

Spink Quarry, Knockbaun, Abbeyleix, Co. Laois

Spink Quarry

Environmental Impact Assessment Report

Section 5

Biodiversity

2021



Part of the Breedon Group

Prepared by:

J Sheils Planning & Environmental Ltd

31 Athlumney Castle, Navan, Co. Meath

TABLE OF CONTENTS

5 BIODIVERSITY 1

5.1 INTRODUCTION..... 1

5.1.1 Planning Context 2

5.1.1.1 Existing Planning 2

5.1.2 Proposed Development 2

5.1.3 Statement of Expertise 4

5.1.4 Objectives..... 4

5.1.5 Planning Guidance Documents & Legislative Requirements 5

5.1.5.1 EU Habitats Directive..... 5

5.1.5.2 EU Birds Directive..... 5

5.1.5.3 Wildlife Acts (1976 - 2012)..... 6

5.2 IMPACT ASSESSMENT METHODOLOGY..... 7

5.2.1 Study Methodology 7

5.2.2 Site Evaluation and Impact Assessment 9

5.2.3 Consultation..... 9

5.2.3.1 Mandatory Stakeholders..... 9

5.2.3.2 Consultation with EPA, Water Matters, Catchments, i.e., LAWPRO, Inland Fisheries Ireland..... 9

5.2.3.3 Project Ecologist and NPWS: 10

5.2.3.4 Pearl Mussel Specialist..... 11

5.3 SITE DESCRIPTION 13

5.3.1 Site Location & Topography 13

5.3.2 Land Use 13

5.3.3 Site Layout..... 13

5.3.4 Previous Site Water Management..... 14

5.3.5 Previous Planning Conditions..... 16

5.4 RECEIVING ENVIRONMENT 17

5.4.1 Habitats and Flora 17

5.4.1.1 Designated Sites..... 17

Laois County Council Planning Authority - Viewing Purposes Only!

5.4.1.2	Quarry Habitats.....	18
5.4.2	Fauna	21
5.4.2.1	Bats	21
5.4.2.2	Badgers	21
5.4.2.3	Otters.....	21
5.4.2.4	Birds	21
5.4.2.5	Freshwater Ecology.....	22
5.5	ASSESSMENT OF IMPACTS	24
5.5.1	'Do Nothing' impacts.....	25
5.5.2	Direct Impacts.....	25
5.5.2.1	Quarry Habitats.....	25
5.5.2.2	Fauna	26
5.5.3	Indirect Impacts	27
5.5.3.1	Quarry Habitats.....	27
5.5.4	Cumulative Impacts	28
5.5.5	Transboundary Impacts.....	29
5.5.6	Residual Impacts.....	29
5.5.7	'Worst Case' Impacts.....	29
5.6	MITIGATION MEASURES.....	29
5.7	SAC PROTECTION MEASURES.....	32
5.8	MONITORING.....	33
5.9	CONCLUSIONS.....	33
5.10	REFERENCES.....	34
5.11	FIGURES	36

Laois County Council Planning Authority, Viewing Purposes Only!

LIST OF TABLES, FIGURES AND PLATES

Table 5.1 European Sites within 15 km or Potential Zone of Influence of Proposed Development . 17

Table 5.2 Biodiversity - Impact Matrix 24

Table 5.3 Mitigation Measures 30

Figure 5.1 Showing European sites and NHAs/pNHAs in wider area of proposed development.... 37

Figure 5.2 Detail of designated conservation sites in vicinity of proposed development..... 38

Plate 5.1 WFD Register of Protected Areas and Margaritifera Sensitive Areas..... 10

Plate 5.2 Site outlined in Red with Margaritifera First Order Rivers (Purple)..... 11

Laois County Council Planning Authority, Viewing Purposes Only!

5 BIODIVERSITY

5.1 INTRODUCTION

This section of the EIAR describes the likely significant effects on biodiversity resulting from the proposed continued use and operation of the existing quarry including deepening of the quarry at Knockbaun, Spink, Co. Laois. Extraction will be confined to the existing permitted quarry area (P.A. Ref. 10/383) comprising an extraction area of c. 14.5 ha within an overall application area of c. 19.6 ha. The development will include provision of new site infrastructure, including portacabin site office, canteen, toilets, concrete batching plant and truck washdown facility, hydrocarbon interceptors, mobile crushing and screening plant, upgrading of the water management system, provision of holding tank for wastewater, and other ancillaries. The proposed development will utilise/upgrade the existing insitu quarry infrastructure, including site access, internal roads, storeroom, wheel wash, weighbridge, aggregate storage bays, refuelling hard stand, water settlement pond system, and other ancillaries (Refer to Figure 1.3).

The quarry will be referred to as 'the site' for ease of reference throughout this chapter.

The aspects of the proposed development that are of particular relevance to biodiversity are:

- Potential effects on species associated with the aquatic ecology of the the Clogh River to the east and the Owenbeg River to the west; and
- Potential effects on water quality in terms of connectivity with the European sites located downstream, i.e., the River Barrow and River Nore Special Area of Conservation (SAC; Site Code 002162).

In order to maintain a dry working subsurface environment on the floor of the quarry, some rainfall-runoff and groundwater will need to be transferred across the site boundary. Such waters will enter local surface waters. In terms of local hydrology, the Water Framework Directive (WFD) sub catchments delineate a surface water divide running broadly north-south through the centre of the site with the Clogh River to the east and the Owveg River (also known as the Owenbeg or Ouveg River) to the west. The Clogh River rises at the site and travels in an easterly direction. The mapped area of the River Barrow and River Nore Special Area of Conservation (SAC; Site Code 002162) commences at 1 km, approximately, NW of the site's most western boundary. All surface waters in this headwater segment of the landscape ultimately drain to the River Nore SAC, which is home to the Freshwater Pearl Mussels (*Margaritifera margaritifera* and *M..m durrovensis*)(FWPM). The significance of the hydrological characterisation is therefore acknowledged.

Waters leaving the site will be managed by way of a discharge license. An existing Discharge License is attached to the site (ENV2 WP27) although a new application will be

submitted to Laois County Council because the existing Licence is in the previous owner's name. Lagan Materials Ltd (Lagan) acquired the site in 2014 and there has been no quarrying of rock at this location since then. The hydrological and Hydro-Geological appraisals and the impact assessment presented in EIAR Section 7 support the case for a new Discharge Licence for the site. In terms of water quality and flow, the proposed surface water management system will be designed with cognisance of the relevant national assessment guidelines (DoEHLG 2011; EPA 2011) and Regulations, namely the Groundwater Regulations (2010, as amended 2011, 2012, 2016), Surface Water Regulations (2009, as amended 2019), Freshwater Pearl Mussel Regulations (2009, as amended 2018), and Birds and Natural Habitats Regulations (2011).

The Appropriate Assessment (AA) process was commenced by Moore Group for the proposed development and a Report for AA Screening and Natura Impact Statement (NIS) are presented as separate documents as part of the Planning application (Refer to Appendices 8 & 9 respectively).

5.1.1 PLANNING CONTEXT

5.1.1.1 Existing Planning

The quarry is currently permitted under P.A. Ref. 10/383 which is for a 10 year period to work the quarry, plus two years for final re-instatement works, unless, prior to the end of the period, planning permission has been granted for its extension for a further period. A copy of the planning permission is included in Appendix 2.

5.1.2 PROPOSED DEVELOPMENT

The development will consist of the continued use and operation of the existing quarry including deepening of the quarry. Extraction will be confined to the existing permitted quarry area (P.A. Ref. 10/383) comprising an extraction area of c. 14.5 ha within an overall application area of c. 19.6 ha. The development will include provision of new site infrastructure, including portacabin site office / canteen, toilets, concrete batching plant and truck washdown facility, hydrocarbon interceptors, mobile crushing and screening plant, upgrading of the water management system, provision of holding tank for wastewater, and other ancillaries. The proposed development will utilise/upgrade the existing insitu quarry infrastructure, including site access, internal roads, storeroom, wheel wash, weighbridge, aggregate storage bays, refuelling hard stand, water settlement pond system, and other ancillaries.

A working scheme has been designed for the quarry that provides for the sequence and direction of working (Refer to Figures 3.1 to 3.3). It is proposed that the quarry will be worked in a series of benches (typically 10 to 20 metres) down to a final depth of 200 m AOD in the western quarry area and 190 m AOD in the eastern quarry area.

A 50 m standoff from the extraction area to the R430 Regional Road will continue to be maintained. This standoff area includes the existing site access, store, wheel wash, weighbridge, refueling hard stand, final water settlement ponds, perimeter screening berms, and other ancillaries. The standoff also includes the northeastern constructed pond/wetland at the site entrance that feeds the headwaters of the Clogh stream. The rising of the Clogh River is in this zone and is thereby protected. This bank also acts to screen the development from views to the north.

The scale of the operation under planning permission P.A. Ref. 10/383 was up to a maximum output of 350,000 tonnes per annum, although it is proposed that the average output will be closer to c. 200,000 tonnes per annum, giving an anticipated duration for the extraction of c. 29 years. A further 2 years will be required to implement and complete final restoration of the site to a secure wildlife refuge / amenity use. The proposed development will also enable the operator to fully complete the restoration of both the proposed and existing quarry to beneficial after-use.

There will be no changes to the method of extraction and processing as a result of this planning application. Drilling and blasting will continue to be utilised with processing of extracted rock using mobile crushing and screening plant located within the quarry void. This will reduce handling of material and will also have the benefit of screening these activities from outside views, and being at depth, will also mitigate impacts associated with noise and dust. The broken rock will be excavated by a combination of either a wheeled loading shovel and / or excavator.

A wheeled loading shovel and/or backhoe excavator will be used to feed the blasted rock to the mobile crushing and screening plant that will be relocated close to the working face so as to reduce handling of materials. Stockpiles will be strategically placed on the quarry floor area and will not be visible from outside views.

This is the extraction method that has been in use at the quarry over many years.

The aggregates produced will then be stockpiled and subsequently loaded out by a front-end loader to road trucks for transport off-site to market and / or to the feed bins for the concrete batching plant.

Plant and machinery that operate at the application area will consist of tracked excavators, wheeled loaders and mobile processing plant. Ancillary plant, such as a drilling rig and a water bowser, will be deployed on an intermittent basis.

It is proposed that surface/groundwater water accumulating within the processing and extraction area will be conveyed to the existing series of settlement ponds. This water will be utilised for dust suppression, if required, and/or discharged off-site to an external watercourse subject to a Discharge licence. The Water Management Plan, capacity of the settlement ponds and mechanisms of discharge are presented in this EIAR Section and the Water Section 7.

A Restoration & Landscape Plan for the site has been prepared. Full details for the Restoration Plan are presented in Section 3.4 of this EIAR. The final site restoration will contain a landscaped woodland / amenity with water feature.

