the general economy of the local and regional area and persons enjoying the recreational and cultural amenities of the area. The principal sources of information are sourced from the Central Statistics Office (CSO). A number of other sources of information and guidance documents were referred to as part of the compilation of this section which are listed in Section 4.10 References.

It is noted that where possible, this report is based on the most recent data available from the Central Statistics Office. A summary report of the Census 2022 results was published May 30th 2023.A series of themed reports, Small Area Population Statistics (SAPS) and Place of Work, School, College - Census of Anonymised Records (POWSCAR) are yet to follow.

4.2.2 The Existing Environment

The application site is located in the townlands of Knocknamoe and Ballymullen which is located approximately 1km south of Abbeyleix town. The application site is located in the Electoral Division (ED) of Abbeyleix (Ref. No. 08001). The nearest urban centre is the town of Abbeyleix located to the north of the site which is located in the ED.

In describing the receiving environment in relation to human beings, this section provides an overview of the local area, including settlement patterns, age structure, population change, social indicators including employment, education, and social class, and economic activity.

4.2.2.1 Population & Age Profile

Based on the latest census data from 2022, 2,979 persons resided in the Abbeyleix ED on Census night in 2022 with the majority of the population living in one off houses and farmsteads throughout the ED. There was a slight increase in the population of the ED between 2016 and 2022 from 2780 to 2,979 which constitutes an increase of approximately 7%.

The 50-69 age group (26.4%) constitutes the highest proportion of people in the Abbeyleix ED which is higher than that of the County (21.9%) and the State (22.5%). The lowest proportion of the population is in the 18-29 age group (11.4%). Of note is the higher proportion of people in the 70-85+ age group for the ED (12.7%) when compared to the County (8.7%) and State (10.4%) and the lower proportion of people in the 30-49 age group for the ED (25.7%) when compared to the County (29.7%) and State (29.1%).

Table 4.1: Age Profile of the Study Area

Area	0-17	18-29	30-49	50-69	70-85+	Dependency Ratio
Abbeyleix	23.9%	11.4%	25.7%	26.4%	12.7%	
Laois	26.8%	12.8%	29.7%	21.9%	8.7%	34.3
Ireland	23.7%	14.3%	29.1%	22.5%	10.4%	30.1

4.2.2.2 Principal Economic status

In 2016, the ED had a labour participation rate of 49% which is lower than the County (52.5%) and State (53.4%). The lower rate is more than likely due to the higher rate of retired people in the ED (18.8%) than the County (12.6%) and State (14.5%).

Table 4.2: Labour Force by Principal Economic Status

Area	At work	Looking for first regular job	Unemployed	Student	Looking after home/ family	Retired	Unable to work	Other
Abbeyleix	49.0%	0.5%	6.8%	10.0%	8.8%	18.8%	5.7%	0.4%
Laois	52.5%	1.0%	8.5%	10.2%	9.4%	12.6%	4.6%	0.4%
Ireland	56.1%	0.83%	4.3%	11.1%	6.6%	15.9%	4.6%	0.7%

4.2.2.3 Socio- Economic Groups

The CSO establishes several principal socio-economic groups within the population. These are classified as follows:

A Employers and Managers
B Higher Professional
C Lower Professional
D Non-Manual
E Manual Skilled
F Semi-Skilled
G Unskilled
H Own Account Worker
I Farmers
J Agricultural Workers
Z All Others Gainfully Employed

Table 4.3 below indicates that the main socio economic group for the ED is 'Non-Manual' (18.2%) which is lower than the County (19.4%) and slightly higher that the State (18.0%). The second highest is 'Employers and Managers' (15.5%) higher than the County (13.1%) and similar to the State (15.5%).

Table 4.3: Percentage Distribution of Socio-Economic Groups

Area	A	B	C	D	E	F	G	H	I	J	Z
Abbeyleix	15.5%	6.5%	10.8%	18.2%	9.4%	8.3%	4.5%	6.4%	5.9%	1.3%	13.3%
Laois	13.1%	4.2%	10.7%	19.4%	10.8%	8.4%	3.8%	5.2%	6.9%	1.0%	16.5%
Ireland	15.5%	7.1%	11.7%	18.0%	9.3%	8.6%	3.6%	5.2%	4.9%	0.5%	15.6%

4.2.2.4 Employment Sources and Travel Patterns

The vast majority of people in the ED travelled by motorcar being either the principal driver (41.7%) or passenger (22.4%) which accounted for 64.1% which is slightly lower than the combined level for the County (64.9%) but higher than the state (57.9%). Even though the closest train station from Abbeyleix town is approximately 20 minutes by motor vehicle, 2% of the EDs population travel by train which is similar to the County (2.1%) and State (2.7%).

A. On foot
B. Bicycle
C. Bus, minibus or coach
D. Train, DART or LUAS
E. Motorcycle or scooter
F. Motor car: Driver
G. Motor car: Passenger
H. Van
I. Other
J. Not stated

Table 4.4: Population (5 Yrs +) by Means of Travel to Work, School or College

Area	A	B	C	D	E	F	G	H	I	J
Abbeyleix	9.5%	0.6%	10.5%	2.0%	0.2%	41.7%	22.4%	5.6%	0.6%	3.0%
Laois	9.4%	0.8%	7.9%	2.1%	0.1%	41.1%	23.8%	5.6%	0.6%	3.7%
Ireland	13.9%	2.7%	10.2%	2.7%	0.3%	39.3%	18.6%	4.2%	0.4%	3.1%

With regard to the journey time the highest percentage of people in the ED travelled under 15 mins to work, school or college constituting (40.6%). The increase in journey times generally results in a lower percentage of people for ED, County and the State.

Table 4.5: Population (5 Yrs+) by Journey Time to Work, School or College

Area	Under 15 mins	1/4 hour - under 1/2 hour	1/2 hour - under 3/4 hour	3/4 hour - under 1 hour	1 hour - under 1 1/2 hours	1 1/2 hours and over	Not stated
Abbeyleix	40.6%	26.2%	11.3%	4.5%	5.7%	5.7%	6.0%
Laois	36.1%	25.9%	12.8%	4.7%	7.7%	4.7%	8.1%
Ireland	32.3%	28.8%	17.3%	5.9%	6.0%	2.3%	7.4%

4.2.2.5 Land-Use & Housing

Table 4.6 contains information on the number of private households and the number of persons in these households. This table shows that the average household size for the ED, County and the State. The lowest average household size is the ED (2.60%) with the highest being Laois (2.90%). Plate 4.1 details habitable residences within the vicinity of the pit.

Table 4.6: Household Formation and Size 2022

Area	No. of Households	No. of Persons in Households	Avg. Household Size
Abbeyleix	1,144	2,979	2.60
Laois	31,232	90,499	2.90
Ireland	1,841,152	5,046,681	2.74

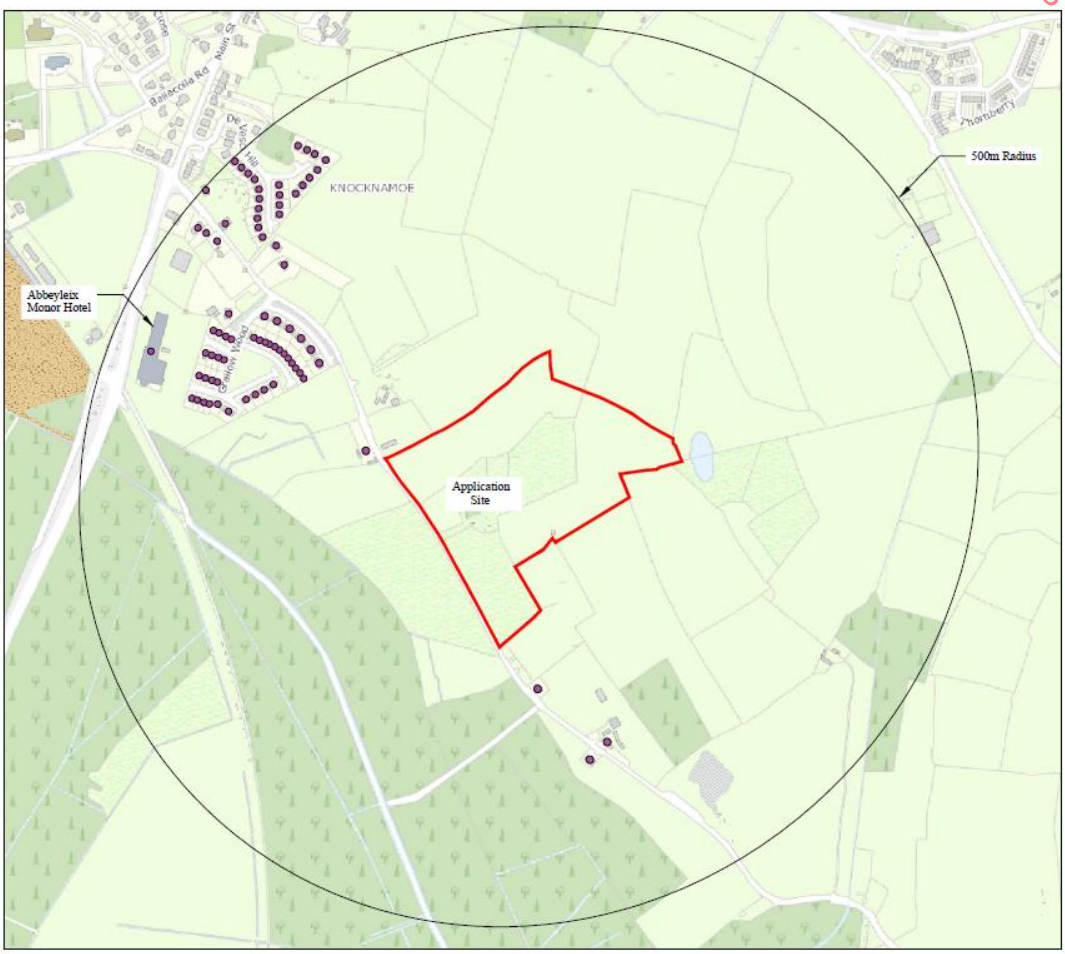


Plate 4.1: Dwelling Locations

The application site is located in the townlands of Knocknamoe and Ballymullen which is located approximately 1km south of Abbeyleix town. There are a number of one-off dwellings and farm house located along local roads in the vicinity which increases in density as you approach Abbeyleix town with a number of housing estates on the out skirts of Abbeyleix.

The main land use of the study area is agricultural with livestock grazing being the predominant sector practiced. To the west of the site is a peatland area referred to as Abbeyleix Bog. There is a number of existing sand and gravel pits in the area, the closest one is a small disused pit located approximately 500m to the southeast of the site. This is currently used as a Defence Forces and An Garda Síochána Firing Range. The existing Booth Precast Products Ltd sand and gravel pit and manufacturing area is located 1.3km to the south of the site.

The closest EPA licensed facility is located approximately 500m to the northwest of the application site. Stonearch previously manufactured Vitamin K3 for use as a supplement in animal feed until closure in the early 2000s. The facility is still licensed by the EPA (P0332).

4.2.2.6 Tourism, Recreation & Amenity

Tourism is regarded as one of the greatest sources of potential employment nationally and also has potential to benefit the community in an environmentally sustainable way. The following is a summary of key statistics from a Fáilte Ireland research report *Tourism Facts 2018:*

- Ireland welcomed 9.5 million overseas tourists in 2018 which is a 6% rise on 2017. This is equivalent to almost two tourists for every resident.
- Total overseas tourism accounted for €5.2 billion in revenue for Ireland in 2018; a 6% increase on 2017.

4.2.2.6.1 Local Tourism Amenities

There are a number of tourist attractions located in the Abbeyleix area which include the following:

Bog Loop Walks

The Collins Bog and Killamuck Bog Loops are two waymarked looped walks. The loops take walkers through woodland and forestry paths. At 4.5 km, the Collin's Bog is the shorter of the 2 looped walk options.

Abbeyleix Golf Club

The 18 hole course at Abbeyleix designed by the well known Golf Architect Mel Flanigan is fast developing a reputation as one of the best courses in the midlands. The 18 hole layout consists of rolling terrain which contains mature trees with many scenic views.

Heritage House Abbeyleix

The heritage House opened in 1997 with a museum dedicated to the local history and culture from Abbeyleix and County Laois. The Heritage House displays information in relation on Abbeyleix and the surrounding area including history of the town. There is also a carpet exhibition room where you can find out how handmade carpets manufactured in Abbeyleix formed part of the furnishings of the Titanic.

Heywood Gardens

The attraction consists of an eighteenth-century gardens, lakes, woodland and architectural features. It was transferred to State ownership in November 1993 from the Salesian Fathers who had taken care of it since 1941. The formal Gardens form the centre-piece of the property and were designed by the famous architect, Sir Edwin Lutyens (1869-1944) and probably landscaped by Gertrude Jekyll (1843-1932). It is one of four Gardens in this country designed by him, the others being in the War Memorial Park, Lambay Island and Howth Castle. The Gardens are composed of four elements linked by a terrace that ran along the front of the house which now no longer exists.

Abbeyleix Bog

The Abbeyleix Bog Project (ABP) conserves and protects the bog which was once threatened with harvesting for peat moss. Abbeyleix Bog is located to the south of Abbeyleix and includes an area of approximately 150 hectares of diverse habitats including degraded (but recovering) raised bog, lagg, cutaway, wet carr woodland, and meadows.

A lease was signed in 2010 with Bord Na Móna to hand over the bog to the local community to manage for a period of 50 years with a primary focus on conservation. The bog is managed by a local voluntary organisation known as the Abbeyleix Bog Project Ltd.

A Boardwalk was constructed to facilitate access to the 'High Bog' and was officially opened in August 2014. The boardwalk allows a safe route through part of the bog and view the area from a stable platform, protecting the bog and the visitors in one action.

4.2.2.7 Social Infrastructure

The nearest primary schools are Abbeyleix South National School, Cloch An Tsionnaigh National School and Scoil Mhuire which are located in Abbeyleix Town. The closest Post primary school is Heywood Community School located in Ballinakill.

Community facilities for the area include churches (Roman Catholic and Protestant Church of Ireland), post office, public houses and guesthouses. Emergency services include a Garda Station and Fire Station located in the town. The closest hospital is the Midlands Regional Hospital in Portlaoise located approximately 15km to the north.

4.2.2.8 Site Safety

There may be some concerns in relation to safety of people and agricultural stock as a result of the side slopes created as a result of extraction of material. There is also a potential danger to members of the public who may gain access to the site. Security fencing and stock proof post and wire fencing will be erected around the perimeter of the application site to prevent unauthorised access. Warning signs will also be erected around the boundaries of the site.