The intention is to create a habitat suitable for aquatic life and birds, such that the disused workings will eventually become of considerable amenity value. Some of the methods to be employed are detailed on the Restoration Plan Figure 3.2.

In summary, the final restoration will consist of the following:

- Landscaping works will be undertaken during the working life of the quarry, where required;
- At the end of quarrying, all plant and machinery will be removed off the site;
- All site boundaries will be secured;
- Additional planting of trees and shrubs may be necessary in some areas; and
- The water abstraction pumps will be switched off and groundwater levels will be allowed to return to the current inactive regime at which sump water levels are maintained by way of an existing overflow to natural existing drainage channels.

5.1.3 STATEMENT OF EXPERTISE

The EIAR Chapter: Biodiversity has been completed by Ger O'Donohoe B.Sc. M.Sc. (Moore Group) and draws on data included in Chapter 7 on Water provided by Dr. Pamela Bartley (Hydro-G) and Dr. Colin O'Reilly (Envirologic).

Ger has over 25 years' experience as an environmental consultant with particular experience in the planning and management of Environmental Impact Assessments. He graduated from GMIT in 1993 with a B.Sc. in Applied Freshwater & Marine Biology and subsequently worked in environmental consultancy while completing an M.Sc. in Environmental Sciences, graduating from Trinity College, Dublin in 1999.

His primary role in Moore Group is as Principal Ecologist in the management and compilation of Environmental Impact Assessment Reports and undertaking Ecological Impact Assessments (EclA/Biodiversity Assessment/Habitat Surveys) of the terrestrial and aquatic environments of any particular development.

Ger has excellent knowledge of Environmental Legislation, Planning and Policy. He has extensive experience in freshwater and marine ecology and in terrestrial habitat surveying and mapping.

5.1.4 OBJECTIVES

The objectives of this assessment are to:

- Provide baseline Habitat conditions within the footprint of the site and update previous assessments such as bat surveys. Assess the potential impact of the proposed development on flora and fauna and associated surface water bodies and sensitive

aquatic receptor species with respect to the proposed quarry water's arisings that will require discharge licencing;

- Identify potential risks and impacts and provide appropriate mitigation measures for any identified potential impacts, as deemed necessary; and
- Consider and address biodiversity issues raised in scoping consultations returned by all competent authorities and historic items identified in considerations by NPWS and An Bord Pleanála for the original planning for the site (An Bord Pleanála PL 11. 130640, 2003 Inspector's Report).

5.1.5 PLANNING GUIDANCE DOCUMENTS & LEGISLATIVE REQUIREMENTS

This report was prepared with consideration of the following guidance documents and ensuring compliance with Irish Regulations, listed in the following subsections.

5.1.5.1 EU Habitats Directive

The *Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna)* is the main legislative instrument for the protection and conservation of biodiversity within the European Union and lists certain habitats and species that must be protected within wildlife conservation areas, considered to be important at a European as well as at a national level. A Special Area of Conservation (SAC) is a designation under the Habitats Directive. The Habitats Directive sets out the protocol for the protection and management of SACs.

The Directive sets out key elements of the system of protection including the requirement for "Appropriate Assessment" of plans and projects. The requirements for an Appropriate Assessment are set out in the EU Habitats Directive. Articles 6(3) and 6(4) of the Directive.

5.1.5.2 EU Birds Directive

The *Birds Directive (Council Directive 79/409/EEC and Council Directive 2009/147/EC on the Conservation of Wild Birds)* provides for a network of sites in all member states to protect birds at their breeding, feeding, roosting and wintering areas. This directive identifies species that are rare, in danger of extinction or vulnerable to changes in habitat and which need protection (Annex I species). Appendix I indicates Annex I bird species as listed on the Birds Directive. A Special Protection Area (SPA) is a designation under The Birds Directive.

SACs and SPAs form a pan-European network of protected sites known as Natura 2000 sites (also called "European Sites") and any plan or project that has the potential to impact upon a Natura 2000 site requires appropriate assessment.

5.1.5.3 Wildlife Acts (1976 - 2012)

The primary domestic legislation providing for the protection of wildlife in general, and the control of some activities adversely impacting upon wildlife is the Wildlife Act of 1976. The aims of the Wildlife Act according to the National Parks and Wildlife Service are "...to provide for the protection and conservation of wild fauna and flora, to conserve a representative sample of important ecosystems, to provide for the development and protection of game resources and to regulate their exploitation, and to provide the services necessary to accomplish such aims." All bird species are protected under the Act. The Wildlife (Amendment) Act of 2000 amended the original Act to improve the effectiveness of the Act to achieve its aims.

Following desktop assessment and fieldwork, an evaluation of the development area and determination of the potential effects on the flora and fauna of the area is based on the following guidelines and publications:

- Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM 2019);
- EPA Draft Guidelines on Information to be contained in an EIA (EPA 2017);
- Best Practice Guidance for Habitat Survey and Mapping (Heritage Council 2011);
- Assessment of plans and projects significantly affecting Natura 2000 sites (EC 2002);
- Managing Natura 2000 Sites (EC 2018);
- Guidance document on Article 6(4) of the Habitats Directive 92/43/EEC (EC 2007);
- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DEHLG, December 2009, Rev 2010);
- Ecological Surveying Techniques for Protected Flora & Fauna (NRA 2008); and
- Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA 2009).

5.2 IMPACT ASSESSMENT METHODOLOGY

This assessment concentrates on ecological features within the development area of particular significance, primarily designated habitats and species. This includes habitats/species listed in Annex I, II and IV of the EU Habitats Directive, birds listed in Annex 1 of the EU Birds Directive, rare plants listed in the Flora Protection Order and other semi-natural habitats of conservation value.

The European Habitats Directive 92/43/EEC (Article 6) indicates the need for plans and projects to be subject to Habitats Directive Assessment (also known as Appropriate Assessment) if the plan or project is not directly connected with or necessary to the management of a Natura 2000 site, which includes Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), but which has the potential to have implications on a site's conservation objectives. These implications can be significant effects, either individually or in combination with other plans or projects.

A habitat survey was carried out, in three stages, firstly through desktop research to determine existing records in relation to habitats and species present in the study areas. This included research on the National Parks and Wildlife Services (NPWS) metadata website, the National Biodiversity Data Centre (NBDC) database and a literature review of published information on flora and fauna occurring in the development area.

Other environmental information for the area was reviewed, e.g., in relation to soils, geology, hydrogeology and hydrology. Interactions in terms of the chapters on these topics presented in this EIA were important in the determination of source vector pathways and links with potentially hydrologically connected areas outside the proposed development site. While the main focus of biodiversity was on the proposed development site within the red line boundary, the surrounding environment was taken into account in terms of biological and hydrological connectivity, particularly in relation to European sites.

5.2.1 STUDY METHODOLOGY

The habitat survey was carried out firstly through desktop research to determine existing records in relation to habitats and species present in the study areas. This included research on the NPWS metadata website, and the National Biodiversity Data Centre (NBDC) database.

The following resources assisted in the production of this chapter of the report:

- The following mapping and Geographical Information Systems (GIS) data sources, as required:
 - National Parks & Wildlife (NPWS) protected site boundary data;
 - Ordnance Survey of Ireland (OSI) mapping and aerial photography;
 - OSI/Environmental Protection Agency (EPA) rivers and streams, and catchments;

- Open Street Maps;
- Digital Elevation Model over Europe (EU-DEM);
- Google Earth and Bing aerial photography 1995-2021;
- Online data available on Natura 2000 sites as held by the National Parks and Wildlife Service (NPWS) from www.npws.ie including:
 - Natura 2000 - Standard Data Form;
 - Conservation Objectives;
 - Site Synopses;
 - National Biodiversity Data Centre records;
 - Online database of rare, threatened and protected species;
 - Publicly accessible biodiversity datasets.
- Status of EU Protected Habitats in Ireland. (National Parks & Wildlife Service 2019); and
- Laois County Development Plan 2017-2023.

The second phase of the survey involved a site visit to establish the existing environment in the footprint of the proposed development area. Areas which were highlighted during desktop assessment were investigated in closer detail according to the Heritage Council Best Practice Guidance for Habitat Survey and Mapping (Smith *et al.* 2011). Habitats in the proposed development area were classified according to the Heritage Council publication *A Guide to Habitats in Ireland* (Fossitt 2000). This publication sets out a standard scheme for identifying, describing and classifying wildlife habitats in Ireland. This form of classification uses codes to classify different habitats based on the plant species present. Species recorded in this report are given in both their Latin and English names. Latin names for plant species follow the nomenclature of *An Irish Flora* (Parnell & Curtis 2012).

Habitats were surveyed on the 1st June 2021 by conducting a study area walkover covering the main ecological areas identified in the desktop assessment. The survey date was toward the beginning of the optimal botanical survey period but adequate given the disturbed nature of the site. A photographic record was made of features of interest during fieldwork.

Birds were surveyed using standard transect methodology and signs were recorded where encountered during the field walkover survey.

A night-time bat detector survey was undertaken on 1st June 2021 by roving transects circling the site using a D230 Pettersson Heterodyne Bat Detector. The survey commenced at 20:30 with sunset at Spink occurring at approximately 21:44. The weather on the night was relatively good with varying cloud cover and moderate westerly wind calming to light breezes later and temperatures ranging from 17°C during the evening to 14°C that night.

The survey was undertaken in line with recommendations of the Bat Conservation Trust 'Good Practice Guidelines', 3rd edition, 2016 (Collins, J (ed) (2016) and Irish Wildlife Manual No. 25' (Kelleher, C. & Marnell, F. 2006).

The final part of the site assessment involved an evaluation of the study area and determination of the potential impacts on the habitats of the study area. This part of the assessment formed the basis for the Impact Assessment.

5.2.2 SITE EVALUATION AND IMPACT ASSESSMENT

Transport Infrastructure Ireland (TII) Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA 2009) outlines the methodology for evaluating ecological impacts of the project in the present report. According to the TII Guidelines, the Ecological Study should address:

- Designated conservation areas and sites proposed for designation within the zone(s) of influence of any of the route options;
- All the main inland surface waters (e.g., rivers, streams, canals, lakes and reservoirs) that are intersected by any of the route corridor options, including their fisheries value and any relevant designations;
- Aquifers and dependent systems and turloughs and their subterranean water systems;
- Any known or potentially important sites for rare or protected flora or fauna that occur along or within the zone(s) of influence of any of the route options;
- Any other sites of ecological value, that are not designated, along or in close proximity to any of the route corridor options;
- Any other relevant conservation designations or programmes (e.g., catchment management schemes, habitat restoration or creation projects, community conservation projects, etc.); and
- Any other features of particular ecological or conservation significance along any of the route options.

5.2.3 CONSULTATION

5.2.3.1 Mandatory Stakeholders

J Sheils Planning & Environmental Ltd. circulated a scoping document to relevant stakeholders in May 2021. Information on the scoping and responses is presented in Section 1.5.1 of the EIAR.

5.2.3.2 Consultation with EPA, Water Matters, Catchments, i.e., LAWPRO, Inland Fisheries Ireland

Following on from consultation with the Environment Section at the site meeting on the 2nd March 2021, Ann Marie Callan suggested that when the project team had a draft discharge proposal prepared, Laois County Council would consult with LAWPRO, Fisheries Board, EPA etc.

5.2.3.3 Project Ecologist and NPWS:

The project ecologist briefed the scope of the hydrological and Hydro-Geological assessment from the perspective that the site straddles the Margaritifera SAC Catchment to the west and Margaritifera Sensitive Area to the east (Plate 5-1 and Plate 5-2). The ecologist and project team are aware that management of discharge and suspended solids is critical and that any Water Management System on site must ensure that the discharge of suspended solids from site is controlled to ensure no impact on the Pearl Mussels.

It is also important to note that consideration needs to be given to impact on Salmonids because the Pearl Mussel and Salmonids are symbiotic.

The project's ecologist requested that works design for no resultant impact on the River Barrow & Nore SAC with respect to groundwater volume or electrical conductivity (Refer to EIAR Water Section 7).

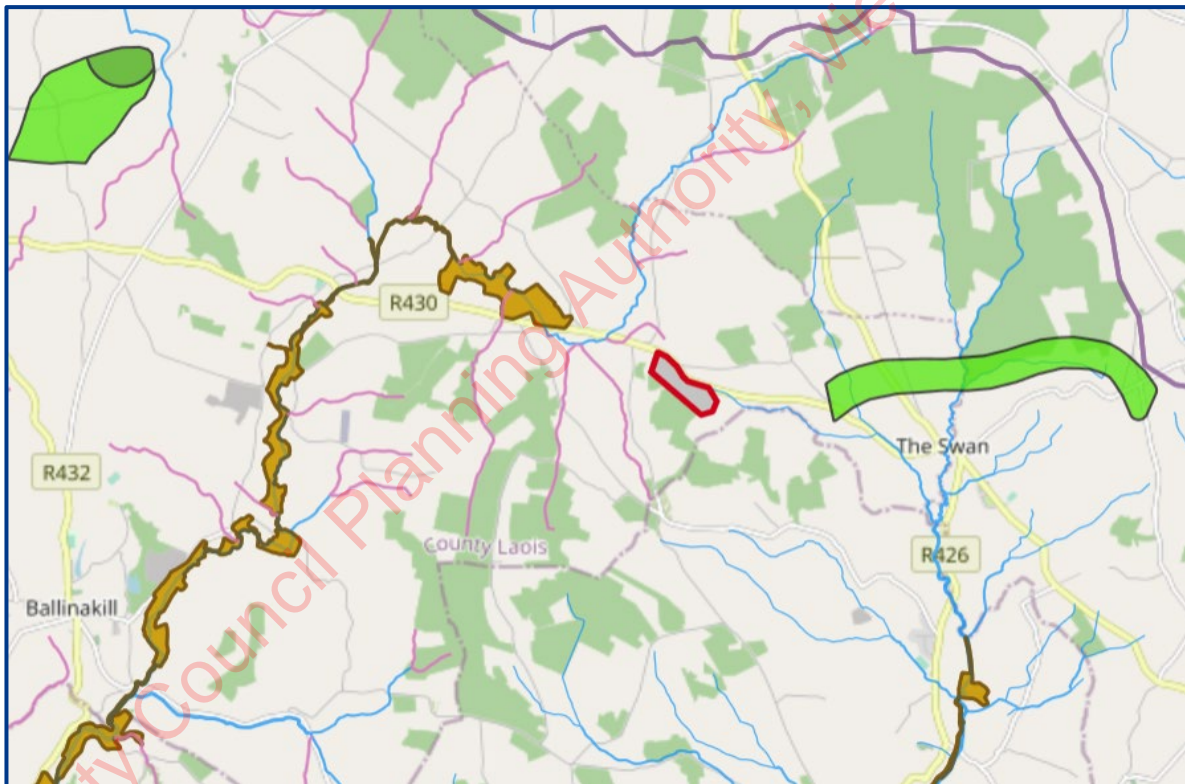


Plate 5.1 WFD Register of Protected Areas and Margaritifera Sensitive Areas (www.epamaps.ie).

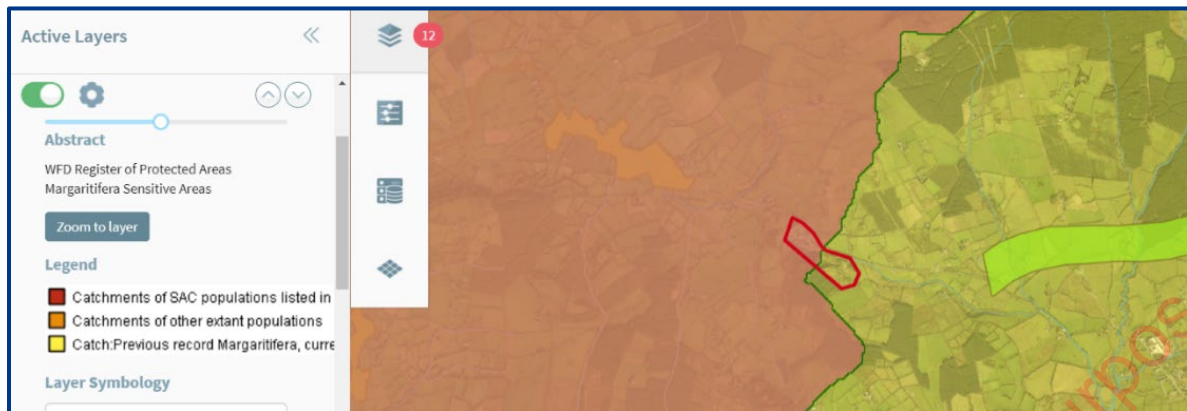


Plate 5.2 Site outlined in Red with Margaritifera First Order Rivers (Purple) - (www.epamaps.ie).

5.2.3.4 Pearl Mussel Specialist

The An Bord Pleanála Inspector's Report for the site in case number PL 11.130640 (2003) reproduced information from the original application (Laois County Council PA. Ref. 10/383):

- 'Freshwater mussels' sensitivity will not be compromised by proposed development: the sensitive zone of the River Nore lies more than 10 kilometres upstream of the confluence of the main Nore channel with its tributary (River Dinin) serving the catchment, including the appeal site. Spawning grounds as far upstream as the village of Swan on the River Nore tributary system will be protected by the mitigation measures of oil interceptor and siltation traps. There will be ongoing monitoring of surface waters. The requirements of the Southern Regional Fisheries Board will be met.'

Dr. Pamela Bartley (Hydro-G) has worked collaboratively on projects with the Pearl Mussel expert Dr. Evelyn Moorkens. In the course of previous projects, Dr. Bartley has previously been advised by Dr. Moorkens that:

1. The headwaters of any pearl mussel catchment are extremely important.
2. It is imperative that Suspended Solids concentrations shall not change as a result of any proposal.

The discharge assessment and assimilation capacity simulation work completed for the site shall ensure those, and other, design caveats are ensured. All discharge evaluations are completed cognisant of the requirements of the Surface Water Regulations (2009, as amended). This assessment will also include the requirements of the Pearl Mussel Regulations (2009 as amended 2018).

Dr. Evelyn Moorkens advised Dr. Pamela Bartley that the point of interest for the Pearl Mussel populations closest to the proposed development site is in the vicinity of Ballyragget, Co. Kilkenny.

Utilising EPA mapping tools (<https://gis.epa.ie/EPAMaps/Water>) allows measurement confirming that there is 20 km, approximately, of stream length between the proposed development site in County Laois and the Pearl Mussel point of interest in Ballyragget, Co. Kilkenny. Hydro-G notes that there are also four other rivers that confluence in advance of Ballyragget. There is an OPW hydrometric station upstream of Ballyragget (Station number, 15012, Station name, BALLYRAGGET) and the reported catchment area is 1056.80 km² (<https://epawebapp.epa.ie/hydronet/#15012>). There is an EPA HydroTOOL model node (15_1157) on one of the River Nore's upland tributaries 1.7 km east of the quarry on the Owveg (Nore)_010 and the cited catchment is 14.506 km². It is therefore calculated that the catchment in which the quarry sits is $((14.506/1056.80)*100) = 1.4\%$ of the land area upgradient of the Pearl Mussel point of interest. The importance of maintaining the Environmental Quality Objectives of the Surface Water Regulations and the Pearl Mussel requirements for no change in Suspended Solids is also acknowledged as crucial for all waters at all parts of the catchment. The assimilation capacity simulations for the proposed discharge will ensure compliance in that regard. However, it is of significance that a ~1% proportion is miniscule in the context of the ~1000 km² surface water catchment upgradient of the Pearl Mussels.

Laois County Council Planning Authority | For Review Purposes Only!

5.3 SITE DESCRIPTION

5.3.1 SITE LOCATION & TOPOGRAPHY

The site is located within the townland of Knockbaun, 3 km west of Swan, 7 km south of Timahoe and 9 km east of Abbeyleix (see Figure 1.1). The quarry is located on the southern side of Regional Road R430, which connects Abbeyleix with Swan.

Regional topography is heavily influenced by the Castlecomer Plateau, an elevated saucer-shaped upland area. The plateau has a north-south length of approximately 30 km, and is widest through the central axis which extends to 20 km. The upland area is hilly with peaks reaching 300–350 m OD. The centre of the raised plateau is depressed relative to the periphery with elevations falling to 130 m OD. The site itself is located at the northern end of the plateau, positioned on the southern side of a small raised valley that runs northwest-southeast between hills 1,300 m to the north (290 m OD) and 130 m to the south (261 m OD). The valley falls naturally to lower grounds to the east and west. The 1:50,000 OSi Discovery maps show elevations at the site to be in the order of 230–250 m OD.

5.3.2 LAND USE

Land in the area typically supports moderate-intensity agricultural grassland supporting livestock production. A forestry plantation abuts the site to the south and this is consistent with land use on higher ground in the wider area. There is a relatively low density of one-off single residences in the area, with some of these attached to farmsteads. A small cluster of residential dwellings is located to the northwest of the site, notably at Larkin's Cross, with the closest of these being c. 175 m west of the site. A search of planning files on the Laois online planning system suggests that potable water supply to all houses in the vicinity of the quarry is sourced from private domestic wells.