The proposed extraction area has been designed to include a 12m wide buffer zone between the edge of the extraction works and the hedgerows along the northern, eastern and southern boundaries of the site.

4.2.2.9 Traffic

The maximum anticipated traffic from the proposed development is 29 loads/day with all loads going directly to the Booth Precast Products Manufacturing Facility located 1.3km to the south of the application site. At present a large percentage of the raw material being processed at the existing plant is hauled from sources outside the area and transported through the towns of Abbeyleix and Ballinakill. The proposal will result in raw material being sourced closer to the manufacturing facility thereby reducing HGV traffic on the roads through Abbeyleix, Ballinakill and the upper section of the L-5731-25 local road between the application site and the junction of the of the N83.

4.3 Human Health

A human health risk assessment is the process to estimate the nature and probability of adverse health effects on humans as a result of a development. The assessment has had regard to the findings of other chapters of this EIA Report, in particular to:

- Section 4.2 Population
- Section 7.0 Water
- Section 9.0 Air
- Section 10.0 Noise
- Section 11.0 Traffic
- Section 12.0 Landscape

This assessment is focused on potential human health effects associated with potential emissions related to day-to-day activities that will be undertaken at the pit.

4.3.1 Health Based Standards

Health based standards by their nature are set to protect against human health effects. The Irish EPA Guidance favours the Health Based Standards approach. In its publication: EPA Revised Guidelines on the Information to be contained in Environmental Impact Assessment Reports (May 2022) it states:

> *'The evaluation of effects on these pathways is carried out by reference to accepted standards (usually international) of safety in dose, exposure or risk. These standards are in turn based upon medical and scientific investigation of the direct effects on health of the individual substance, effect or risk. This practice of reliance upon limits, doses and thresholds for environmental pathways, such as air, water or soil, provides robust and reliable health protectors [protection criteria] for analysis relating to the environment.'*

Baseline information gathered to date and predictions of future emissions in relation to air, noise, vibration, water etc. associated with the day-to-day operations of the existing and proposed development have been used as part of the assessment. These can be compared to various

thresholds relevant to each element. No detrimental health effects are expected below these thresholds.

4.3.2 Emission Thresholds

Emissions to air including dust, noise and vibration emissions, emissions to water and traffic associated with the development are identified as the main areas which could impact on human health. The concept of dose response suggests that the greater the dose to which an individual is exposed the greater either the likelihood of a health response and/or the greater the severity of that response. Inbuilt to this concept is the principle of a threshold. The threshold is the level of an agent below which one would expect no adverse response. This is a concept on which many health based standards are based.

In relation to the extractive industry, thresholds are set in relation to emissions to various elements of the environment such as emissions to air, dust deposition, noise associated with day-to-day operations, vibration emissions from blasting and discharge of water to surface water or ground water. These are set by way of standards and recommended guideline values which are attached as conditions to a grant of a planning permission or by way of an air emissions licence or discharge licence. In order to ensure compliance routine monitoring of the emissions is undertaken.

Emission levels which are below the threshold are taken to have no significant health effects. If however the levels increase above the threshold it is anticipated that an increasing number of people will be affected and the severity of that effect increases with increase in level.

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 ELVs 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 hrs LAeq (1 h) = 55 dBA
Night-time: 20:00–08:00 hrs LAeq (1 h) = 45 dBA

There are currently no Irish statutory standards or EPA guidelines relating specifically to dust deposition thresholds for inert mineral dust. There are a number of methods to measure dust deposition but only the German TA Luft Air Quality Standards (TA Luft, 1986) specify a method of measuring dust deposition – The Bergerhoff Method (German Standard VDI 2119, 1972) – with dust nuisance. It is the only enforceable method available. Where this method is deemed unsuitable for use, and only in these circumstances, an alternative method may be agreed with the Local Authority. On this basis, it is recommended that the following TA Luft dust deposition limit value be adopted at site boundaries associated with quarry developments – total dust deposition (soluble and insoluble): 350 mg/m^2/day (when averaged over a 30-day period).

4.4 Development Description

The application site consists of a greenfield area of 8.5 hectares comprising of several grazing fields with some woodland and scrub in the central area. The applicant proposes to remove the existing woodland, vegetation and overburden and extract the underlying sand and gravel material in line with an eight-phase extraction plan.

It is proposed to construct a berm along the western boundary using overburden and sand and gravel material removed from Phase 1. As extraction proceeds into various phases, overburden removed from the working phase will be used to restore the previous phase where material has been extracted. This will be undertaken on a rolling basis to minimise the uncovered area of the site.

All extracted sand and gravel material from the application site will be transported to the applicants manufacturing facility located approximately 1.3km to the south of the application site.

The proposed development will require the erection of minor infrastructure to include a wheel wash and refuelling area. These facilities will be located close to the entrance to the site. Plant and machinery which will operate at the application site will consist of excavators, road trucks and a water bowser.

The pit will operate between the hours of 0700 hours and 2000 hours Monday to Friday and 0800 to 1800 hours on Saturday and will not operate on Sundays or Public Holidays. The maximum rate of extraction will be in the region of 200,000 tonnes/annum; however, this will depend on the demand for material. Therefore, the applicant is seeking a 10 year permission in order to extract the available material taking into account years when the maximum extraction rate will not be achieved. The application site will be landscaped and restored in line with the proposed landscape and restoration plan.

4.5 Impact Assessment

The significance criteria used in the assessment as adapted from the Irish EPA Guidelines, are set out in Table 4.7.

Table 4.7: Criteria Used in the Assessment of Human Health Effects

Effect Level	Significance Criteria
Imperceptible	No significant human health impacts are apparent. An example is no measurable effect attributable to the proposed development.
Slight	A small impact on individual reported symptoms but no change in health status can be attributed to the proposed development. An example is a temporary increase in symptoms in an individual but no change in the severity of the underlying condition or treatment required.
Moderate	A small impact on health status of individuals but no change in morbidity or mortality can be attributed to the proposed development. An example is an individual increasing their use of a treatment attributable to the development but no change in underlying condition.

Significant	A proposed development has the potential to impact on individual health status. An example is an individual's condition becoming measurably more severe as a result of the proposed development.
Very Significant	A proposed development has the potential to impact on the health status of groups. An example is a group of individuals' conditions becoming measurably more severe as a result of the proposed development.
Profound	A proposed development has the potential to impact on the health status of communities. An example is a measurable increase in the incidence or severity of a condition in a community.

4.5.1 Population Impact Assessment

4.5.1.1 Population

The application site is located in an area which consists of one-off dwellings and farm houses situated along local roads in the vicinity of the pit with the density of housing increasing as you approach Abbeyleix Town. The closest house to the proposed development site is located approximately 50m to the northwest of the site. Plate 4.1 details dwellings located within a 500m radius of the application site.

The proposal will result in raw material being sourced closer to the manufacturing facility thereby reducing HGV traffic on the roads through Abbeyleix, Ballinakill and the upper section of the L-5731-25 local road between the application site and the junction of the of the N83.

Assessments carried out in relation to noise and air concluded that emissions from the proposed development will be within recommended guideline values. Noise, air and water monitoring will be undertaken to ensure emission levels are within recommended guideline values. Water, air and noise emissions are discussed in more detail in Sections 7.0, 9.0 and 10.0 respectively.

4.5.1.2 Economic Activity

The applicant is a significant employer in the area and the proposed development will sustain employment which will be a positive effect. It will also supply construction materials to the local and regional market.

4.5.1.3 Land-Use & Housing

The proposed development will result in a change of land use from agricultural to extraction for a 10 year duration. The site will be restored to agricultural land on completion of extraction which is the existing land-use. The majority of land in the proximity of the application site is used for agricultural purposes with livestock grazing being the predominant activity practiced; therefore, the proposed development will not result in a significant loss of agricultural land. The land soils and geology chapter of the EIAR assesses the development to result in a negative, reversible, significant, direct, likely, long term effect on land and landuse.

The landscape and restoration plan which includes planting of a large number of trees in time will establish and develop into mature woodland to replace those trees removed to facilitate the extraction of material. With good planting stock and proper aftercare, along with improved hedgerow management of the surrounding hedges, these post-quarrying landscape works could see the arboricultural value of the site being improved in the long-term.

4.5.1.4 Tourism, Recreation & Amenity

The application area is not located on or in the near vicinity of a Natura 2000 site or near any protected structure. The closest tourist amenity is Abbeyleix Bog which is located to the west of the site and assessments in relation to biodiversity, water, air and noise have proposed mitigation measures which will safeguard Abbeyleix Bog. Please refer to Chapter 5.0 Biodiversity and Chapter 7.0 Water for details on the impact assessment undertaken.

4.5.1.5 Social Infrastructure

It is unlikely that the proposed development will impact on the social infrastructure of the area and may have a positive impact as materials extracted from the pit will be used to develop social infrastructure in the study area.

4.5.1.6 Site Safety

Security fencing, stock proof fencing, screening and other landscaping around the perimeter will secure the site from unauthorised access. Extraction will be in line with "Safe Quarry - Guidelines to the Safety, Health and Welfare at Work (Pit) Regulations 2008". The potential for impact is assessed as not likely.

4.5.1.7 Traffic

The anticipated maximum level of traffic from the application site will be 29 No. vehicles per day, which will be made up of artic and rigid truck. Currently sand and gravel material required at the Booth Precast Products Manufacturing Facility is sourced from third party quarries and pits not under the ownership of the applicant.

Should the proposed development be granted planning permission it will reduce HGV traffic travelling through Ballinakill and Abbeyleix towns and on the lower Ballymullen Road (L-5731-25) between the pit and Abbeyleix town as material will be sourced closer to the manufacturing facility. Please refer to Chapter 11.0 Traffic for details in the traffic impact assessment undertaken.

4.5.2 **Human Health**

The key elements of the proposed development which have the potential to impact on Human Health are detailed below. Each element has been assessed in relation to thresholds specified for emissions related to each element such as dust deposition, noise, vibration etc.

The various elements have been assessed under other sections of the EIAR, for example air has been assessed under Section 9.0 (Air) and noise assessed under Section 10.0. It can be assumed that provided the predicted changes do not result in exceedances of the threshold for each element that there will be no significant risk or impact.

4.5.2.1 Assessment of Impacts Associated with Emissions to Water

Due to the porosity of the underlying material, all water falling as rainwater on the site will percolate to ground. There will be no discharge of water off site to an adjoining watercourse.

Assessment of Effect

Potential health effects arise mainly through the potential for groundwater contamination and impacts on local wells. Hydrocarbons, in the form of fuels and oils, will be used on-site during aggregate extraction.

Groundwater protection measures included in Chapter 7.0 Water which include adopting best practice controls to ensure any potential sources of contamination on the site will be managed appropriately and the volumes present will be small in the context of the scale of the project. The potential residual impacts associated with groundwater contamination and subsequent health effects are not likely.

4.5.2.2 Assessment of Impacts Associated with Noise

As detailed in Section 10.0 of the EIAR the noise levels associated with the proposed development at the nearest receptors surrounding the site will be below recommended guideline values during operation of the development. The construction of the proposed screening berm will result in a temporary increase in noise; however, it will be below recommended guidelines for construction related activities.

Assessment of Effect

The human health effect for receptors in the near vicinity arising from noise are assessed as being negative not significant medium-term impact.

4.5.2.3 Assessment of Impacts Associated with Emissions to Air

The main potential sources of emissions to air in relation to the development will be associated with plant and machinery undertaking day to day activities such as extraction and transportation of material and dust blow generated during dry windy conditions.

Assessment of Effect

The dispersion modelling results show that predicted levels of particulate matter (PM_{10} and $PM_{2.5}$) will be significantly below the EU ambient air quality limit values which are based on the protection of human health. Dust deposition levels are anticipated to be significantly lower that the TA Luft Limit Value of 350 mg/(m2*day). Levels of dust deposition, PM_{10} and $PM_{2.5}$ are significantly below the respective limit values. Thus, the impact on air quality and climate as a result of the proposed development is considered as long term, negative and slight and thus no residual impact is anticipated.

4.5.2.4 Assessment of Impacts Associated with Traffic

The proposed development will result in a reduction in the traffic levels associated with the manufacturing facility as material will be sourced closer to the facility. Material is currently sourced from locations at a greater distance from the site. This will have a positive impact in terms of traffic.

4.5.2.5 Unplanned Events

Should an unplanned event occur, emergency response plans and procedures in place will be implemented. Unplanned events are discussed further in various sections of the EIAR.

4.5.2.6 'Do Nothing' Scenario

If the applicant considered not applying for planning permission the application site would remain as greenfield site and the applicant would continue to source material from third party quarries and pits. There would be no significant change in the existing baseline environment and the future baseline environment.

4.6 Mitigation Measures

Mitigation measures for Air, Noise, Water, Landscape and Material Assets included in the representative sections of the EIAR will ensure that the proposed development's effect on the receiving environment is minimised.

4.7 Residual Effects

The findings of the assessment is that the proposed development will give rise to a slight, medium term effect on population and human health.

4.8 Monitoring

Environmental monitoring will be carried out in accordance with the requirements of the conditions attached to the grant of planning permission.

4.9 Technical Difficulties

No technical difficulties were encountered.

4.10 References

Laois County Development Plan, 2021-2027

Central Statistics Office, (2022) – Results of the 2022 Census - www.cso.ie

Central Statistics Office, (2016) – Results of the 2016 Census - www.cso.ie

Fáilte Ireland - Travel Profiles a Snapshot of Key Markets

Fáilte Ireland - http://www.failteireland.ie/Research-Insights/Current-Tourism-Performance.aspx

United States Environmental Protection Agency - Conducting a Human Health Risk Assessment - https://www.epa.gov/

5.0 BIODIVERSITY

5.1 Introduction

This chapter examines the potential likely significant effects of the proposed sand and gravel pit at Ballymullen, Abbeyleix, Co. Laois on the baseline condition and ecology of the receiving environment. Where likely significant effects are identified, appropriate mitigation measures to reduce / avoid these effects are outlined.

A standalone Natura Impact Statement (NIS) has also been produced, which evaluates the potential for significant effects on the Natura 2000 sites within a defined zone of influence of the proposed development.

5.1.1 Statement of Competency

Roger Goodwillie B.A. (Hons.), M.Sc.
Roger Goodwillie has been in ecological practice for 40 years, working first with An Foras Forbartha (The Planning Institute) and then as a consultant with projects for NPWS and other agencies as well as private developers and companies. He qualified in botany and is County Recorder for Kilkenny for the Botanical Society of Britain and Ireland. He is a full member of the Chartered Institute for Ecology and Environmental Management (CIEEM).