5.3.3 SITE LAYOUT

The site or permitted area for quarrying under PA. Ref. 10/383 covers c. 26.6 ha. Part of the unworked permitted area to the northwest has been sold and the revised landholding including quarry now covers c. 19.6 ha., which is under the control of the applicant, Lagan (Breedon Group). Refer to Application Area Map 1.2 for details of landholding and application area.

The site is broadly rectangular in shape with a southeast-northwest length of 800 m parallel with, and adjacent to, the R430, and a perpendicular width of 200–250 m.

An aerial topographical survey was carried out by JSPE in 2021 and has been used to inform discussion of site topography. Pre-development topography falls from the hill to the south (261 m OD) into a minor, raised east-west valley that corresponds with the R430 routing. The high point on the road in front of the site is approximately 234 m OD and road elevations fall to the east and to the west from this point.

The site is accessed via an entrance midway along the northern boundary. For the purposes of site description, it is considered by the hydrogeological team to contain three distinct areas (see Figure 7.2): (i) southeastern portion; (ii) central portion; and (iii) northwestern portion.

The south eastern portion is regarded as the area southeast of the site entrance. Ground in this area is uneven having been partially stripped of overburden in the past, and used for the storage of overburden. It has mostly reverted to natural scrub. To the immediate southeast of the site entrance is a small area understood to have contained a bentonite-lined clarification pond and infiltration area which was probably for management of waters as per the historical Discharge Licence for the site.

The northwestern portion of the site relates to the area excavated to a single bench and contains the previous processing area. The surface condition is generally competent bare rock, which has an elevation of c. 225 m OD. The processing area previously contained an asphalt plant, which has since been removed and will not be reinstated. Other existing site infrastructure remaining includes the site access, internal roads, storeroom, wheel wash, weighbridge, aggregate storage bays, refuelling hard stand. Constructed settlement ponds are present in the north-western and south-western corners. There is evidence of pumping infrastructure and equipment across this area. The sump occurs in the central portion of the site, which has a footprint of approximately 1 ha. Exposed faces around the sump perimeter have heights up to around 20 m above sump water level. There are several stockpiles of previously extracted and processed material to the west of the sump, which remain from the previous operator.

5.3.4 PREVIOUS SITE WATER MANAGEMENT

The sump contains a mixture of groundwater and rainfall due to excavation below existing perimeter ground level. Rainfall landing in the catchment upgradient of this area drains by gravity to the sump. Rainfall landing in the western half of the quarry drains by gravity either to the sump or towards the north-western corner of the site, which accommodates historic water management infrastructure.

It is understood that during previous operations, water was pumped initially from the sump to a series of four interconnected settlement ponds in the south-western corner of the site (referred to as 'Western Settlement Ponds' in Figure 7.2). These ponds remain in place and usable for the management of the quarry's waters in the future. Refer to EIAR Plate 7.3. All settlement system ponds at the site are lined with concrete and are impermeable. The dimensions, and consequent volumetric capacity, for the existing 'Western Settlement Ponds' are as follows:

- Pond Tank No. A = 62 m x 12 m x 1.0 m = 744 m³ (surface area = 744 m²)
- Pond Tank No. B = 72 m x 12 m x 1.0 m = 864 m³ (surface area = 864 m²)

Upon adequate retention time, clarified water left the south-western corner's settlement tank system by a high-level overflow and travelled by gravity flow via a constructed channel to

two final concrete structured settlement ponds located in the north-western corner, these being referred to as:

- Pond Tank No. 2 = 541 m³
- Pond Tank No. 1 = 541 m³

These ponds remain in-situ and continue to be maintained to ensure they remain operational.

It is understood that, under the Conditions of the previous Licence, water was to be pumped uphill from Pond Tank No. 1 to an excavated pond adjacent to the site entrance, referred to in previous planning documentation as the Discharge Pond (capacity = 1,941 m³). This 'Discharge Pond' area appears to have contained two discrete excavated areas. Previous planning documents suggest that pumped water entered an initial settlement pond lined with bentonite at the site entrance. A small spring outflow from raised ground in the eastern half of the site follows the land gradients and is routed into this pond. This pond then overflowed to a second unlined pond from which it infiltrated to ground. A soakaway test performed by Trinity Green in this area returned a vertical infiltration rate of 1.5×10^{-6} m/s. The assessor noted the upper 1.3 m of rock in the trial pit to be heavily fragmented and results may not be a true representation of bedrock permeability.

The historic discharge licence (ENV2 WP27, dated 2009) for the site specified management of a discharge volume of 8,000 l/d, which is equivalent to 8 m³/d, and discharge to groundwaters in the discharge pond immediately to the east of the site entrance. Historic records justifying the discharge do not seem to be currently accessible to the Environment Section of the Council.

A flowmeter was reportedly fitted prior to waters entering the Discharge Pond, though flow records could not be sourced. Currently, rainfall in the southeastern half of the quarry and the aforementioned spring flow also enter this excavated 'discharge' pond. While there may be some unquantified infiltration to ground, it appears from visual observation that there is a surface water outflow from this area which continues eastwards via a ditch that runs along the southern side of the R430. This flow was estimated as 0.5 l/s (43 m³/d) in March 2021. This is the rising of the Clogh River. The proposed quarry design makes provision for a 50 m buffer zone set back from the boundary with the R430 Regional Road. There will be no quarrying and no construction activity in this area. The rising of the Clogh River is in this zone and is thereby protected.

Since cessation of activities at the site, the lack of pumping has resulted in the sump filling with water. The sump is maintained at a constant level by an overflow located on its lower western side. The overflow is channeled into Pond Tank No. 1. The northern wall of Pond Tank No. 1. has been altered such that a short section is made up of large boulders, facilitating a natural pond outflow. Water leaves through the northern edge of Pond Tank No. 1 and subsequently flows westwards through a channel excavated between stockpiled material that is part of the embankment with the adjacent road. This channel continued westwards and directed quarry water into a roadside gully. The channel has become

overgrown due to lack of maintenance resulting in quarry water now emerging into a small roadside channel. Water flows westwards alongside the road until it enters the gully. This flow entering the gully was estimated as 1.5 l/s (130 m³/d) in March 2021 and 2.5 l/s (216 m³/d) in May 2021.

5.3.5 PREVIOUS PLANNING CONDITIONS

There are currently two active surface water outfalls from the site, one to the eastern catchment and one to the western catchment. These correspond with the mapped surface water divide that runs north-south through the centre of the site. The mapped surface water division within the site is the natural separation between the River Clogh catchment to the east and the River Owveg to the west (EIAR Figure 7.1) but both of these are headwaters for the River Nore and both rivers ultimately contribute downstream to the River Nore at a distance of 22 km to the south to southwest of the site. The significance of local catchment divisions with respect to the entire Nore catchment will be considered in the evaluation of the most appropriate surface water management plan for the site.

Historic planning reports, prior to the applicant's acquisition of the site, outlined how surface water from the entire site drained into the settlement pond system by a series of channels and drains. The design of the settlement ponds was such that overall pond capacity was sufficient to prevent overflowing of the Discharge Pond, even in the case of return period design floods, and this prevented flow of surface water from the site entrance onto the R430 (Byrne 2010a). There had reportedly been settlement ponds, two silt and oil interceptors, a discharge pond, and a flow meter to ensure that the daily discharge limit of 8,000 litres of trade effluent from the discharge pond, established by Discharge Licence Ref. ENV2, WP27 from Laois County Council, was not exceeded. All clarified water was reportedly discharged to ground in the Discharge Pond near the site entrance, and was restricted to a suspended solids level of < 25 mg/l. The Licence to Discharge Trade Effluent (ENV2, WP27) to ground appears to relate specifically to PA. Ref. 09/384.

Under PA. Ref. 10/383, planning condition 8 (Water Quality Protection) and 12 (Groundwater, Surface water and Water Table) relate to water management, while Condition No. 11 (Environmental Management & Monitoring) in part relates to monitoring of surface and groundwater. Laois County Council also sought clarity on collection of surface water, operation of settlement ponds, and prevention of overflowing of the Discharge Pond. All waters were pumped from the settlement ponds, via the silt and oil interceptors, to the Discharge Pond.

Furthermore, issues were identified by Laois County Council in relation to mains water, foul sewer and source protection. There is no mains water supply in the area, so the applicant was directed to provide water of adequate quality, and instructed that sewage treatment systems must comply to EN12566, with appropriate thickness of unsaturated subsoil below invert of percolation trench. The previous owners of the site were instructed regarding water, sewerage and oil storage bund capacity.

5.4 RECEIVING ENVIRONMENT

5.4.1 HABITATS AND FLORA

5.4.1.1 Designated Sites

The Department of Housing, Planning and Local Government (previously DoEHLG)'s Guidance on Appropriate Assessment (2009) recommends an assessment of European sites within a Zone of Influence (ZoI) of 15 km. This distance is a guidance only and a zone of influence of a proposed development is the geographical area over which it could affect the receiving environment in a way that could have significant effects on the Qualifying Interests of a European site. This should be established on a case-by-case basis using the Source- Pathway-Receptor framework and not by arbitrary distances (such as 15 km).

The Zone of Influence may be determined by connectivity to the Proposed Development in terms of:

- Nature, scale, timing and duration of works and possible impacts, nature and size of excavations, storage of materials, flat/sloping sites;
- Distance and nature of pathways (dilution and dispersion; intervening 'buffer' lands, roads etc.); and
- Sensitivity and location of ecological features.

The potential for source pathway receptor connectivity is firstly identified and detailed information is then provided on sites with connectivity. European sites that are located within the potential Zone of Influence of the Proposed Development are listed in Table 5.1 and presented in Figure 5.1 and Figure 5.2. Spatial boundary data on the Natura 2000 network was extracted from the NPWS website (www.npws.ie) on the 27 September 2021.

Table 5.1 European Sites located within 15 km or the potential Zone of Influence¹ of the Proposed Development

Site Code	Site name	Distance (km) ²
000869	Lisbigney Bog SAC	8.80
002162	River Barrow And River Nore SAC	1.04
002256	Ballyprior Grassland SAC	10.14
004233	River Nore SPA	8.51

¹ All European sites potentially connected irrespective of the nature or scale of the Proposed Development.

² Distances indicated are the closest geographical distance between the Proposed Development and the European site boundary, as made available by the NPWS. Connectivity along hydrological pathways may be significantly greater.

5.4.1.2 Quarry Habitats

The quarry habitats are best identified on the site layout map in Figure 1.3 where the scrub and grassland mosaic areas are identified as 'Rough pasture' and 'Scrubland' and the worked quarry areas are shown in grey.

5.4.1.2.1 Artificial Ponds (FL8)

This category refers to artificial water bodies present in the site including a number of holding ponds in the north-western corner and the south-western corner of the site. There is an overgrown pond to the east of the quarry entrance and the ponds contain floating sweet-grass, reed mace (*Typha latifolia*) and pondweed (*Potamogeton* spp.). Rushes are present around the margins. The quarry sump was full of water at the time of surveying and while it fits into this habitat category, it is devoid of flora and ephemeral in nature.

5.4.1.2.2 Dry calcareous and neutral grassland (GS1)

This category is used for unimproved or semi-improved dry grassland that may be either calcareous or neutral, but not acid. It is associated with low intensity agriculture and typically occurs on free-draining mineral soils of various depths. Calcareous grassland is restricted in its distribution and is now largely confined to the steep slopes of esker ridges and moraines in the midlands, and to other areas with shallow and rocky limestone soils.

Dry calcareous and neutral grassland may comprise a wide range of grasses and broadleaved herbs. Species richness varies and can be high (up to 45 species per m²). Common grasses include bents (*Agrostis* spp.), meadow-grasses (*Poa* spp.), meadow foxtail (*Alopecurus pratensis*), Timothy (*Phleum pratense*), fescues (*Festuca* spp.), sweet vernal-grass (*Anthoxanthum odoratum*), crested dog's-tail (*Cynosurus cristatus*), cock's-foot (*Dactylis glomerata*) and Yorkshire-fog (*Holcus lanatus*). Grasses that are indicative of strongly calcareous soils include downy Oat-grass (*Avenula pubescens*), yellow oat-grass (*Trisetum flavescens*), blue moor-grass (*Sesleria caerulea*) and quaking-grass (*Briza media*). Perennial rye-grass (*Lolium perenne*) may also be present but should not dominate the sward. Common broadleaved herbs include clovers (*Trifolium* spp.), yarrow (*Achillea millefolium*), common knapweed (*Centaurea nigra*), selfheal (*Prunella vulgaris*), common bird's-foot trefoil (*Lotus corniculatus*), cats-ear (*Hypochoeris radicata*), lad/s bedstraw (*Galium verum*) and oxeye daisy (*Leucanthemum vulgare*).

This grassland type is found in the field outside of the application site on the western side of the site and is closely grazed. Typical grass species encountered include cock's foot (*Dactylis glomerata*), creeping bent (*Agrostis stolonifera*), perennial rye-grass (*Lolium perenne*), Yorkshire fog (*Holcus lanatus*), crested dog's tail (*Cynosurus cristatus*) and meadow grasses (*Poa* spp.). A variety of herbaceous species were recorded including yarrow (*Achillea millefolium*), ribwort plantain (*Plantago lanceolata*), knapweed (*Centaurea nigra*), mouse-ear chickweed (*Cerastium fontanum*), self-heal (*Prunella vulgaris*), creeping buttercup (*Ranunculus repens*), red and white clover (*Trifolium pratense* and *Trifolium repens*), meadow buttercup (*Ranunculus acris*) and bird's foot trefoil (*Lotus*

corniculatus). Commonly recorded weedy species include frequent ragwort (*Senecio jacobaea*), spear thistle (*Cirsium vulgare*), broad-leaved dock (*Rumex obtusifolius*) and nettle (*Urtica dioica*). There are occasional stands of sot rush (*Juncus effusus*) in poorly drained areas.

This habitat type also occurs in drier sections of the eastern section of the site where wet flushes of wet grassland (GS4) and areas of poor fen and flush (PF2) are a feature.

5.4.1.2.3 Wet grassland (GS4)

Areas of wet grassland are found in the eastern side of the landholding and are underlain by poorly drained soils. This area is dominated by rushes (sharp-flowered rush (*Juncus acutiflorus*), compact rush (*Juncus conglomeratus*), jointed rush (*Juncus articulatus*), bulbous rush (*Juncus bulbosus*) and soft rush (*Juncus effusus*)), of which form dense stands. Purple moor-grass, tufted hair-grass, marsh thistle, devils-bit scabious, cuckooflower, Yorkshire-fog, creeping bent and lesser spearwort were all recorded. This area grades into an area of poor fen (PF2) and has scattered areas of gorse scrub (WS1) throughout.

5.4.1.2.4 Poor fen and flush (PF2)

A small area of wet grassland which is transitional to fen type vegetation is located in the south-east corner of the landholding and supports a small spring (FP2), which rises in this area. This area is species rich - a variety of rush species are present sharp-flowered rush (*Juncus acutiflorus*), compact rush (*Juncus conglomeratus*), jointed rush (*Juncus articulatus*), bulbous rush (*Juncus bulbosus*) and soft rush (*Juncus effusus*), and a rich *Sphagnum* moss cover occurs. A variety of sedges; carnation sedge (*Carex panicea*), glaucous sedge (*Carex flacca*), flea sedge (*Carex pulicaris*), and species such as sheep's sorrel (*Rumex acetosella*), ragged-robin (*Lychnis flos-cucuii*), tormentil, lousewort (*Pedicularis sylvatica*), tufted hair-grass (*Deschampsia cespitosa*) and occasional purple moor-grass, devils-bit scabious (*Succisa pratensis*), heath wood-rush (*Luzula multiflora*), great wood-rush (*Luzula sylvatica*) occur.

5.4.1.2.5 Hedgerows (WL1)

There are a number of remnant hedgerows within the site boundary to the east and west of the existing quarry. These hedgerows are gappy, unmanaged and are formed on an earth bank. The dominant species are hawthorn, blackthorn, ivy, bramble and gorse. More structurally intact hedgerows are found along the eastern boundary of the site and along the northern boundary of the site adjacent to the public road. These hedgerows contained a greater diversity of species and are more intact in their structure. Typical species include: elder, holly, willow, blackthorn, hawthorn, ivy and bramble with more rarely ash and spindle (*Euonymus europaeus*).

The ground flora below hedgerows was typically poor (with the exception of the hedgerow, which forms the eastern boundary of the site). Species recorded include bramble, ivy

(*Hedera helix*), cleavers (*Galium aparine*), bush vetch (*Vicia sepium*), tufted vetch (*Vicia cracca*), wood sorrel (*Oxalis acetosella*), bracken (*Pteridium aquilinum*), bilberry (*Vaccinium myrtillus*), docks (*Rumex sp.*), nettle (*Urtica dioica*), male fern (*Dryopteris Nix-mas*), hares tongue fern (*Asplenium scolopendrium*) and herb Robert (*Geranium robertianum*).

5.4.1.2.6 Scrub (WS1)

Patches of scrub are found interspersed with areas of wet grassland in the eastern section of the landholding. Remnants of gorse scrub also occur along the site boundary with the adjoining conifer plantation. Other species present in areas of scrub include bramble, bracken and hawthorn. An area of more dense mature scrub is found in the north eastern part of the site where blackthorn, hawthorn, ash, gorse and sally willow (*Salix cinerea*) occur. The ground flora beneath this scrub is poor and restricted to shade-tolerant species such as bracken, ivy, bramble and occasional hart's-tongue fern.

5.4.1.2.7 Ornamental non-native shrub (WS3)

Linear planting of a variety of non-native species is found on the earthen berms constructed for screening purposes along the northern edge of the site, adjacent to the road. Typical species include, cypress (*Cupressus sp.*), privet (*Ligustrum sp.*), field maple (*Acer campestre*), and an ornamental variety of alder (*Alnus sp.*).

5.4.1.2.8 Recolonising bare ground (ED3)

This category is used for any areas where bare or disturbed ground, derelict sites or artificial surfaces of tarmac, concrete or hard core have been invaded by herbaceous plants. Areas of earthen berms built for screening along the northern boundary of the site either side of the quarry entrance and soil rich areas adjoining the old trackway along the southern boundary of the site support a variety of plant species including; creeping bent, mouse-ear chickweed, cock's-foot, red and white clover, ribwort plantain, creeping buttercup, spear thistle, ragwort, groundsel, yarrow, knapweed, foxglove (*Digitalis purpurea*), hogweed (*Heracleum sphondylium*), docks, occasional rushes and colt's-toot. Some scattered gorse bushes also occur these areas, notably on the berm, which provides screening between the main access road to the quarry and the public road.

5.4.1.2.9 Active quarries and mines (ED4)

The majority of the site is dominated by a worked quarry, where shales and sandstones are extracted, crushed and processed. The nature of this activity means a high level of disturbance, which prevents the colonisation of this area of the site by vegetation. A large area of loose stone and soil has been landscaped in the eastern section of the site and a number of tracks through the quarry allow access for machinery from this area to the upper bank along the southern boundary of the site.

5.4.2 FAUNA

5.4.2.1 Bats

There are no records of bats from a custom polygon encompassing the quarry site for a distance of up to 100 m from the site boundary from the National Biodiversity Database which was consulted on 20/07/2021.

The night time detector survey of the site recorded three contacts from two species of bats: Leisler's bats (*Nyctalus leisleri*) calls were heard from the forestry area to the south along with Common pipistrelle (*Pipistrellus pipistrellus*) in the general area to the west.

These species were also recorded by Brian Keely during a bat survey of the quarry site in June 2011. In general, the use of the quarry area by bats is generally low as would be expected over exposed areas of bedrock.

5.4.2.2 Badgers

No specific feeding signs or setts were found within the quarry site boundary and the soils present tend to be either waterlogged or very thin over the underlying rock. A survey of the upper southern boundary with the adjacent conifer plantation did not reveal any setts. A scat observed in this area was later determined to be from a wild goat observed emerging from the plantation at dusk.

5.4.2.3 Otters

There are no suitable habitats for otters on the proposed development site and no signs of otter were recorded within the site. Potential impacts on otters are considered under indirect impacts on water quality downstream.

5.4.2.4 Birds

Birds recorded during the site visit were typical of the wider countryside. The following species were recorded; Blackbird (*Turdus merula*), Robin (*Erithacus rubecula*), Wren (*Troglodytes troglodytes*), Blue tit (*Parus caeruleus*), Great tit (*Parus major*), Chaffinch (*Fringilla coelebs*), Song thrush (*Turdus philomelos*), Dunnock (*Prunella modularis*), Rook (*Corvus frugilegus*), Hooded crow (*Corvus corone cornix*), Starling (*Sturnus vulgaris*), Magpie (*Pica pica*), Jackdaw (*Corvus monedula*), Wood pigeon (*Columba palumbus*), Stonechat (*Saxicola rubicola*), Coal tit (*Parus ater*), Greenfinch (*Carduelis chloris*), Bullfinch (*Pyrrhula pyrrhula*) and Pied wagtail (*Motacilla alba*).

A single Peregrine Falcon (*Falco peregrinus*) was recorded nesting on the cliff face of the southwestern area of the site.