Sarah Ingham MSc BSc (Hons.)
Sarah Ingham has worked as an Ecologist and Project Manager for several environmental consultancies since 2009 and has prepared about 100 Appropriate Assessment Screening Reports, Natura Impact Statements and Ecological Impact Assessments. She is primarily a bird expert with robust professional experience in surveying and studying bird ecology; she has also been the on-site Ecological Clerk of Works at several wind farms under construction. She is an Associate member of the CIEEM.

5.2 Materials and Methods

5.2.1 Desktop Review

A desktop review was carried out to identify features of ecological importance on the site and in its immediate surroundings.

Sites designated for nature conservation were also reviewed by examining the most recent updates of GIS shapefiles downloaded from the NPWS website and exploring these within QGIS 2.18.15. These included European sites i.e. Special Areas of Conservation and Special Protection Areas, as well as nationally designated Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs) within a 15km radius of the proposed development, as per published guidance on the Department of the Environment and Local Government (2009).

A review of the published literature was undertaken in order to collate data on the receiving environment, including species and habitats of conservation importance in the study area. Publicly available documents from the following agencies and bodies were accessed as part of the desktop review:

- Environmental Protection Agency (EPA);
- Laois County Council (LCC);
- Inland Fisheries Ireland (IFI);
- Inland Waterways Association of Ireland (IWAI);
- National Parks and Wildlife Service (NPWS);
- Water Framework Directive (WFD);
- Botanical Society of Britain & Ireland (BSBI)
- National Biodiversity Data Centre (NBDC);
- Bird Watch Ireland (BWI);
- Bat Conservation Ireland (BCI).
- Abbeyleix Bog Project

5.2.2 Site Survey

The application site has been visited over the course of four years, in summer 2019 (13th June), autumn 2020 (20thOctober), 2021 (15th February) and 2022 (30th June) when the site itself and the surrounding area was examined as recommended by Best Practice guidance. These visits were augmented by a specialised study of badger and bat species carried out in July 2022. Ecological receptors and justification for their respective survey areas are presented in Table 5.1.

The weather on survey days was optimum with overcast skies allowing for fair visibility, no precipitation, a light breeze and an ambient temperature of 10/20 º C.

Table 5.1: Study area in relation to ecological receptors.

Ecological Receptor	Geographical Boundary of the Study Area	Justification for the Study Area Extents
Habitats	The proposed application area.	Professional judgement and as per Best Practice (CIEEM, 2016).
Designated Sites including European Sites, NHAs, pNHAs.	Appraised in the Appropriate Assessment reporting document.	A zone of influence of 15km was taken.
Birds	The proposed application area.	Professional judgement and as per Best Practice (CIEEM, 2016).
Ground Mammals	The proposed application area. Followed up by field survey (2022).	Badgers, as per Best Practice guidelines published by the NRA (2005). Other mammal species, professional judgement and as per Best Practice (CIEEM, 2016)
Bats	Desk study of hectads S48 within which	Professional judgement and as per: "*Bat Surveys for Professional Ecologists:*

Ecological Receptor	Geographical Boundary of the Study Area	Justification for the Study Area Extents
	proposed application area is located. Followed up by field survey (2022).	*Good Practice Guidelines,* Collins, (2016)"
Amphibians & Reptiles	The proposed application area only.	Professional judgement and as per Best Practice (CIEEM, 2016).
Invertebrates	The proposed application area only.	Professional judgement and as per Best Practice (CIEEM, 2016).

5.2.3 Habitat and flora

A Phase I habitat survey was undertaken to describe the ecology and allow for evaluation of importance in accordance with methods outlined in the Heritage Council publication, "Guidance for Habitat Survey and Mapping" (Smith et al., 2011). Habitats were recorded using the habitat classification scheme published by the Heritage Council in A Guide to Habitats in Ireland (Fossitt, 2000) and evaluated using the geographical frame of reference scheme as per "Guidelines for Assessment of Ecological Impacts of National Road Schemes" (NRA, 2009; please see Table 6-2 below for an outline of this evaluation scheme).

The flora of the habitats is described with nomenclature as in Stace (2019).

5.2.4 Fauna Survey and Evaluation

5.2.4.1 Birds

A list of birds, both seen and heard in the study area, was made on all days.

5.2.4.2 Mammals including Bats

The area of broad-leaved woodland and scrub in the centre of the application site contains suitable foraging and breeding habitat for badgers Meles meles. As such, all suitable habitat was assessed during the walkover surveys for evidence of badger activity – setts (active or disused), latrines, snuffle-holes and tracks. A dedicated survey was carried out in July 2022.

There were no buildings which could potentially act as bat roosts within 150m of the application area boundary. However, its use for feeding and possible tree roosting was assessed in July 2022.

The closest watercourse to the application site is the Ballymullen Stream (1st order) which flows in a northerly direction at the edge of Abbeyleix Bog, approximately 250m to the west of the site. Given the distance between the site and the Ballymullen stream and that there is also a minor road (L5731) running between the two locations, an otter (Lutra lutra) survey was not warranted.

Records of tracks or signs of other mammals such as red fox Vulpes vulpes, pine marten Martes martes, Irish hare Lepus timidus, European rabbit Oryctolagus cuniculus, red squirrel Sciurus vulgaris, bank vole Clethrionomys glareolus and wood mouse Apodemus sylvaticus were also noted if encountered.

In addition to field records, a desktop review of all mammal and bat species records within hectad S48 (NBDC, 2019) in which the application area is located was undertaken.

5.2.4.3 Amphibians and Reptiles

Any sightings and suitable habitat of amphibians and reptiles were noted during the site ecology walkover survey.

5.2.4.4 Invertebrates

A survey of suitable habitat of invertebrate species was undertaken during the site ecology walkover survey. Butterflies and bumble bee species were noted.

5.2.4.5 Water Quality

A hydrology report to accompany this application was prepared by Hydro-Environmental Services (HES) (see Chapter 7.0 Water).

5.2.5 Criteria for Evaluating Likely Significant Effects

The significance of a likely effect is a combined function of the value of the affected feature (its ecological importance), the type of effect and the magnitude of the effect. It is necessary to identify the value of ecological features within the study area in order to evaluate the significance and magnitude of possible effects.

Each habitat type within the study area has been evaluated and given an overall significance rating on the basis of the criteria outlined in the National Roads Authority (2009) Guidelines for the Ecological Assessment of Road Schemes. This system, presented in Table 5-2 in Section 5.2.6.1 below, outlines criteria for evaluating the significance of effects on designated sites at various geographical scales.

5.2.5.1 Geographical Context for Determining Ecological Value

Ecological features are evaluated on the following geographical frame of reference when determining value:

- International importance

- National importance
- County importance (or vice-county in the case of plant or insect species)
- Local importance (higher value)
- Local importance (lower value)

The local scale is approximately equivalent to one 10km square but can be operationally defined to reflect the character of the area of interest. This system is presented in Table 5.2 below and is taken from the NRA publication "*Guidelines for the Assessment of the Ecological Impacts of National Road Schemes*" (NRA, 2009).

Table 5.2: Criteria used to determine the ecological value of the site (adapted from NRA, 2009).

Ecological Valuation	Criteria
International Importance	• 'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation. • Site that fulfills the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended). • Features essential to maintaining the coherence of the Natura 2000 Network. • Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive. • Resident or regularly occurring populations (assessed to be important at the national level) of the following: o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or o Species of animal and plants listed in Annex II and/or IV of the Habitats Directive. • Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971). • World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972). • Biosphere Reserve (UNESCO Man and the Biosphere Programme). • Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979). • Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979). • Biogenetic Reserve under the Council of Europe. • European Diploma Site under the Council of Europe.

Ecological Valuation	Criteria
	Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).

National Importance	• Site designated or proposed as a Natural Heritage Area (NHA).
	• Statutory Nature Reserve.
	• Refuge for Fauna and Flora protected under the Wildlife Acts.
	• National Park.
	• Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park.
	• Resident or regularly occurring populations (assessed to be important at the national level) of the following:
	  ○ Species protected under the Wildlife Acts; and/or
	  ○ Species listed on the relevant Red Data list.
	
	Site containing 'viable areas' of the habitat types listed in Annex I of the Habitats Directive.

County Importance	• Area of Special Amenity.
	• Area subject to a Tree Preservation Order.
	• Area of High Amenity, or equivalent, designated under the County Development Plan.
	• Resident or regularly occurring populations (assessed to be important at the County level) of the following:
	  ○ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
	  ○ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
	  ○ Species protected under the Wildlife Acts; and/or
	  ○ Species listed on the relevant Red Data list.
	
	• Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.
	• County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or Local BAP, if this has been prepared.
	• Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.
	• Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.

Ecological Valuation	Criteria
Local Importance (Higher Value)	• Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared; • Resident or regularly occurring populations (assessed to be important at the Local level) of the following: o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; o Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; o Species protected under the Wildlife Acts; and/or o Species listed on the relevant Red Data list. • Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality; • Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential.
Local Importance (Lower Value)	• Sites containing small areas of semi-natural habitat that are of some local importance for wildlife; • Sites or features containing non-native species that are of some importance in maintaining habitat links.

5.2.5.2 Impact Assessment

The process of impact assessment examines the impacts and their effects, incorporating mitigation measures and determining the significance of residual effects. The CIEEM Guidelines for environmental impact assessment in Britain and Ireland (2019) which are followed here lists ecological aspects to be considered. These are listed below.

- Available resources – e.g. animal territory, food, soil nutrients, water movement
- Environmental processes – geomorphology and weather
- Ecological processes and relationships – vegetation and population dynamics, food webs including recycling
- Human influences – farming management, disturbance, air quality
- Ecosystem properties – productivity, trophic status, fragility, fragmentation, connectivity

Impacts on any of these factors are assessed as to their extent and magnitude, duration, frequency and timing and reversibility and whether they are positive or negative. Their significance after mitigation may be expressed as follows.

Table 5.3: Significance of Effects (adapted from EPA, 2017)

Significance of Effect	Description
Imperceptible	An effect capable of measurement but without noticeable changes in the character of the environment.
Not Significant	An effect which causes noticeable changes in the character of the environment but without noticeable consequences.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging trends.
Significant	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters the majority of a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics.

5.3 Receiving Environment

5.3.1 Designated Sites

5.3.1.1 Natura 2000 Sites

There are four EU designated sites (3 Special Areas of Conservation – SACs and 1 Special Protected Area – SPA) located within 15km of the application area.

Table 5.4: Natura 2000 sites located within a 15km radius of the application area at Ballymullen

Natura 2000 Site	Distance and direction from the application area
River Barrow and River Nore SAC (Site Code: 002162)	2.2km to the west
River Nore SPA (Site Code: 004233)	2.3km to the west
Lisbigney Bog SAC (Site Code: 000869)	4.4km to the south
Knockacoller Bog SAC	14.5km to northwest

There are no surface hydrological connections between the application area and any Natura 2000 site though it could have a groundwater connection to the River Barrow & River Nore SAC and the River Nore SPA.

A Natura Impact Statement report, which evaluates the likely significant effects of the project on the above listed European sites, is included as part of the planning application.

Evaluation: EU designated sites are of International Importance.

5.3.1.2 Nationally Designated Sites

There are no full Natural Heritage Areas (NHAs) but six proposed Natural Heritage Areas (pNHAs) located within 15km of the application area (Table 5.5).

The project site has no surface hydrology connection with any of the NHAs or pNHAs though it could have a groundwater connection to the River Nore/Abbeyleix Woods pNHA.

Table 5.5: Proposed NHAs within a 15km radius of the site at Ballymullen.

NHA/pNHA and Site Codes	Distance and direction from the application area
River Nore/Abbeyleix Woods Complex pNHA (Site Code: 002076)	2.2km to the west (mostly included in SAC)
Lisbigney Bog pNHA (Site Code: 000869)	4.4km to the south (same boundary as SAC)
Grantstown Wood & Lough pNHA (0417)	9.9km to west
Cuffsborough pNHA (0418)	11.6km to west
Coolacurragh Wood pNHA(0862)	12.6km to WSW
Knockacoller Bog pNHA (0419)	14.5km to NW

Evaluation: NHAs and proposed NHAs are of National Importance.

5.3.1.3 Undesignated sites of ecological value

Abbeyleix (Killamuck) Bog is located west of the site on the opposite side of the road L5731. It is a relatively small raised bog, roughly oval in shape, which developed over a former lake contained by a glacial moraine on its eastern side. The bog is the subject of an ongoing conservation programme known as the Abbeyleix Bog Project and numerous ecological studies have been carried out which have informed the Abbeyleix Bog Project Conservation Management Plan 2015-2020 (Ryle, 2014) and subsequent management.

The bog consists of a central area of raised bog surrounded by a periphery of cutover and marshy lagg – a more natural transition to the surrounding habitat. Abbeyleix Bog supports a number of semi-natural and modified habitats. By far the largest component is raised bog which is now extending as a result of the blocking of former drains. Estimates from the Bord na Mona study in 2009 suggest 99.4ha of high bog, 1.1ha of active bog (Annex I habitat) and a potential for 4.6ha after restoration of potential active bog. Later measurement shows that the active bog had grown to 3.19ha in 2014 and 13.78ha in 2020 (Ecology and Environmental Consultants Ireland, 2020).

The high bog is largely surrounded by cutover bog, in which a myriad of different habitats have also developed. These are mostly forested with open, self-sown Scot's pine and other trees. They include mixed woodland and peripheral conifer plantation, much of which was originally planted by the Abbeyleix Estate. In places, the woodland is naturally regenerating or at the least, self-seeding across the bog. Along the western boundary of the cutover, there is some naturally developing bog woodland dominated by Scot's Pine. Elsewhere

within the cutover, scrub and other semi-natural woodland types (bog and wet woodland) are present.

Of considerable ecological value is the presence of an intact lagg (comprising fen carr along with a number of other transitional wet woodland types) along the eastern margins of the bog (Smith & Cowley, 2020). These transitional zones around raised bogs are extremely rare in Ireland (3 intact sites), having generally been destroyed by peat-cutting. A significant feature is a calcareous spring in the NE part which corresponds to the Habitat Directive Annex I habitat of 'petrifying springs 7220'. On an existing grading system this was reckoned to be of High Conservation value (Lyons and Kelly, 2016) though there is no deposit of calcium carbonate (tufa). The nearby fen area is also of notable value with transition mire of two sorts (bogbean and bottle sedge), poor fen and flush habitats (Smith & Cowley op. cit.). Transition mire (7140) is again listed in Annex I of the Habitats Directive, as is Bog Woodland 91D0.