Approximately 50 Sand Martins (*Riparia riparia*) were recorded nesting in the face of a sand berm on the central northwest section of the site.

5.4.2.5 Freshwater Ecology

The proposed development site is located in the Water Framework Directive Area 15; the River Nore Catchment. As previously mentioned, there are currently two active surface water outfalls from the site, one to the eastern catchment and one to the western catchment. These correspond with the mapped surface water divide that runs north-south through the centre of the site. This division separates the River Clogh catchment to the east and the River Owenbeg to the west. A sampling point on the Owenbeg River at the bridge west of the site indicates that this watercourse has a Q value of 4 in 2019, while a sampling point on the Clogh River, at Slatt Bridge east of the site indicates that this watercourse also has a Q value of 4, both indicating *Good* water quality status. This data is based on the information available from the EPA Maps website.

Unspecified species of lamprey have been recorded from the lower reaches of the River Dinin (to which the River Clogh discharges, c. 6 km directly southeast from the site) and there are records of both sea lamprey (*Petromyzon marinus*) and brook lamprey (*Lampetra planeri*) from the River Nore catchment (Kurz and Costello (1999)). River lamprey (*Lampetra fluviatilis*) and brook lamprey are reported from the River Nore catchment by Kelly and King (2001), while Igoe et. Al. (2004) record all three lamprey species for the Nore. It is unknown as to whether or not lampreys occur in local watercourses in close proximity to the site but brook lamprey is thought likely to occur. All three lamprey species that occur in Ireland are legally protected under the EU Habitats Directive where they are listed under Annex II.

The distribution of white-clawed crayfish (*Austropotamobius palipes*) from the Erkina, Gou' and Gully Rivers in the upper River Nore catchment is confirmed by Lyons & Kelly-Quinn (2003) where it has undergone recent declines that appear to coincide with a deterioration in water quality as indicated by the Q-value biotic index. The presence of the species in the River Nore catchment is also confirmed by Reynolds (1998), Demers et. al. (2005) and NPWS records. The White-clawed crayfish is legally protected under the EU Habitats Directive where it is listed under Annex II. The NPWS have records of White clayed crayfish in the River Owenbeg and River Dinin downstream.

Important populations of the freshwater pearl mussel (*Margaritifera margaritifera*) and the Nore freshwater pearl mussel (*Margaritifera margaritifera durrovensis*) occur in the River Barrow and River Nore SAC (Site Code: 002162). The River Nore is the only site in the world for the hard water form of the Pearl Mussel (*Margaritifera margaritifera durrovensis*). Both species of freshwater pearl mussel (*Margaritifera margaritifera* and *M. m. durrovensis*) are legally protected under the EU Habitats Directive where they are listed under Annex II. This long-lived species is particularly sensitive to any deterioration in water quality.

Atlantic Salmon (*Salmo salar*) and Trout (*Salmo trutta*) are present in the River Nore and Atlantic Salmon are a Qualifying interest of the River Barrow and River Nore SAC along with Twite Shad (*Alosa falax*). The freshwater stretches of the River Nore main channel is a designated salmonid river.

Freshwater Pearl Mussels FWPM and their associated links with Salmonids as life cycle hosts, may be affected by pollution events such as elevated suspended solids and/or chemical pollution.

Laois County Council Planning Authority, Viewing Purposes Only!

5.5 ASSESSMENT OF IMPACTS

The procedure for determination of potential impacts on the receiving environment was to identify potential receptors within the site boundary and surrounding environment and use the information gathered during the field work and desk study to assess the degree to which these receptors will be impacted upon.

Half the application site lies within the existing quarry void, and when the full site is considered as a cumulative site, it is moderate size. In line with best practice, the individual impacts will be considered with respect to the application site, plus the cumulative impacts with respect to the application site and surrounding area.

While the EPA label the Clogh 010 as a river in the EPA surface water monitoring network, it is really groundwater emerging as a stream at ground level. The EPA Q Rating is 4 for the monitoring stations on the Clogh River and the Owveg 010, which are their closest stations to the site.

A spring rises on the site, and this is a potential receptor.

Surface waters are potential receptors. While the EPA label the Clogh 010 as a river in the EPA surface water monitoring network, it is really groundwater emerging as a stream at ground level. The EPA Q Rating is 4 for the monitoring stations on the Clogh River and the Owveg 010, which are their closest stations to the site. The downstream River Nore SAC is a potential receptor.

Table 5.2 Biodiversity - Impact Matrix

'Do Nothing' Impacts	X		
	Construction	Operation	Decommissioning
Direct Impacts	●	●	●
Indirect Impacts	X	●	X
Cumulative Impacts	X	X	X
Residual Impacts	X	X	X
'Worst Case' Impacts	X	●	X

None: X; Slight: ●; Moderate: ●; Significant: ● (Negative) ● (Positive)

Groundwater is a receptor.

The Planning and Development Regulations 2001-2021 require Impact Assessment under the headings of Do Nothing, Transboundary, Direct, Indirect, Cumulative, Residual & Worst Case. Impacts are also assessed in relation to construction, operational and decommissioning stages.

The main anticipated impact associated with the proposed quarry development, in relation to Biodiversity, relates to the potential risk posed to surface water and aquatic receptors.

The above Impact Assessment matrix provides an indication of the significance of potential effects arising during the life cycle of the development not accounting for any mitigation measures.

5.5.1 'DO NOTHING' IMPACTS

If the development did not proceed, the ground of the proposed development would remain a quarry floor within the existing quarry void excavated in the Northwestern half of the site and scrubland in the elevated Southeastern half of the site, which is the current site status. Thus, it would be expected that the application site would not undergo any changes in a 'do-nothing' scenario. Hydro-G and Envirologic have assessed that the site sits on the edge of the Castlecomer Plateau and that the interception and discharge from the site will not significantly change the groundwater dynamics component of the site. It is therefore assessed that to 'go deeper' is unlikely to change the 'do-nothing' scenario.

Under the 'Do Nothing' scenario, all quarrying and ancillary activities would cease. The site would be restored as per the requirements of the existing planning permission (P.A. Ref. 10/383). Habitat development would occur slowly and lead to a general increase in biodiversity as the plant cover became more varied.

As mentioned, the site does not contain items of particular ecological interest at present but the successional stage of open scrub that occurs within the worked-out areas of the quarry has a positive biodiversity value in such agricultural surroundings.

5.5.2 DIRECT IMPACTS

5.5.2.1 Quarry Habitats

There will be no significant change to the quarry habitats from the continued working of the quarry. The quarry base and surrounding upper levels comprise areas of bedrock and have been prepared for quarrying with no predicted significant effects on footprint habitats. The predicted direct effect on footprint habitats is neutral, imperceptible and permanent.

The surrounding Scrub/Grassland mosaic will continue to be managed as part of the quarry operation with similar levels of grazing and maintenance of tracks and access areas. The predicted direct effect on surrounding habitats is neutral, imperceptible and long term.

5.5.2.2 Fauna

Bats

There are no records of bats from a custom polygon encompassing the quarry site for a distance of up to 100 m from the site boundary and night time detector surveys returned relatively low numbers of bats.

There are no roosting habitats in the footprint of the proposed development and there are no predicted direct effects bats.

Badgers

There will be no direct effects on badgers as a result of the proposed development.

Otters

There will be no direct effects on otters as a result of the proposed development.

Birds

Birds recorded during the site visit were typical of the wider countryside. There will be no cutting of vegetation and no direct effects on nesting birds.

The single Peregrine Falcon (*Falco peregrinus*) recorded nesting on the cliff face of the southwestern area of the site will not be affected by the proposed development. Site data from a fully operational rock quarry undertaking regular blasting being operated by the applicant, has shown that nesting peregrines here have successfully raised and fledged a chick in 2021 .

Sand Martins (*Riparia riparia*) are seasonal colonisers of the face of a quarry stockpile on the central northwest section of the site. They migrate to Ireland and often breed on exposed banks especially within sand and gravel quarries and on suitable spoil heaps where limited disturbance allows a sand cliff face to develop.

Potential effects on the nesting area can be avoided by timing of works specific to the area identified.

Freshwater Ecology

The water courses on site are not suitable for lamprey recruitment and there will be no direct effects on lamprey species.

The water courses on site are not suitable for white-clawed crayfish and there will be no direct effects on white-clawed crayfish.

The Irish Wildlife Manual (No. 122³) identifies Pressures and Threats to FWPM can broadly be divided into five categories:

1. Direct damage or disturbance (e.g., trampling by livestock);

³ Moorkens, E.A. & Killeen, I.J. (2020) Monitoring Populations of the Freshwater Pearl Mussel, *Margaritifera margaritifera*, Stage 3 and Stage 4 Survey. Irish Wildlife Manuals, No. 122. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.

2. Hydrological changes (e.g., through excavation or clearance/maintenance of surface or sub-surface drains, sealing of vegetated land, land-use changes from semi-natural habitat cover);
3. Hydrogeological changes, particularly in the riparian area within 50 m either side of mussel habitat (drying out or intensive management of areas that should be contributing to seepage of valuable water and oligotrophic detritus to the river bed);
4. Morphological changes (e.g., erosion or armouring of the river bank, bridge works); and
5. Pollution (e.g., slurry, nutrients, fine sediment).

The water courses on site are not suitable for freshwater pearl mussel and there will be no direct effects on freshwater pearl mussel.

Thus, the main concern with regard to FWPM is for water quality. FWPM and their associated links with Salmonids as life cycle hosts, may be affected by pollution events such as elevated suspended solids and/or chemical pollution.

5.5.3 INDIRECT IMPACTS

5.5.3.1 Quarry Habitats

The quarry surrounding upper levels comprise areas of bedrock and have been prepared for quarrying with no predicted indirect effects on surrounding habitats.

Fauna

Bats

The predicted indirect impact on surrounding habitats is neutral, imperceptible and long term and as such there will be no indirect impact on bats in the surrounding area.

Badgers

There will be no indirect impacts on badgers as a result of the proposed development.

Otters

In the absence of mitigation, a significant discharge of silt laden water could have a significant effect on otter habitats or prey availability.

The proposed development includes specific measures for the attenuation and discharge to surface waters and there will be no indirect impacts on otters as a result of the proposed development.

Birds

The single Peregrine Falcon (*Falco peregrinus*) recorded nesting on the cliff face of the southwestern area of the site will not be affected by the proposed development.

Sand Martins (*Riparia riparia*) are seasonal colonisers of the face of a quarry stockpile on the central northwest section of the site. They migrate to Ireland and often breed on exposed

banks especially within sand and gravel quarries and on suitable spoil heaps where limited disturbance allows a sand cliff face to develop.

Potential indirect impacts on the nesting area can be avoided by timing of works specific to the area identified.