Although not designated, the site was included in the Review of Raised Bog Natural Heritage Area Network carried by the Dept of Arts, Heritage & the Gaeltacht (2014). It was assessed as being of moderate value for its size and habitat quality but of high value for its location (south of most of the habitat) and ecological diversity. On the criteria in Table 5.2 it would be considered of National value.

There is no surface water connection between the application area and the bog but its proximity to the project and ecological importance warrants its inclusion in the evaluation of likely significant effects.

5.3.2 Habitats in the Receiving Environment

The habitats recorded in and beside the application area are presented and evaluated below as in "Guidelines for Assessment of Ecological Impacts of National Road Schemes" (NRA, 2009; please see Table 5-2 in Section 5.2.6.1 for an outline of the geographic frame of reference valuation scheme). Habitats have been categorized as in Fossitt (2000). A Phase 1 habitat map is shown below (Plate 5.1).

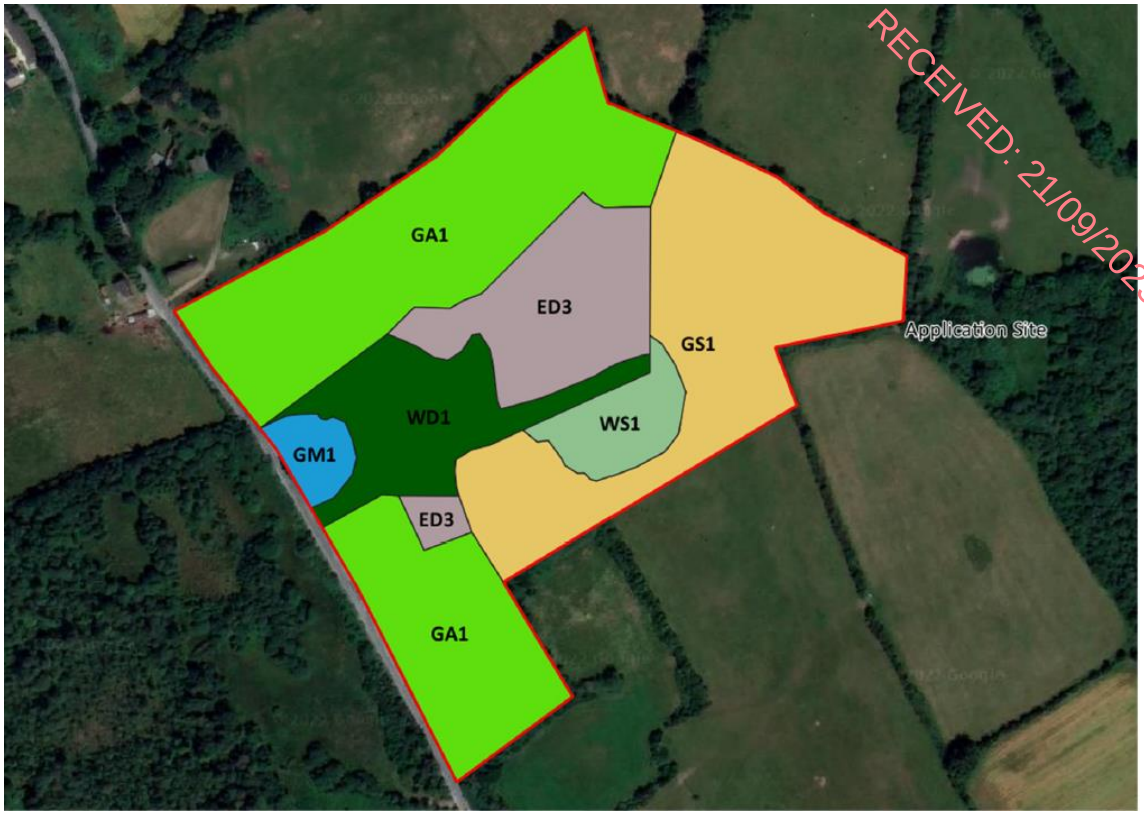


Plate 5.1. Habitat Map of site. Codes in text.

5.3.2.1 Improved Agricultural Grassland GA1

This habitat comprises approximately 60% of the application area. It is dominated by grasses – rye-grass *Lolium perenne* and meadow-grass *Poa trivialis* – with species such as dandelion *Taraxacum officinale* agg., creeping buttercup *Ranunculus repens*, ribwort plantain *Plantago lanceolata*, nettle *Urtica dioica*, creeping thistle *Cirsium arvense*, spear thistle *Cirsium vulgare* and broad-leaved dock *Rumex obtusifolius* occurring occasionally within the sward (Plate 5.2).

Improved agricultural grassland is common throughout Ireland and is evaluated as not important as a result. This habitat can be scoped out of further consideration in this report.

Plate 5.2: Field of improved agricultural grassland at NW end of site

5.3.2.2 Dry Calcareous Grassland GS1

This habitat occurs in the north-eastern section of the application site on a free-draining limestone soil. It consists of a wide range of grasses and broadleaved herbs (Plate 5-2). Grasses include bent *Agrostis capillaris*, meadow-grass *Poa pratensis*, crested dog's-tail *Cynosurus cristatus* sweet vernal-grass *Anthoxanthum odoratum* meadow foxtail *Alopecurus pratensis*, quaking grass *Briza media*, timothy *Phleum pratense*, cock's-foot *Dactylis glomerata* and Yorkshire-fog *Holcus lanatus* with more local patches of yellow oat-grass *Trisetum flavescens* and downy oat-grass *Avenula pubescens*. The grass-like field clubrush *Luzula campestris*, glaucous sedge *Carex flacca* and spring sedge *C. caryophyllea* also occur in a few places where the soil is thin. The broadleaved herbs include:

Creeping buttercup	*Ranunculus repens*
Bulbous buttercup	*Ranunculus bulbosus*
Yarrow	*Achillea millefolium*
Common knapweed	*Centaurea nigra*
Selfheal	*Prunella vulgaris*
Common Bird's-foot Trefoil	*Lotus corniculatus*
Lady's bedstraw	*Galium verum*
Burnet saxifrage	*Pimpinella saxifraga*
White clover	*Trifolium repens*
Red clover	*Trifolium pratense*
Yellow trefoil	*Trifolium dubium*
Cat's-ear	*Hypochaeris radicata*
Smooth hawk's-beard	*Crepis capillaris*
Germander speedwell	*Veronica chamaedrys*
Heath speedwell	*V. officinalis*
Field scabious	*Knautia arvensis*
Sandwort	*Arenaria serpyllifolia*

Mosses include *Rhytidiadelphus squarrosus* and *Scleropodium purum* while a single spotted orchid *Dactylorhiza fuchsii* was present in early July. In autumn quite high numbers of waxcap fungi were fruiting, especially *Cuphophyllus virgineus.* This is a characteristic group for established pastures that are not overly fertilised.

This habitat is evaluated as of Local importance (Higher value) and extends considerably southwards beyond the application area. It would be classified as a Group 3 grassland by the Irish semi-natural grassland survey 2007-2012 (O'Neill *et al*. 2013)

Plate 5.3: Area of dry calcareous and neutral grassland in the north-eastern section and highest point of the application site.

5.3.2.3 (Mixed) Broadleaved Woodland WD1

This habitat occurs on a small scale in the central section of the application site (Plate 5-4) and is composed of mature and semi-mature ash *Fraxinus excelsior*, beech *Fagus sylvatica*, sycamore *Acer pseudoplatanus*, willow *Salix caprea* and Scot's pine *Pinus sylvestris* which are interspersed with the occasional planted Douglas fir *Pseudotsuga menziesii.* Tree density is patchy and grades into open grassy spaces with regenerating brambles *Rubus fruticosus*. A few herbaceous species occur at ground level such as yellow pimpernel *Lysimachia nemorum*, wood dock *Rumex sanguineus*, wood sanicle *Sanicula europaea* and celandine *Ficaria verna*. Where the woodland abuts on the former scrub areas, primrose *Primula vulgaris*, pignut *Conopodium majus* and wood avens *Geum urbanum* are frequent.

This habitat in the application site is evaluated as of Local importance (Lower value).

Plate 5.4: Mixed broadleaved woodland area in the centre of the application site.

5.3.2.4 Recolonising bare ground ED3

Scrub was a feature of the central area of the site until March 2022 when practically all of it was cleared by the grazier (see aerial photo above). What remains is a bed of shredded wood and twigs punctuated by regenerating blackthorn *Prunus spinosa*, bramble *Rubus fruticosus* and hawthorn *Crataegus monogyna* as well as some wild raspberry *Rubus idaeus* and an abundance of bracken *Pteridium aquilinum*, Yorkshire fog *Holcus lanatus* and sweet vernal grass *Anthoxanthum odoratum*. Sorrel *Rumex acetosa* and knapweed *Centaurea nigra* are frequent and there is some remaining hedge woundwort *Stachys sylvatica* and field rose *Rosa arvensis.* The lower section around a former dwelling supports a sward of ground elder *Aegopodium podagraria*, sweet rocket *Hesperis matrionalis* and Welsh poppy *Meconopsis cambrica*.

The habitat has been classified as recolonising bare ground but may return to scrub depending on the grazing pressure. It has little current value.

5.3.2.5 Scrub WS1

An open gorse scrub occurs on a slope on the western side of the grassland area and as a hedge along the lower field. Scattered plants of perforate St John's wort *Hypericum perforatum*, burdock *Arctium minus*, wall lettuce *Mycelis muralis* and white campion *Silene latifolia* occur here with a little hemlock *Conium maculatum*.

5.3.2.6 Hedgerow/Treeline WL1/WL2

Field boundaries surrounding the entire site are made up of a hedgerow/treeline composition. The species are typically hawthorn, blackthorn, gorse, holly, dog-rose *Rosa canina* and bramble with occasional beech, ash, horse chestnut *Aesculus hippocastanum* and sycamore. These linear habitats are stockproof and generally in good condition.

The eastern section of the marginal hedge contains several trees/bushes of Irish whitebeam *Sorbus hibernica* which is rare in the county and otherwise found around Portlaoise. Because of this species, this habitat within the application site is evaluated as of Local importance (Higher value).

Plate 5.5: Hedgerow/treeline comprise field boundaries around the entire application site.

5.3.2.7 Marsh GM1

A small wetland occurs at the southwest base of the wooded area. It has a shallow organic layer with a fluctuating watertable. The vegetation consists of sedges and grasses, especially bottle sedge *Carex rostrata*, brown sedge *C. disticha*, oval sedge *C. leporina* and carnation sedge *C. panicea* as well as grasses – red fescue *Festuca rubra*, quaking grass *Briza media* and sweet-grass *Glyceria notata*. The broad-leaved plants include

Devil's-bit	*Succisa pratensis*
Purple loosestrife	*Lythrum salicaria*
Tormentil	*Potentilla erecta*
Fleabane	*Pulicaria dysenterica*
Lesser spearwort	*Ranunculus flammula*
Ragged robin	*Silene flos-cuculi*

Marsh bedstraw	*Galium palustre*
Marsh willowherb	*Epilobium palustre*
Square-stemmed St John's wort	*Hypericum tetrapterum*
Spotted orchid	*Dactylorhiza fuchsii*

A number of willows occur, some of them killed by bark-stripping, and there is also a little Sherard's rose *Rosa sherardii* at the edge.

The marsh is a good if very small habitat and can be thought of as of Local importance (Higher value) though it is replicated by habitats just to the west.

*5.**3.2.8 Protected Flora***

No protected plant species were found during the habitat surveys and there are no Flora Protection Order records within hectad S48, the location of the proposed sand and gravel pit (NBDC, 2019).

*5.**3.2.9 Invasive Plant Species***

No invasive plant species were found during the Phase I habitat survey. Records of the high impact invasive species, Japanese Knotweed *Fallopia japonica* and Rhododendron *Rhododendron ponticum*, were registered in 2010 and 2007 elsewhere in the hectad S48.

5.3.3 Fauna in the Receiving Environment

5.3.3.1 Birds

The site survey recorded the presence of a number of common bird species. The presence of pockets of scrub and broadleaved woodland makes for suitable nesting and roosting sites for a range of these species. A buzzard *Buteo buteo* was recorded on two occasions circling and soaring over the site, most likely hunting in the surrounding agricultural fields. A total of 14 species were recorded in the application area.

Bird species diversity and abundance recorded during the site visits are shown in Table 5-6. No species cited as Red-listed under the Birds of Conservation Concern in Ireland (Gilbert *et al*. 2021) were recorded during the walk-over survey. The species assemblage is evaluated as important at the Local level.

Common and Scientific Name	Total no. birds observed	Conservation Status	
		BoCCI	Annex I
Buzzard *Buteo buteo*	2	Green	No
Blackbird *Turdus merula*	2	Green	No
Song thrush *Turdus philomelos*	1	Green	No
Coal Tit *Periparus ater*	3	Green	No
Chaffinch *Fringilla coelebs*	5	Green	No
Great Tit *Parus major*	1	Green	No
Goldcrest *Regulus regulus*	2	Amber	No
Robin *Erithacus rubecula*	3	Green	No
Dunnock *Prunella modularis*	2	Green	No
Rook *Corvus frugilegus*	8	Green	No
Hooded Crow *Corvus cornix*	8	Green	No
Wood Pigeon *Columba palumbus*	3	Green	No
Wren *Troglodytes troglodytes*	3	Green	No
Chiffchaff *Phylloscopus collybita*	1	Green	No

Table 5.6: Bird species and abundance recorded during surveys in the application area.

Experience of the habitats elsewhere in Laois and adjoining counties suggest that sparrowhawk, blackcap, whitethroat and linnet are very likely to occur, at least on a sporadic basis; they all are recorded within this 10km square by Balmer *et al* (2013). Of these the linnet has an amber rating in the current Birds of Conservation Concern. The bird fauna in general has been reduced by the clearance of scrub.

5.3.3.2 Ground Mammals

Evidence of badger activity was noted in 2020 and 2022 with an out-of-use sett in the northern site boundary (see Badger & Bat report Appendix). In all six mammal species were recorded

Badger	*Meles meles*
Irish hare	*Lepus timidus hibernicus*
Rabbit	*Oryctolagus cuniculus*
Wood mouse	*Apodemus sylvaticus*
Fox	*Vulpes vulpes*
Grey squirrel	*Sciurus carolinensis*

Additional records for hectad 48 are shown in the table below with the likelihood of visits from the species.

Species	Suitable Habitat	Protected Status
Eurasian Otter	Near to site	Habitats Directive Annex II and Wildlife Act
Pine Marten	Near to site	Habitats Directive Annex II and Wildlife Act
Mountain (Irish) Hare	Near to site	Habitats Directive Annex V and Wildlife Act
Hedgehog	Near to site	Wildlife Act
Fallow Deer	Near to site	Wildlife Act
Irish Stoat	On site	Wildlife Act
Pygmy Shrew	On site	None
Greater white-toothed shrew	Near to site	None
Rabbit	On site	None
Bank Vole	On site	None
House Mouse	Near to site	None
Brown Rat	Near to site	None
Feral Goat	Near to site	None
American Mink	Near to site	None

Table 5.7: Other mammal records for hectad S48 in which the application area is located. Source: National Biodiversity Data Centre (2022).

5.3.3.3 Bats (see Badger & Bat report in Appendix)

The separate 2022 survey found that no animals were using the trees on site as roosts. However five species were encountered feeding, i.e.

Leisler's bat
Common pipistrelle
Soprano pipistrelle
Myotis including Natterer's bat,
Brown long-eared bat

The application area is considered to be important to feeding bats at a Site level.

5.3.3.4 Amphibians and Reptiles

The Common Frog *Rana temporaria* and the Smooth Newt *Lissotriton vulgaris* are afforded protection under the Wildlife Act (1976) and Wildlife (Amendment) Act, 2000. Both occur in hectad S48 (NBDC, 2019 – accessed 16/12/2019), on Abbeyleix Bog and a frog was seen in the marshy area at the NW corner of the site.

The Viviparous lizard *Zootoca vivipara* is also afforded protection under the Wildlife Act (1976) and Wildlife (Amendment) Act, 2000. It occurs on Abbeyleix Bog but none was seen during the habitat survey, as expected given the habitats present.

5.3.3.5 Invertebrates

There was no specific invertebrate survey during site analysis except for noting obvious bumble bees and butterflies. Speckled wood, small white, small tortoiseshell and common blue butteflies were encountered as well as early, white-tailed, red-tailed and common carder bumblebee *Bombus pratorum*, *B. lucorum*, *B. lapidarius* and *B. pascuorum*. Table 5.8 lists other invertebrates that have been recorded in the appropriate hectad S48 (NBDC, 2019 – accessed 16/12/2019). Considering the limited extent and quality of semi-natural scrub and woodland habitat within the site, it is unlikely any rare or threatened invertebrate fauna occur.

Species Name (Latin)	Faunal Group
Common Tiger Beetle *Cicindela campestris*	Insect – beetle
Ringlet	Insect – butterfly
Silver-washed Fritillary *Argynnis paphia*	Insect – butterfly
Peacock *Inachis io*	Insect – butterfly
Meadow Brown *Maniola jurtina*	Insect – butterfly
Comma *Polygonia c-album*	Insect – butterfly
Holly blue *Celastrina argiolus*	Insect – butterfly
Large Red Damselfly *Pyrrhosoma nymphula*	Insect – damselfly
Brown Aeshna *Aeshna grandis*	Insect – dragonfly
Chevron *Eulithis testata*	Insect – moth
Flame Carpet *Xanthorhoe designata*	Insect – moth

Table 5.8: Invertebrate species recorded in hectad S48 likely to occur on site (Source: National Biodiversity Data Centre (2019) accessed 16/12/2019)

The proposed application area is considered to be important to invertebrates only at a Site level.

5.4 Likely Significant Effects

5.4.1 Source-Pathway-Receptor-Effect Conceptual Model

Using Source-Pathway-Receptor-Effect (consequences) modelling, all characteristics and activities associated with the proposed development are evaluated for their likelihood to cause significant effects (in the absence of mitigation) on the sensitive ecological aspects of the receiving environment. The conceptual model is presented in Table 5.9 below.

The description, significance, magnitude, probability, duration and type of effects are then described in the subsequent subsections in accordance with the CIEEM Guidelines of Ecological Impact Assessment in the UK and Ireland (2019).

Table 5.9: Source-Pathway-Receptor-Effect model.

Source	Pathway	Receptor	Effect (Consequences)	Potential for Significant Effects (Y/N)
Sand and gravel excavation activities	Surface water runoff	• Natura 2000 Designated Sites	Indirect effects through surface water contamination and sediment runoff.	**No.** Absence of surface water hydrological connectivity between the site and local water courses ensures no measurable effects.
	Groundwater flow-paths		Indirect effects through groundwater contamination by virtue of percolation of hydrocarbons.	**Yes.** Project is in catchment of Ballymullen Stream which feeds into the Nore.
	Surface water runoff	• NHAs and pNHAs	Indirect effects through surface water contamination and sediment runoff.	**No.** Absence of surface water hydrological connectivity between the site and local water courses ensures no measurable effects.
	Groundwater flow-paths		Indirect effects through groundwater contamination by virtue of percolation of hydrocarbons.	**Yes.** Project is in catchment of Ballymullen Stream which feeds into the Nore pNHA. **No.** Absence of groundwater hydrological flow-path connectivity between the site and local water courses ensures no measurable effects on other sites.
	Surface water runoff	• Water quality/Aquatic Ecology/Adjacent habitats	Indirect effects through surface water contamination and sediment runoff.	**No.** Absence of surface water hydrological connectivity between the site and local water courses ensures no measurable effects. Rainwater accumulations would disperse in substrate
	Groundwater flow-paths		Indirect effects through groundwater contamination or quality by virtue of	**Yes.** Probable connection of site as source area to water quality in lagg area of Abbeyleix Bog, including spring.

Source	Pathway	Receptor	Effect (Consequences)	Potential for Significant Effects (Y/N)
			percolation of hydrocarbons or alteration of gravel body	Significance of effect evaluated in Section 5.4.6.
	Land take	• Habitats (effects on birds and mammals)	Direct reduction/loss of habitats within the application area.	**Yes.** Significance of effect evaluated in Section 5.4.6.
	Fugitive Dust Emissions	• Habitats	Indirect effects on vegetative habitats within the adjacent Abbeyleix Bog through fugitive dust emissions.	**Yes.** Significance of effect evaluated in Section 5.4.7.

5.4.2 Potential Effects on Designated Sites

5.4.2.1 European & Nationally Designated Sites

There are four EU sites located within a 15km radius of the application area (see Table 5-4) as well as six pNHA. A Natura Impact Statement has been prepared for the former, which evaluates the potential for significant effects on the integrity of the EU site network. The NIS accompanies the planning application as a stand-alone document.

Groundwater flow from the sand and gravel aquifer of the project area is assumed to discharge in a westerly direction and enter the River Barrow and River Nore SAC and River Nore SPA indirectly (either via the Ballymullen Stream, spring discharge or as baseflow). The River Nore/Abbeyleix Woods complex pNHA is similarly at potential risk. The SAC and SPA are located approximately 2.2km west and downstream of the proposed development site but since there will be no alteration of the regional hydrogeological regime (see Water section 7.7.4.2) there is no likelihood of physical effects on these designated areas. All other designated sites are located further from the site and have no hydrogeological connection to it. They therefore cannot be impacted by the proposed development.

However there could be an oil loss to groundwater during construction or operation so the possibility exists of it entering the Ballymullen Stream by base flow.

5.4.2.2 Mitigation

During the extraction of each phase an infiltration swale will be dug on the lower side of the excavations to ensure any run-off percolates into the ground. A 30m wide zone (as shown in Figure 3.4, Chapter 3.0) will also be left along the road with its existing vegetation. This will act as a soakaway and natural buffer for the wetland habitats west of the road and for the Ballymullen Stream.

The following mitigation is proposed for hydrocarbon materials:

- All plant and machinery will be serviced before being mobilised to site;
- Refuelling will be completed in a controlled manner, at all times, in the specially designed fuelling facility on site (refer to Drawing PP-140 00);
- Only designated trained operators will be authorised to refuel plant on site;
- Procedures and contingency plans will be set up to deal with emergency accidents or spills;
- An emergency spill kit with oil boom, absorbers etc. will be kept on-site for use in the event of an accidental spill; and,
- Runoff from the site entrance and overflows from the wheel wash will be directed to a silt trap and full retention hydrocarbon interceptor* prior to discharge to ground.

*The full retention hydrocarbon interceptor will be sized to cope with a 10-year storm return period

5.4.2.3 Residual Effect

Any effect on the Natura 2000 site network and on the Nationally designated sites from the use of hydrocarbons on site is unlikely to occur. At worst it would have a medium term and slight effect on the nearest part of the watercourse. Wetland systems, especially peatlands, are effective in breaking down hydrocarbons, both natural and man-made (Moore et al. 1999).

5.4.3 Potential Effects on the Existing Environment

5.4.3.1 Habitats and Mammals

The removal of broadleaved woodland and grassland will result in the irreversible and permanent loss of these habitats from the site. All the woodland will be removed (in total 0.74ha) but only about 12% of the area of calcareous grassland (1.96ha) as a whole, because the habitat extends 600m outside the site to the southeast.

5.4.3.2 Mitigation

The landscape chapter details the planting and preparation measures for restoration to be incorporated into each phase of the extraction. Broadly these are to establish tree cover on the side slopes of the pit and grassland for agricultural use on the base. The front hedge will be replanted to allow for traffic visibility while all marginal hedges will be retained.

The use of native species of woody plants is emphasised in the Notice Nature publication while the maintenance and replacement of hedgerows fulfils the network objectives.

Once complete the landscaping will result in a partial replacement of the woodland area with benefits to biodiversity that will increase in time.

Biosecurity measures will be employed during the construction to avoid the introduction of any non-native invasive species on site. Any hired equipment and machinery used on site will be washed before its arrival on site. The NRA guidelines *'The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads'* (2010) will be followed for the project as there are currently no invasive species.

5.4.3.3 Residual Effect

There will be a significant loss of calcareous grassland habitat in the area (12% of total) since it is one of relatively few examples in the locality that is managed by extensive grazing. However, the greater part of this habitat (off-site) to the southeast will remain intact. For the site area it may be seen potentially as a medium-term effect since the community could eventually regenerate on remaining substrate if managed appropriately.

Although extraction will be limited to the current phase at any time, the site area will be closed off from grazing so the herb species in the grassland will flower more freely

than at present. This will be a beneficial impact to pollinators and other invertebrates and would be seen as a medium-term positive effect.

The loss of woodland will have a permanent effect in the long-term. Future woodland is likely to be linear and comparable to treelines/hedgerows although its total area will be the same.

The removal of a feeding area for badgers and bats will reduce their local populations though because of the size of badger territories and the presence of foraging habitat west of the road, this effect is likely to be significant on site but slight in the general area. Bat numbers are likely to recover as the new tree planting grows.

5.4.4 Disturbance/displacement of breeding birds

Breeding birds occur in the woodland, scrub and hedges through the site and will be affected by habitat loss, both breeding sites and feeding area. This effect will be permanently negative for the woodland species – buzzard, sparrowhawk, rook, hooded crow and chiffchaff. There is alternative habitat along the edges of Abbeyleix Bog, however.

5.4.4.1 Mitigation

No removal of vegetation will be undertaken on-site between 1st March and 31st August (incl).

5.4.4.2 Residual effect

There will be a moderate reduction in the breeding bird population for the long-term.

5.4.5 Disturbance/displacement of mammals

The reduction and loss of habitat area will obviously affect breeding and foraging mammals.

5.4.5.1 Mitigation (see badger report for more detail)

- No interference with ground levels will occur within 30m of the sett identified consistent with the NPWS procedure. NPWS will be notified before work begins.
- Measures will be taken to allow access through the peripheral fencing for badgers and other mammals

5.4.5.2 Residual impact

New woodland habitat on the side slopes of the extraction area will remain unsuitable for badger feeding. The impact may be seen as a likely, long-term effect but not significant to the resident social group of badgers.

5.4.6 Potential effects on surrounding habitats (Abbeyleix Bog)

The Water chapter notes that there is no likelihood of any surface water flow from the project area to the lands west of the road as the gravel material on site is coarse and very permeable to infiltration. The development occurs in the catchment of the Ballymullen Stream which runs south about 340m east of the project site. It then curves westwards to reach the basin of Abbeyleix Bog (Figure 7.2). Although originally divided around the bog edge, the majority of the water now flows northward in an artificial channel inside the lagg zone (and therefore west of the fen areas). Water from this stream is unlikely to infiltrate the fen which is fed by general groundwater levels controlled by infiltration from the east and the watertable on the bog.

As discussed in Section 7.6.13 of the Water chapter, there will be no impact on groundwater flow volumes/quantity to the springs/wet woodland as the catchment for collection will remain the same. Changes in quality might be thought possible from contamination of the groundwater by hydrocarbons or from a change in calcareous content. However, recent work on the groundwater included in the Water chapter (Section 7.7.4.6) shows that the flow feeding the petrifying spring area (including the transition mire) originates somewhat to the south of the proposed extraction site, not from within it. It appears therefore that the calcareous input is not controlled by processes within the extraction site and is most likely an effect originating in the underlying marl.

The potential hydrocarbon contamination risk is assessed to be significant in the medium-term but can be prevented.

5.4.6.1 Mitigation

Phase 4 of the extraction plan is significantly reduced and there will be no extraction in the southern end of the site immediately upstream of the petrifying spring. The existing vegetation will be retained so that the situation will remain as it is today.

Measures for the prevention of oil contamination are listed in Section 5.4.2.2.

5.4.6.2 Residual impact

No significant effects on groundwater amount or quality are expected.

5.4.7 Airborne Dust

Fugitive dust arising from sand and gravel extraction activities, bare ground and stockpiles/overburden has the potential to become deposited on habitats in the adjacent Abbeyleix Bog. Dust may affect photosynthesis, respiration, transpiration and allow the penetration of phytotoxic gaseous pollutants. It may also change the pH of surrounding land if an acid peatland and *Sphagnum* moss is involved. Visible injury symptoms may occur and generally there is decreased productivity (Farmer, 1993, Kovatsa 2021). In the absence of mitigation, these effects have the potential to be moderate to significant at a Site level. However, the fact that the nearest communities are dominated by sedges rather than *Sphagnum* reduces any potential risk.

5.4.7.1 Mitigation

Measures to avoid likely effects of dust emissions on Abbeyleix Bog are outlined in Section 9 of the EIAR. They include a wheel-wash at the entrance to the site and the use of a water bowser. Also the phased pattern of extraction will limit the area of exposed sediment at any one time. The absence of grading at the site will reduce the exposure of fines (which could become wind-borne) while the extracted material will be damp over much of the year.