The River Nore SPA is designed for Kingfisher. However, the pathway to the habitats of this species is over 10 km downstream and potential effect from the operation of the quarry are unlikely given the inclusion of control measures on surface water discharge.

Freshwater Ecology

In the absence of mitigation, a significant discharge of silt laden water could have a significant effect on lamprey, habitats or recruitment.

The proposed development includes specific measures for the attenuation and discharge of surface water and there will be no indirect effects on lamprey species as a result of the proposed development.

In the absence of mitigation, a significant discharge of silt laden water could have a significant effect on white clawed crayfish, habitats or recruitment.

The proposed development includes specific measures for the attenuation and discharge of surface water and there will be no indirect effects on white clawed crayfish as a result of the proposed development.

The proposed development includes specific measures for the attenuation and discharge to surface waters and there will be no indirect effects on freshwater pearl mussel as a result of the proposed development.

In the absence of mitigation, a significant discharge of silt laden water could have a significant effect on salmonids, habitats or recruitment.

The proposed development includes specific measures for the attenuation and discharge to surface waters and there will be no indirect effects on freshwater pearl mussel as a result of the proposed development.

5.5.4 CUMULATIVE IMPACTS

There are no other significant developments within c. 3 km of the site at Knockbaun. The absence of any extractive or industrial developments within c. 3 km renders the likelihood of significant negative cumulative impacts on the Biodiversity of the area highly improbable.

5.5.5 TRANSBOUNDARY IMPACTS

The EIA Directive 2014-52-EU invokes the Espoo Convention on Environmental Impact Assessment in a Transboundary Context, 1991, and applies its definition of transboundary impacts. Given the location (c. 135 km from the border with N. Ireland), the nature, size and scale of the proposed development, it is expected that the impacts of the development would not have any significant transboundary effects with respect to water bodies.

5.5.6 RESIDUAL IMPACTS

Based on the mitigation measures provided for during the operational phase, there will be no significant residual impacts envisaged in terms of biodiversity. On completion of the full restoration and closure of the site, it is expected that there will not be any significant, long-term, adverse impacts.

5.5.7 'WORST CASE' IMPACTS

The proposed development includes specific measures for the attenuation and discharge to surface waters and there will be no indirect effects on freshwater pearl mussel as a result of the proposed development.

In the absence of mitigation, a significant discharge of silt laden water could have a significant effect on salmonids, habitats or recruitment.

The proposed development includes specific measures for the attenuation and discharge to surface waters and there will be no indirect effects on freshwater pearl mussel as a result of the proposed development.

5.6 MITIGATION MEASURES

The predicted impacts can be resolved under the mitigation measures set out in [Table 5.3](#).

Table 5.3 Mitigation Measures

Construction Activity	Attribute	Character of Impact	Mitigation	Residual Impact
1. Fuel storage/ usage on site	Local Rivers Clogh and Owenbeg (Nore)	Accidental spillage of contaminants during site operations could cause short to long term, moderate to significant impacts to soils, groundwater and the surface water environment, if not stored and used in an environmentally safe manner.	<ul style="list-style-type: none"> Lagan's SOPs have been designed to ensure responsible activity on their sites. All plant and machinery will be refueled using refueling tanker contractors that will attend at site as required. As such, no fuel will be stored onsite. Waste and fuel materials will be stored in designated areas that are isolated from surface water drains or open waters (e.g., excavations). Hazardous wastes, such as waste oil, chemicals and preservatives, will be stored in sealed containers. Refueling, lubrication and storage areas will not be located within 30 m of drainage ditches or settlement sumps. Drip trays used for drum storage must be capable of holding at least 25 % of the drum capacity. Where more than one drum is stored the drip tray must be capable of holding 25 % of the aggregate capacity of the drums stored. A wheel wash facility exists near the site offices and the roads will have sprinkler systems. Regular monitoring and maintenance of silt traps will be undertaken in accordance with the manufacturer's specifications. Oil that accumulates within hydrocarbon interceptors shall be regularly removed by an appropriately licensed contractor. In addition, the hydrocarbon interceptor shall be appropriately maintained in accordance with the manufacturer's specifications. Regular visual monitoring of the attenuation sump and wetland area will be undertaken to ensure no visual oil or fuel contamination is present. An oil interceptor shall be fitted with the capacity to deal with 1,500 m³/d. The location of the hydrocarbon interceptor is presented in Figure 3.1. 	Neutral
2. Excavation works, Blasting and vehicle movement on site	Local Rivers Clogh and Owenbeg (Nore) Peregrine Falcon	Excavation works may result in vulnerability of surface water at the site and blasting can affect bird species.	<ul style="list-style-type: none"> All plant and machinery will be refueled using refueling tanker contractors that will attend at site as required. As such, no fuel will be stored onsite. Excavations of rock will follow best management practices for maintenance of plant & machinery. The quarry stockpile where sand martins are currently nesting (Summer) will not be worked or disturbed during the summer breeding season. 	Neutral

Construction Activity	Attribute	Character of Impact	Mitigation	Residual Impact
	Sand martins		<ul style="list-style-type: none">The single Peregrine Falcon (<i>Falco peregrinus</i>) recorded nesting on the cliff face of the southwestern area of the site will not be affected by the proposed development. Site data from a fully operational rock quarry undertaking regular blasting being operated by the applicant, has shown that nesting peregrines here have successfully raised and fledged a chick in 2021 .	
3. Surface Water Runoff	Local Rivers Clogh and Owenbeg (Nore)	Road surface runoff or drainage systems have potential, if not correctly designed, to result in contamination of surface waters and groundwater. Accidental spillage could contaminate the aquifer by direct percolation or via the superficial water network. Monitoring results and existing system evaluation suggest that this is not the case at the site.	<p>The settlement sumps and the floor of the quarry have sufficient volumetric capacity to accommodate all waters for the required residence time. Discharge will be of a quality that will not impact water quality. Assimilation capacity simulations have been completed and appropriate Emission Limit Values have been proposed.</p> <p>A flow meter has been proposed for the discharge. Telemetric recording and observation shall be maintained.</p>	Neutral

5.7 SAC PROTECTION MEASURES

The main risk associated with the proposed development, is the potential adverse impact it could have on receiving surface and groundwaters. However, dewatering volumes will be low, envisaged to range from 256 to 1,453 m³/d, approximately, in the course of development. Furthermore, the competent solid nature of the rock and the GSI's classification on groundwater recharge suggest that the site's potential interference in the wider groundwater catchment's water balance is **insignificant**. Groundwater enters the quarry primarily through accumulations at the base of the sandstones. There might be some small transition zone ingresses at times of heavy rainfall, but primarily, actual groundwater enters through the base of the sandstones. This groundwater will settle in the sump at the lowest level of the quarry and will be pumped to the water management ponds prior to discharge. Monitoring results suggest no potential to negatively affect groundwater or surface water quality.

Assimilation capacity simulations have been completed for a potential maximum envisaged discharge volume of 1,453 m³/d. However, that volume will not be encountered all at once. The planned extraction rate and lifetime of the quarry suggests that a maximum of 1,453 m³/d will be encountered in the future close to end of life of the site. The ELVs proposed for the discharge will meet the requirements of all surface water receptors for the maximum discharge volume. The ELVs proposed are justifiable in the context that they are calculated to result in concentrations that comply with the Surface Water Regulation's EQS concentrations and this ensures maintaining favourable habitat in local surface water receptors of groundwater. This is because the discharge quality will be good.

Excellent pond and settlement systems exist already at the site to ensure no change in resultant Suspended Solids concentrations at the point of mixing for the discharge in the Owveg_010. It is worth noting that, as previously stated, the discharge point is 20 km, approximately, upstream of the point of interest for the closest downstream pearl mussel populations to the site, which is in the vicinity of Ballyragget, Co. Kilkenny. The river at the approximate location of the pearl mussels has a land mass catchment area of ~1000 km² feeding to it. The catchment area in which the quarry sits and whose surrounding lands contribute also to the surface water system is ~1 km² land mass of the pearl mussels. It is clear, beyond scientific doubt, that there is so much land mass and recharge area between the site and the pearl mussels and there is such a level of engineering and control at the quarry site, there is no potential for impact and no special protection measures required other than those already prescribed in the design for the site.

With respect to protecting the river systems to the east of the site, the quarry's proposed Management Plan makes provision for a 50 m buffer zone set back from the boundary road. There will be no quarrying and no construction activity in this area. The rising of the Clogh River is in this zone and is thereby protected. The NIS has reviewed the predicted impacts arising from the Project and found that with the implementation of appropriate mitigation measures specifically with regard to surface

water, significant effects on the integrity of the River Barrow and River Nore SAC and the River Nore SPA can be ruled out.

It is the conclusion of the NIS, on the basis of the best scientific knowledge available, and subject to the implementation of the mitigation measures set out that the possibility of any adverse effects on the integrity of the European Sites considered in this NIS, or on the integrity of any other European Site (having regard to their conservation objectives), arising from the proposed development, either alone or in combination with other plans or projects, can be excluded beyond a reasonable scientific doubt.

5.8 MONITORING

There are no proposed monitoring measures for biodiversity. Monitoring of water quality is outlined in EIA Section 7 and has implications for the quality of habitats and aquatic species downstream.

5.9 CONCLUSIONS

There are no predicted adverse effects on local or downstream biodiversity, flora or fauna as a result of the proposed development given the inclusion of workable industry standard mitigation measures that will be monitored to ensure continued efficacy.

The finding of ***no adverse effects*** is a confident assertion because all risks are mitigated and that the proposed development will have no impact on receiving waters and designated sites if the existing mitigating measures continue to be implemented.

No other quarries nor other developments are within a significant distance to affect a cumulative impact.

The findings of this assessment and conclusions concur with the findings for the previous assessment by the Board with respect to “Rock Quarry Development (18 hectares) and Tarmacadam Plant Knockbaun, Spink, near Abbeyleix, Co. Laois” (An Bord Pleanála Ref.: PL 11.130640; Laois Reg. Ref.: 01/1947).

It has previously been concluded that the continuation of quarrying was feasible at the site.

It is concluded, in light of demonstrated compliance with the requirements of the Groundwater and Surface Water Regulations, as well as aiding the objectives of the Water Framework Directive’s implementation in the region, that there are no ‘Water’ impediments to the proposed development.