The seeding of berms and fully extracted areas will be done as soon as they are exposed (see landscape section).

5.4.7.2 Residual effects

No significant effects are expected from the operation of the quarry.

5.4.8 Unplanned Events

Section 171A (b) (ii) of the Planning and Development Act 2000, as amended, in addition to the 2014 EIA Directive both require an EIAR to include such examination, analysis and evaluation of the expected direct and indirect significant effects on the environment derived from the vulnerability of the proposed development to risks of major accidents or disasters that are relevant to the development.

There are no unplanned events identified in relation to biodiversity to which the proposed development could potentially be vulnerable to.

5.4.9 Potential In-combination Effects

There are a number of existing sand and gravel pits in the area, the closest one is a small disused pit located approximately 500m to the southeast of the site. This is currently used as a Defence Forces and An Garda Síochána Firing Range.

The existing Booth Precast Products manufacturing facility is located 1.3km to the south of the site. Material extracted from the proposed development will be transported to this facility and it can be thought of part as the same project, prolonging the life of the concrete operation.

The impacts of this plant on Abbeyleix Bog were significant in the past with an escape of calcareous water to the lagg area and into the Owveg River. The settlement arrangements for silt were inherited from a previous owner but have now (2021) been replaced by a new, closed circulation system. Silty water from the washing plant is pumped to the northern lagoon in the NW corner and after settlement flows through a hydrobrake to the southern lagoon. This clarified water joins the flow from two other silt ponds on the eastern side to produce the wash water. Only the southernmost pond on the eastern side discharges through a gravel filter and joins the field drain along the southern boundary.

The continuation of use of the concrete plant will not be a cumulative impact with the proposed extraction as it does not now have negative ecological impacts to the surrounding area (Abbeyleix Bog).

Other sand quarries in the Abbeyleix area are located at Knockbaun (Spink) and Dysart. In ecological terms there is no communication between Ballymullen and these other areas and no cumulative impacts are likely.

5.4.10 Evolution of site in absence of project

The current habitats and vegetation are controlled by farming practices and if these continue without changing, the habitats will likewise remain as they are. Agricultural intensification of the calcareous grassland would devalue its plant communities.

5.4.11 Summary of Likely Effects

The main impacts identified as a result the proposed development relate to the loss/reduction of habitat for breeding birds and mammals and a reduction of the calcareous grassland. It will not act in combination with the process area to the south to produce a cumulative effect on the local ecology as this has no significant ecological effects on the environment of Abbeyleix Bog. There are no other developments in the area which could result in a significant cumulative impact.

Table 5.10 presents a summary of the likely effects on the sensitive ecological receptors on and near the application area.

Table 5.10: Residual effects of the proposed application on significant elements.

Element	+/-	Extent	Magnitude	Duration	Reversibility
Woodland	-	All at outset of site clearance	0.7ha	Medium-term	New planting will substitute in part
Calcareous grassland	-/+	Phases 5-8	1.89ha	Short-term Temporary benefit to insect life	Yes. Habitat could re-develop on new substrate
Mammal	-	Removal of woodland species	0.7ha feeding area for badgers	Medium-term	New planting will substitute in part
Birds	-/+	Loss of woodland species.	Decline of 30% of total species	Medium-term. Hedgerow birds to benefit from increased cover	Yes, new trees will reach mature size
Adjacent habitat (Abbeyleix Bog)	0	None	None	None	

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Appendix 5.1: Bat & Badger Survey

A Bat and Badger Assessment of The Proposed Quarry at Ballymullen, Abbeyleix, County Laois

Brian Keeley B.Sc. (Hons) in Zool. September 2022

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Introduction

Most of Ireland's mammals enjoy protection under the Wildlife Act (1976) and the more recent updating of this legislation (Wildlife (Amendment) Act 2000, S.I. No. 94 of 1997, S.I. No. 378 of 2005, European Communities (Natural Habitats) (Amendment) Regulations, 2005). In conjunction with the enactment of the Habitats Directive into Irish legislation, all native mustelid species and bat species are protected with further protection given to otters and lesser horseshoe bats. Lesser horseshoe bats are not found in County Laois or neighbouring counties. Bats account for nine of Ireland's terrestrial mammal species, approximately one quarter of the species of the Irish land mass. All of the species found to date and indeed all bat species that may remain undetected up to the present are afforded legal protection under Irish and EU legislation and agreements (Wildlife Act (1976), Wildlife (Amendment) Act (2000), S.I. No. 94 of 1997 and S.I. No. 378 OF 2005 implementing the EU Habitats Directive, Bonn Convention (The Convention on the Conservation of Migratory Species of Wild Animal) and

the Bern Convention (Convention on the Conservation of European Wildlife and Natural Habitats).

A speedy and productive means of determining the mammal fauna within a site is to walk the entire site concerned, paying particular attention to all hedgerow, woodland, watercourses, fence lines, paths etc. to locate mammal signs. Determining the fauna of the surrounding area may involve a much greater level of assessment if the aim of the survey is to catalogue all mammals in all townlands but this is too detailed for the aim of creating mitigation for most developments except where the species under consideration are particularly elusive or specialised and leave few signs. The survey undertaken within the site of the proposed quarry at Abbeyleix allows a targeting of mitigation measures to the appropriate or most efficient sites to prevent accidental death or injury in and to assist in providing mitigation for losses brought about in feeding and commuting.

Excavation and extraction create sequential changes to a site that usually lead to considerable landmass loss, vegetation loss and a change from a green site to a greater level of exposed stone. Many mammals that have legal protection may be placed at risk from this including bats, badgers, otters, pine martens, red squirrels and hares to name but a few. While larger mammals such as badgers and otters may be monitored and protected once their presence is noted, bats pose a greater challenge due to their life cycle, small size, secretive and nocturnal habits and their choice of resting places ranging from ground level (or subterranean) up to treetops. In the current site, felling of trees creates potential risks to bats.

In relation to badgers, the clearance of hedgerow or scrub poses the risk of the removal of the badgers' home burrow and the associated burrows (all of which are known as setts) that are used seasonally or occasionally throughout the year. In winter, this is especially risky if the sett is not identified before hedgerow removal operations, as this is the time when badger cubs are born. In the classification used in this report, setts are considered to fall into four categories, which are best elaborated by long-term studies but can be interpreted to a relatively good accuracy in terms of status based on basic observations.

The basic sett type within which badgers are typically present throughout the year is the main sett. This is almost always the sett within which cubs are born. Bedding outside the entrance to these setts often identifies their use as such and paw prints and dung pits or latrines nearby also assist in their categorisation. There are typically a number of entrances to a main sett, some of which may be disused. Paths leading from the main sett are often very easy to trace for some distance.

Annexe setts are similar in construction to main setts and are typically accessed by a number of entrances. They are often discernibly connected to a main sett by well-worn paths, which is within 150 metres of the annexe sett. Badgers do not necessarily use this type of sett throughout the year, and they may be inactive at the time of any short-term study. Subsidiary setts are again not always active throughout the year. There may be a number of entrances to the sett, and they are not clearly associated with any other sett.

The last type of sett, the outlier sett, may only have one entrance and has no path leading to it. This type of sett is only sporadically used and may even be in areas subject to flooding or seasonally unsuitable to badger use. These setts may be overlooked if they have remained inactive for several weeks.

Setts may be under threat from the operation of a quarry if they are adjacent to the excavation activity or are affected by the increased human activity. Setts outside of this land take area may also be threatened with damage from the normal activities of the heavy plant equipment required for extraction. For example, if a badger sett entrance were located outside of the land take of the project but led to a system of tunnels that lay under the working area of the heavy plant, there is a clear risk that the tunnels would be crushed under the repeated movement of equipment. These tunnels may occasionally go as deep as two metres underground (or deeper) but are also liable to surface to shallower depth to avoid rocky substrate or water.

Thus, badger setts may be affected by the immediate impact upon them from the excavation and removal of the soil within which they are established or by the indirect destruction of tunnels that lie under the commuting corridor of equipment within the quarry.

This report will deal with bats and badgers and any other mammal species encountered. Mitigation is proposed for the preparatory phase and also the operational phase of the quarry for badgers and bats.

Bats are a widespread element of the Irish fauna. They are known to occur from much of the rural landscape and to a lesser extent, the urban environment and here they occupy buildings and occasionally trees for short or long periods. Houses and other buildings are a vital element of the annual cycle of all Irish bat species and at no time more so than the period May to August. But many bats may also avail of trees or buildings as hibernation sites. In sites such as the proposed quarry site where there are several buildings surrounding but not within the site, there is the potential for roosting within any one of the buildings if appropriate conditions are met to provide safe shelter from the elements and predation. Furthermore, trees within the site proposed for development may have roost potential. Changes to a site including tree and hedgerow removal may destroy roosts, placing bats at risk during such procedures and may reduce the options available to bats as a roosting site and may also affect their feeding and commuting activity.

Bats are protected by Irish and EU law and to prevent unlawful injury or death, it is essential that a full understanding of the site is available in advance to protect the resident bats from unintentional disturbance, injury or death and to create a pathway by which a legal derogation and exemption may be designed in consultation with the National Parks and Wildlife Service of Department of Housing, Local Government and Heritage.

Materials and Methods

Badgers

Equipment employed:

Maps of proposed quarry, Motorola G8 Smartphone, Nikon 8 x 42 Aculon binoculars, Google Maps. Pulsar Helion XP 50 Pro Thermal Imager

Badger presence was determined by:

1) the identification of setts or structures likely to be setts (some animal burrows may require further checking to rule out (or confirm) as badger setts). 2) badger tracks (digging and paw prints and badger dung and hairs)

The badger fauna was sought during a survey undertaken on May and 27th to 28th July 2022. All hedgerow drains and streams, tree cover, soil and stone banks, obvious mounds or depressions and gorse within the survey band (the quarry area and adjoining areas) were examined for the presence of badger setts or other animal burrows. Any identified setts are typically considered in terms of the number of entrances, signs of activity, location relative to the development and the likelihood of alternative setts in the vicinity.

Motion activated cameras were installed at two locations on the edge of an extensive area of gorse to record any badger activity. A thermal imager was used on July 27th and 28th 2022 to determine if badgers were feeding or commuting through the site.

Survey constraints

The ground mammal survey was carried out in May and July 2022, a period when wild vegetation is dense and badger signs may be difficult to pinpoint.

Badger surveys are intended to be undertaken in winter when the die-back allows for ease of detection of entrances to setts or other burrows. Thus, this assessment provides good information on badgers within the site but may overlook badger setts within the extensive gorse scrub as this area is impenetrable to humans in summer.

Bats

Equipment employed:
Map of Abbeyleix, County Laois
Motorola Moto G(8) Plus smartphone with digital camera
Anabat Walkabout Broadband Bat detector
Echometer Touch 2 Pro broad spectrum detector
Songmeter Mini Bat static monitor x 2

This assessment included a visual inspection from ground level of trees and shrubs and scrub within the site and adjacent areas in May and July 2022. A bat activity survey was undertaken on May 2022 up to sunrise of May 2022 and again on 27th July to 28th July 2022. The survey involved a passive monitoring survey and an active survey undertaken by a surveyor with 30 years' experience of bat surveys. A static Songmeter Mini Bat broad spectrum recorder was placed close to the mature trees within the site and a second close to the dense gorse cover in May 2022.

In July 2022, one static monitor was placed on a gate post at the nearest house where there was potential for house roosts. The active surveyor availed of an Echometer Touch 2 Pro bat detector and an Anabat Walkabout heterodyne and time expansion bat detector to convert bat signals both to audible and recordable signals. All signals were analysed by Kaleidoscope Pro software and automatic identifications were checked manually.

Monitoring involved assessment of trees for evidence of emerging bats at sunset and sunrise. The surveyor also examined bat feeding and commuting activity within the site to determine the usage of the site both for feeding and moving across the landscape.

Survey constraints

Conditions were ideal for surveying in May and July 2022 and bat activity was noted on all occasions during the survey dates. The nights were dry, calm and warm.

Results For Badgers and Other Mammals

Species of mammal noted at Abbeyleix

Badger	Meles meles
Irish hare	Lepus timidus hibernicus
Rabbit	Oryctolagus cuniculus
Wood mouse	Apodemus sylvaticus
Fox	Vulpes vulpes
Squirrel (probably grey)	Sciurus carolinensis

[redacted]. This sett is not a main sett and is most probably an outlier sett. There was no evidence of activity at the time of survey (i.e., no paw prints, no fresh spoil, no dung). [redacted].

Results For Bats

Species roosting within the footprint of the proposed quarry

None

Species of bat feeding within the site
Leisler's bat
Common pipistrelle
Soprano pipistrelle
Myotis including Natterer's bat,
Brown long-eared bat

There are a number of suitable roost trees within the site, but no bats were seen to emerge or return to any tree. The trees with greatest roost potential include a horse chestnut and a split *Acer* within the partially cleared area in the wooded section of the site. There are no buildings within the site. There are also a number of conifers (cedar trees) with roost potential for individual bats towards the public road.

There are a wide variety of bat species within and around the site including common pipistrelle (the most commonly encountered species throughout) and soprano pipistrelles (noted at the pond on the edge of the site). Leisler's bats were present over pasture, close to the public road and were seen drinking from the pond.

Brown long-eared bat signals were noted very infrequently. This species has a low, highly directional signal. *Myotis* signals were noted along the road and along the trees close to the dense gorse cover.

Potential Impacts On Ground Mammals

1. Badger sett loss

There will be at least one sett removed based on the examinations of May and July 2022. The only noted sett was [redacted] The sett lies within

2. Interference with commuting badgers and other mammals

Badger movement will be altered by the presence of the quarry and there will be a loss of foraging within the quarry area. This may lead to an alteration of badger movement, but it is

unlikely to cause a loss of the badger social group from the area. Any steep sides may create a risk of falling for badgers along the quarry edge.

Mitigation For Badgers

1. Wherever setts are present, Provide a buffer around the badger setts of no less than 30 metres (in advance of exclusion where this is essential for the safety of the resident badgers)

No work shall take place within 30 metres of the badger sett(s) prior to assessment and exclusion. To ensure that all setts have been identified, here there shall be a winter assessment of badgers within the site to determine the status of all badger setts.

A barrier or fence denoting 30 metres from the setts shall be erected and maintained throughout the exclusion process. This barrier should denote that no work can be carried out beyond this point but should not highlight the presence of the setts to any staff except the site manager and all management level to prevent persecution of badgers.

2. E lusion of badger setts with approval from NPWS

All identified setts that are placed at risk of damage during excavation shall be excluded by a procedure proposed by NPWS. [redacted] Alternatively, a buffer of 30 metres may be maintained from the entrance to protect sett tunnels.

3. Badger access through all fences

A series of badger underpasses shall be constructed along the perimeter of the quarry to allow free movement of badgers. There shall be no less than 8 access areas throughout the quarry footprint by which badgers may gain entry. These shall be provided by the incorporation of 300 mm pipes that shall pass under the perimeter fence and re-emerge from the ground on each side of the fence. Pipes may include twin walled drainage pipe or equivalent. Pipes need not exceed 4 metres in length to allow badger entry and to prevent human and livestock intrusion. The exact position of access shall be identified in the winter badger assessment.

Potential Impacts On Bats

1. Loss of roost sites

2. Death or injury during tree felling and clearance

3. Loss of feeding

4. Interruption to commuting

1. Loss of roost sites

There is potential for roost loss through tree removal. If undertaken without proper measures, this would lead to injury or death of protected bats.

2. Death or injury during tree felling and clearance

While no tree roosts were noted, these are difficult to rule out. If undertaken without proper assessment at the time of removal, this could lead to fatalities (if undertaken when present at any time of year).

3. Loss of feeding

The removal of hedgerow and mature trees removes feeding opportunities for bats. There will be a loss of a small number of mature trees and areas of scrub.

4. Interruption to Commuting

This may arise from a combination of tree loss, hedgerow loss and increased lighting.

Mitigation For Bats

1. Examination of all trees earmarked for removal for the presence of bats 2. Provision of bat boxes for bats within the surrounding area 3 Lighting must be managed within and around the quarry

1. **Examination of all trees earmarked for removal for presence of bats.**

All mature trees proposed for removal or tree surgery shall be examined for the presence of bats by a bat specialist prior to any procedures that will lead to their complete removal or the

removal of mature limbs or parts of limbs that may possess suitable splits or cavities for roost sites for bats.

Should any tree be noted to be a roost site for bats, the tree shall require a derogation issued by NPWS to allow the planned destruction of a protected structure. A programme of measures shall be designed and approved by NPWS and implemented under the guidance of a bat specialist. This may include additional bat boxes or other features for alternative roost sites as well as a schedule of the timing of felling and the specific procedure required to prevent injury or death to bats.

2. Provision of bat boxes for bats within the surrounding area

It is proposed that 15 Schwegler 2F bat boxes are erected on trees (that will be retained outside of the site or on poles where this cannot be achieved) within the adjoining the land take, 10 with Double Front Panel and 5 x 2FN bat boxes. All boxes should be no less than 3 metres from the ground, mainly in southerly directions and away from lighting, clear of dense branches or scrub and away from busy roads. The boxes may be installed at a maximum of three to any one tree, but this should only be done where a tree is substantial in girth and boxes are not crowded together.

3 Lighting must be managed within and around the quarry

Lighting must be kept from any vegetation intended to provide shelter for fauna and the canopy of any mature trees that are retained within the site. Lighting should not exceed 3 lux along any hedgerow or mature trees to allow for bat feeding and commuting. No bat boxes or other roost sites shall be intentionally or inadvertently illuminated.

Lighting shall be motion-activated to reduce unnecessary illumination at times when quarrying and sand transportation is not operational.

Lighting shall follow the parameters shown below:

No lighting of tree crowns

Motion-activated sensor lighting to reduce light pollution.

The light source shall be LED.

All luminaires shall lack UV elements when manufactured.

A warm white spectrum (ideally <2700 Kelvin) shall be adopted to reduce blue light component.

Luminaires shall feature peak wavelengths higher than 550 nm.

No mature trees shall be illuminated greater than 3 lux

4. Provision of feeding areas for bats following all excavations

Following the completion of excavations, the restored lands shall include feeding opportunities and roost potential for bats. This should include mature trees and where possible a waterbody for bats.

5. Protection of existing pond

The pond adjacent to the site is important both as a feeding area and drinking area for bat (and birds). No excavated materials shall enter the water or in any way reduce the quality of the water for wildlife.

Monitoring

All measures proposed for the site shall be confirmed as in place and operational by an ecologist. The fence around areas of the quarry with sheer sides (e.g. cliff faces or steep side) shall be confirmed as adequate for reducing the potential for badger entry by an ecologist.

Lighting shall be checked upon installation and following 1 year to ensure that the light levels are as proposed and are not creating significant light pollution.

All bat boxes shall be checked after 2 years for use, by a licensed bat specialist, and shall be re-positioned if there is no evidence of take-up.

Impacts After Mitigation

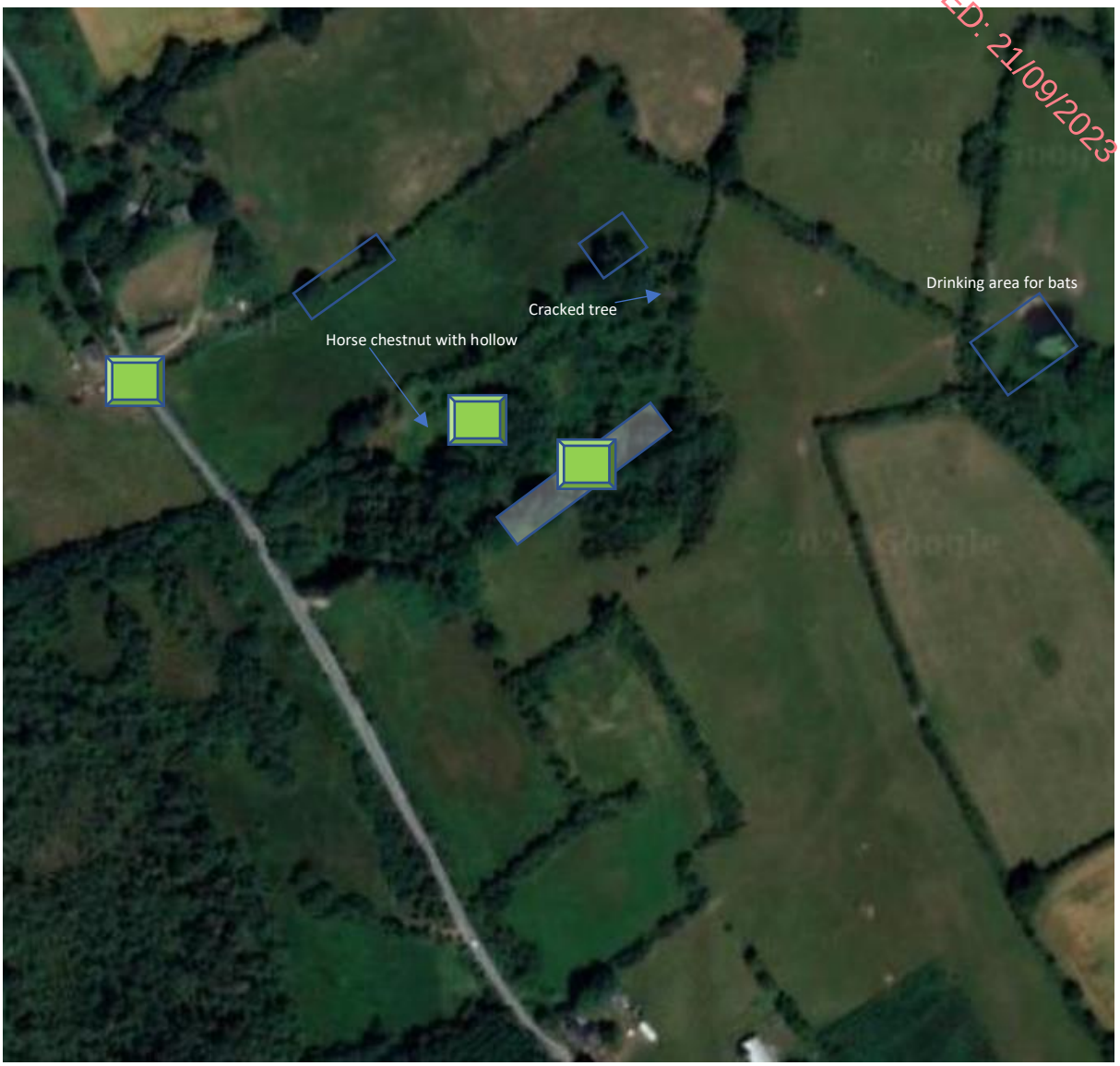
The success of mitigation is dependent upon its full implementation. It is essential that the measures proposed are implemented in full to ensure that impacts are restricted to a medium term and are not permanent. With proper lighting control, dust (and other waste) control, planting, protective measures and roost replacement, there should be a medium-term impact on bats and other mammals. With proper remediation, there is the potential to restore the site to a varied biodiversity as is currently present. The site will be depleted of biodiversity in stages during its exploitation and there will be a similar re-colonisation of the site over time following depletion of the excavated material.

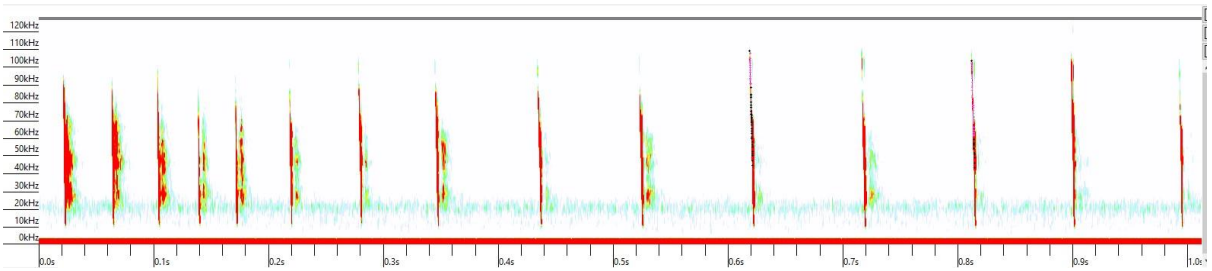
Bat activity within the site in May and July 2022

Legend

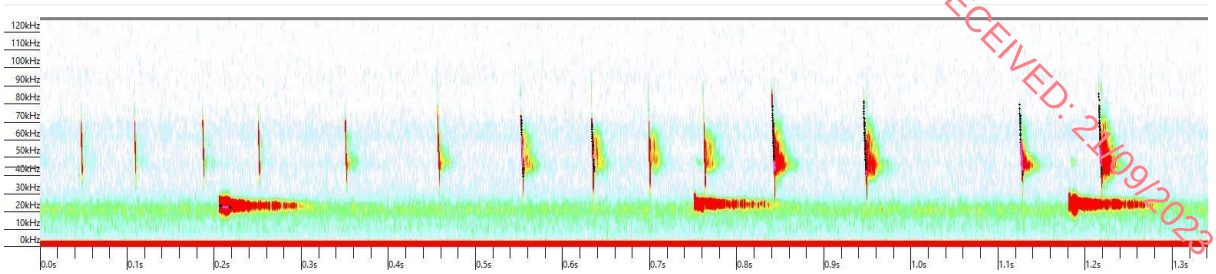
Area of high bat activity

Area where static monitor was placed

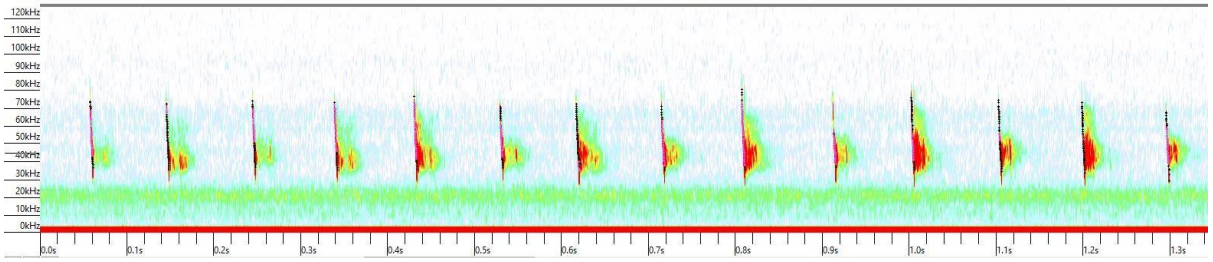




Natterer's bat signal at 01.09 hours at house gate 28th July 2022



Leisler's bat signals and possibly Daubenton's bat signals (but clearly a *Myotis* bat species)



Signals auto-identified at whiskered bat on 28th July 2022. This may be of another *Myotis* species

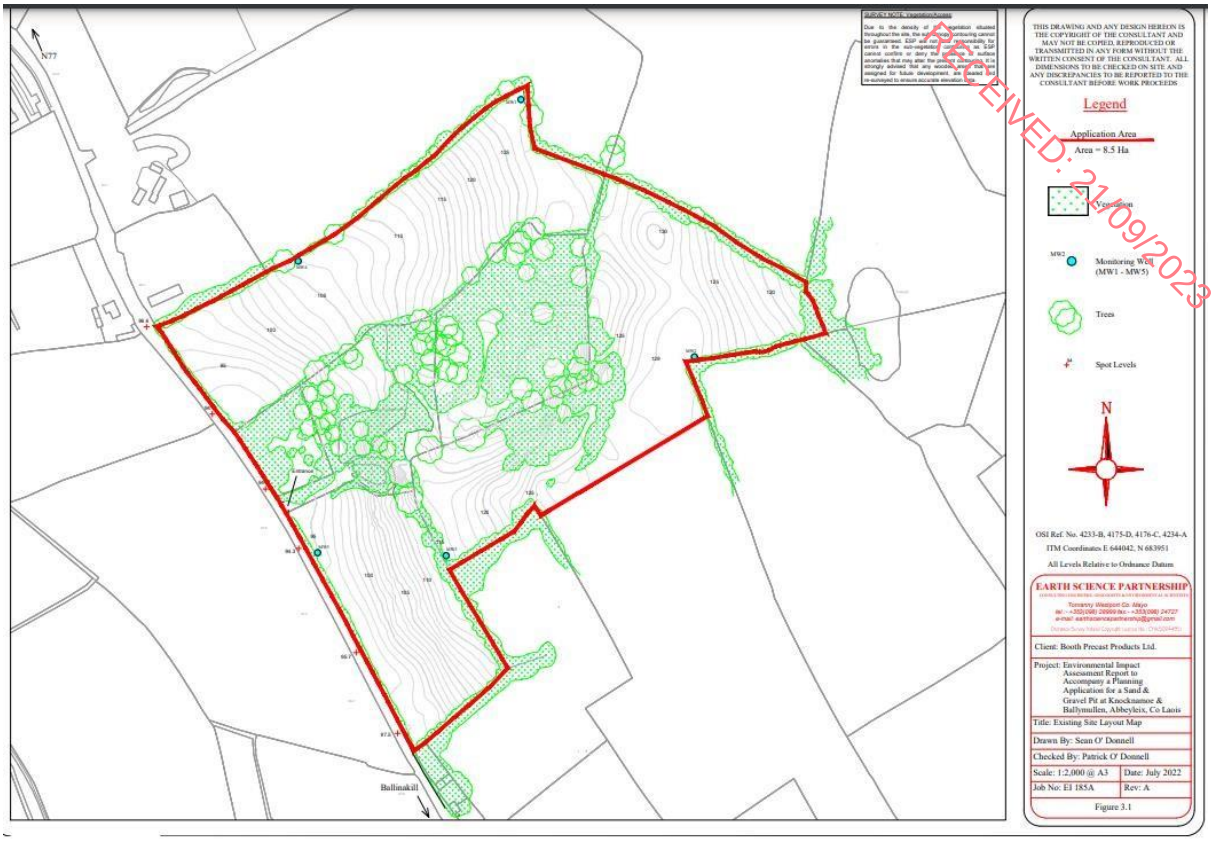
Bat passes recorded by static monitor at the nearby house gate to the northwest of the site