5.10 REFERENCES

- CIEEM (2019). *Guidelines for Ecological Impact Assessment in the UK and Ireland Terrestrial, Freshwater, Coastal and Marine*. September 2018 Version 1.1 - Updated September 2019. Chartered Institute of Ecology and Environmental Management (CIEEM), Winchester, UK.
- Collins, J. (ed.) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines*. 3rd edn. The Bat Conservation Trust, London, UK.
- DoEHLG (2010). *Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities*. Department of the Environment, Heritage and Local Government (DoEHLG), Dublin, Ireland.
- European Commission (2000). *Managing Natura 2000 Sites: The Provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*. European Commission, Office for Official Publications of the European Communities, Luxembourg.
- European Commission (2002). *Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*. European Commission, Office for Official Publications of the European Communities, Luxembourg.
- European Commission (2007). *Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC: Clarification of the Concepts of: Alternative Solutions, Imperative Reasons of Overriding Public Interests, Compensatory Measures, Overall Coherence and Opinion of the Commission*. European Commission, Office for Official Publications of the European Communities, Luxembourg.
- European Commission (2018). *Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC*. European Commission, Brussels, Belgium.
- EPA (2017). *Draft Guidelines on Information to be Contained in an EIAR*. Environmental Protection Agency (EPA), Johnstown Castle, Co. Wexford, Ireland.
- Fossitt, J.A. (2000). *A Guide to Habitats in Ireland*. The Heritage Council, Kilkenny, Ireland.
- Kelleher, C. & Marnell, F. (2006). *Bat Mitigation Guidelines for Ireland*. Irish Wildlife Manuals, No. 25. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.
- Nairn, R. & J. Fossitt (2004). *The Ecological Impacts of Roads, and an Approach to their Assessment for National Road Schemes*. In: Davenport, J. & Davenport, J.L. (eds.) *The Effects of Human Transport on Ecosystems: Cars and Planes, Boats and Trains*, 98-114. Royal Irish Academy, Dublin, Ireland.
- NPWS (2019). *The Status of EU Protected Habitats and Species in Ireland*. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Dublin, Ireland.

- NPWS (2020). *National Parks and Wildlife Service Metadata*. Available online at <https://www.npws.ie/maps-and-data>.
- NRA (2008). *Ecological Surveying Techniques for Protected Flora & Fauna during the Planning of National Road Schemes*. Available at: <http://www.nra.ie/Environment/>.
- NRA (2009). *Guidelines for Assessment of Ecological Impacts of National Road Schemes*. National Roads Authority (NRA), Dublin, Ireland. Available at: <http://www.nra.ie/Environment/>.
- Parnell, J. & Curtis, T. (2012). *Webb's An Irish Flora*. 8th edn. Cork University Press. Cork, Ireland.
- Smith, G.F., Delaney, E., O'Hora, K., & O'Donoghue, P. (2010). *Habitat Survey and Mapping of Kilkenny City: Habitat Survey Report*. Report prepared for the Councils of the City and County of Kilkenny. Atkins, Dublin, Ireland.
- Smith, G.F., O'Donoghue, P., O'Hora, K. & E. Delaney (2011). *Best Practice Guidance for Habitat Survey and Mapping*. Report prepared for the Heritage Council. Atkins, Cork, Ireland.

Laois County Council Planning Authority, Views Purposes Only

5.11 FIGURES

Laois County Council Planning Authority, Viewing Purposes Only

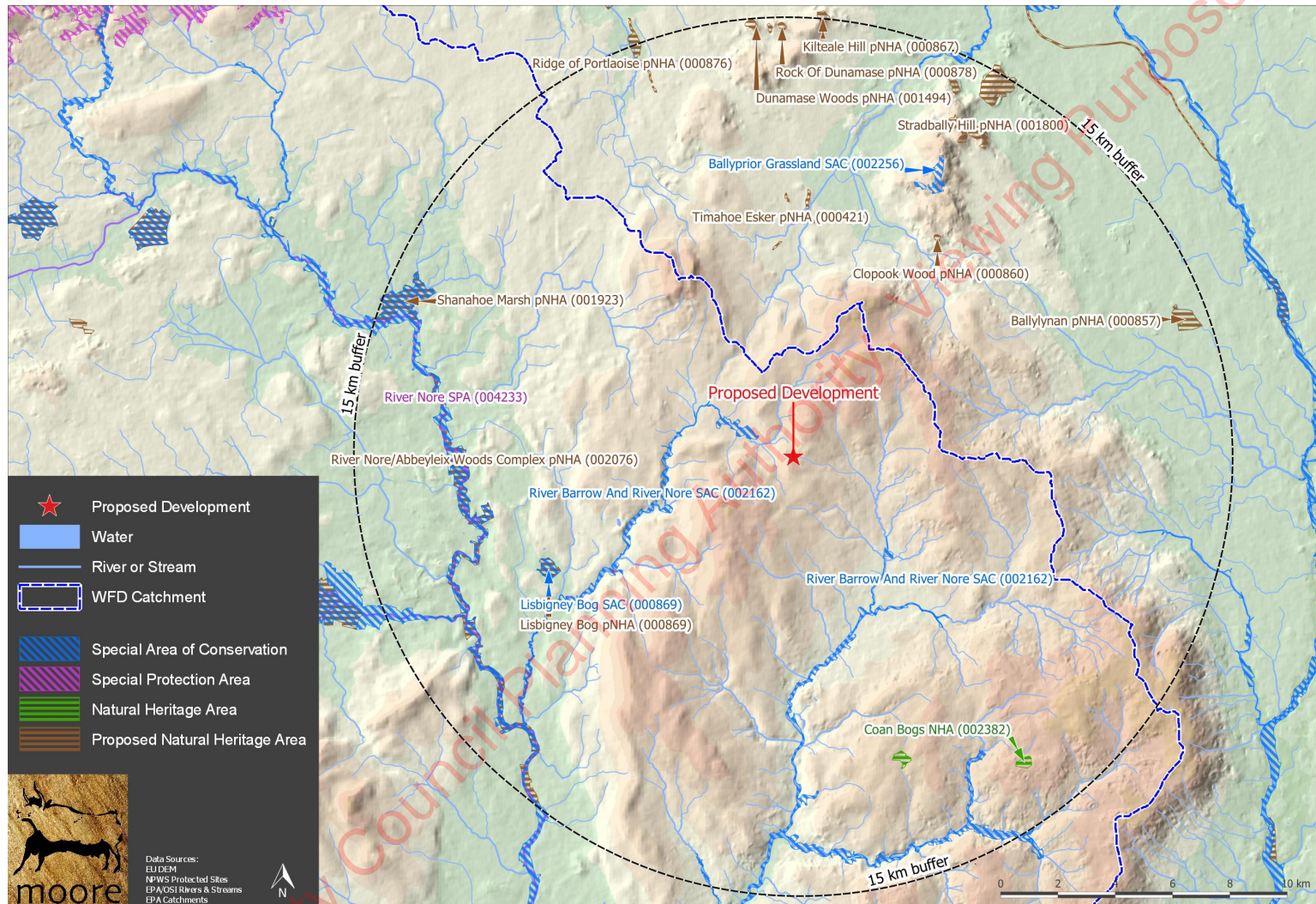


Figure 5.1 Showing European sites and NHAs/pNHAs in the wider area of the proposed development

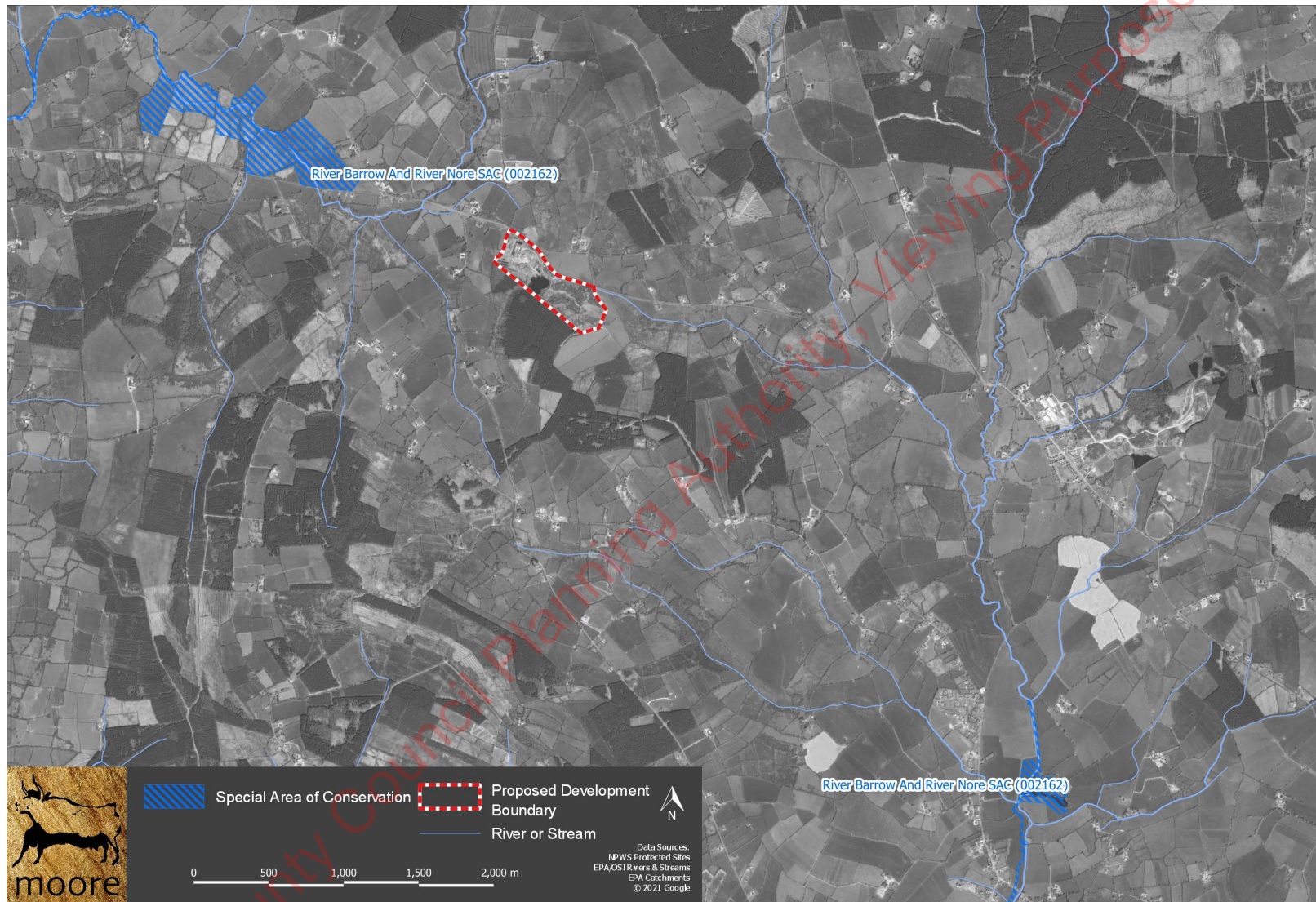


Figure 5.2 Detail of designated conservation sites in the vicinity of the proposed development.