Bat species	Bat passes per hour									
	0	1	2	3	4	5	21	22	23	Grand Total
Brown long-eared bat				1					1	2
Common pipistrelle	48	37	7	5	20	10	2 1	96	97	341
Daubenton's bat	2	1	1	1	5			2	1	13
Leisler's bat	2	1			4	1	1 9	35	4	66
MYOTIS								2		2
Natterer's bat		1								1
pipistrelle							1	11		12
Soprano pipistrelle	7	8	1	1	9	3	2	93	16	140
Grand Total	59	48	9	8	38	14	43	239	119	577

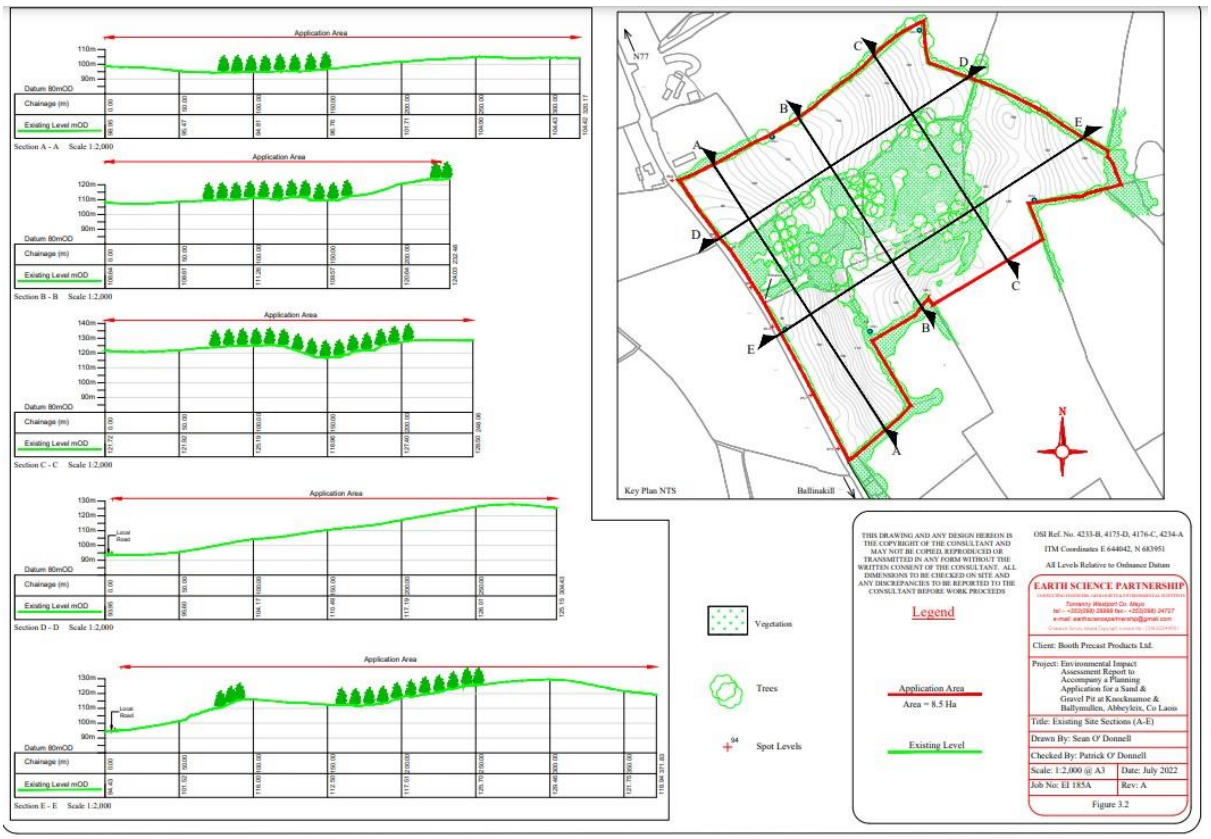
The Natterer's bat signals may be greater and may be included with Myotis and Daubenton's bat signals

Leisler's bat drinking from pond 23.29 hours 27th July 2022

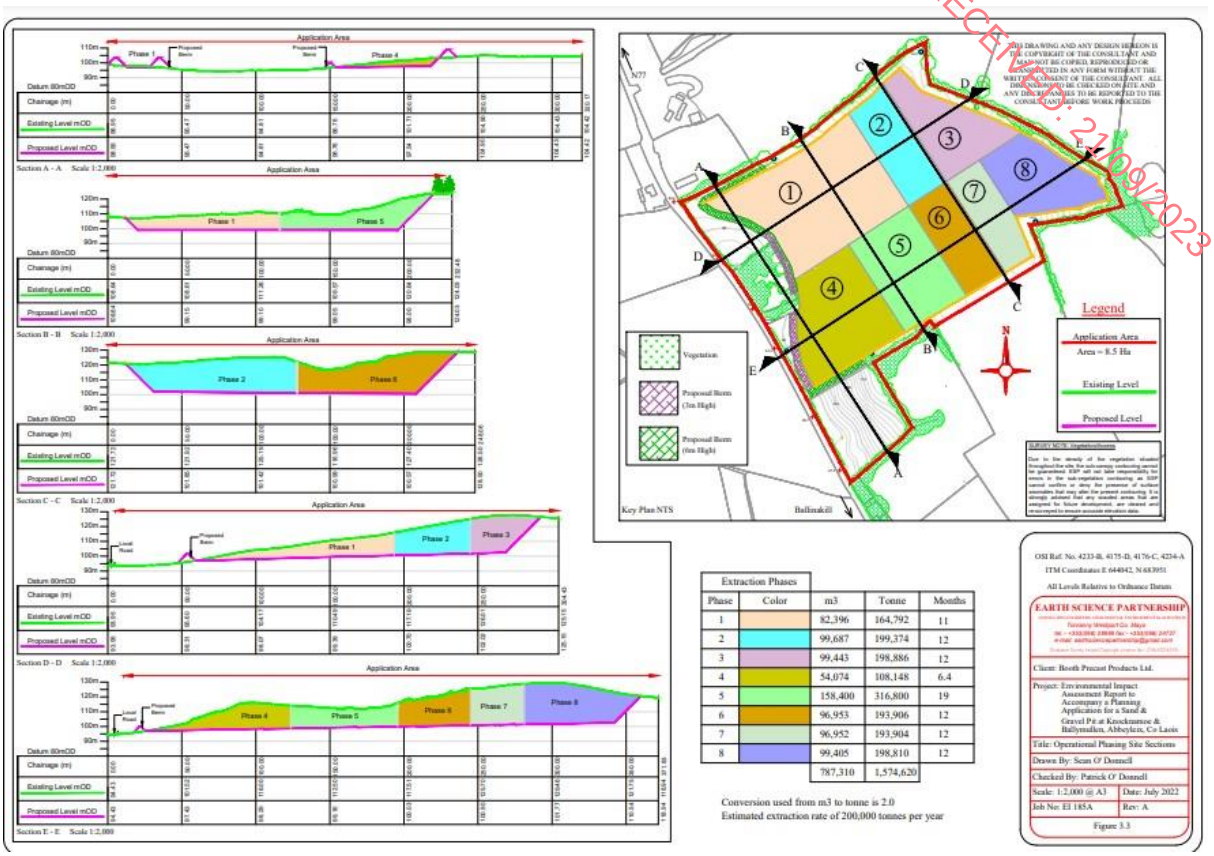
Red deer hind and fawn and Irish hare
Irish hare at 05.44 hours



Existing Site Layout



Existing Site Scetions



Extraction Phases				
Phase	Color	m3	Tonne	Months
1		82,396	164,792	11
2		99,687	199,374	12
3		99,443	198,886	12
4		54,074	108,148	6.4
5		158,400	316,800	19
6		96,953	193,906	12
7		96,952	193,904	12
8		99,405	198,810	12
		787,310	1,574,620	

Conversion used from m3 to tonne is 2.0
Estimated extraction rate of 200,000 tonnes per year

OSI Ref. No. 4233-B, 4175-D, 4176-C, 4234-A
ITM Coordinates E 644942, N 683951
All Levels Relative to Ordnance Datum

EARTH SCIENCE PARTNERSHIP
Tawnaghmore, Westport Co. Mayo
tel: - +353 (0)98 28900 fax: - +353 (0)98 24727
e-mail: earthsciencepartnership@gmail.com

Client: Booth Precast Products Ltd.

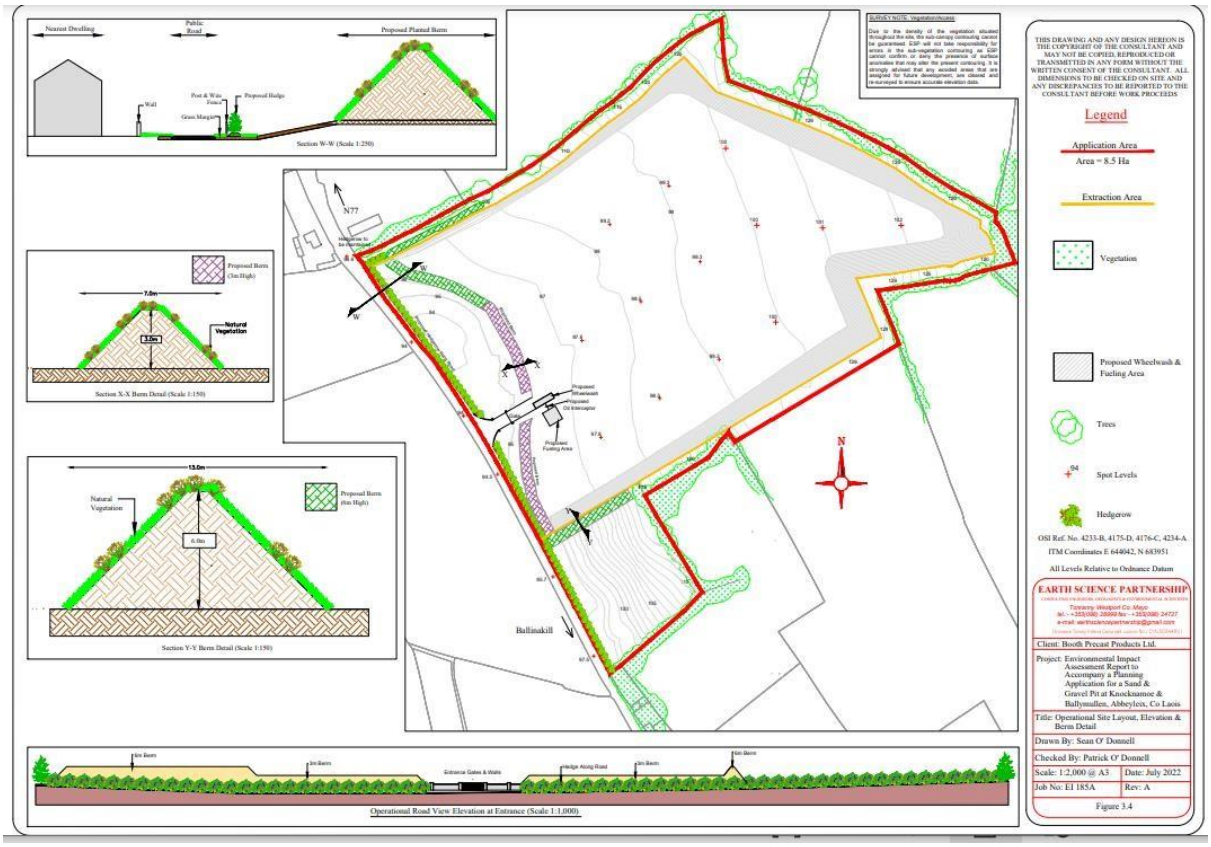
Project: Environmental Impact Assessment Report to Accompany a Planning Application for a Sand & Gravel Pit at Knocknamoe & Ballymullen, Abbeyleix, Co Laois

Title: Operational Phasing Site Sections

Drawn By: Sean O' Donnell
Checked By: Patrick O' Donnell
Scale: 1:2,000 @ A3 | Date: July 2022
Job No: EI 185A | Rev: A

Figure 3.3

Operational Phasing Site Sections



OSI Ref. No. 4233-B, 4175-D, 4176-C, 4234-A
ITM Coordinates E 644942, N 683951
All Levels Relative to Ordnance Datum

EARTH SCIENCE PARTNERSHIP
Tawnaghmore, Westport Co. Mayo
tel: - +353 (0)98 28900 fax: - +353 (0)98 24727
e-mail: earthsciencepartnership@gmail.com

Client: Booth Precast Products Ltd.

Project: Environmental Impact Assessment Report to Accompany a Planning Application for a Sand & Gravel Pit at Knocknamoe & Ballymullen, Abbeyleix, Co Laois

Title: Operational Site Layout, Elevation & Berm Detail

Drawn By: Sean O' Donnell
Checked By: Patrick O' Donnell
Scale: 1:2,000 @ A3 | Date: July 2022
Job No: EI 185A | Rev: A

Figure 3.4

Badger sett, badger dung, badger hairs and badger digging

Gorse with sett potential; and pine marten scat on cow dung

Pond used by bats for drinking and feeding and cedars with minor roost potential

Trees and bat roost potential

No trees were occupied on the survey dates in May and July 2022