ECOLOGICAL IMPACT ASSESSMENT

Proposed Deepening and Southerly Extension, Aughnacliffe, Aghamore Upper, Co. Longford

Report produced by Woodrow APEM Group for Quarryplan Ltd.
On behalf of Lagan Materials Ltd.

Woodrow APEM Group
Upper Offices, Ballisodare Centre,
Station Road, Ballisodare,
Co Sligo, F91PE04

Email: info@woodrow.ie
Tel: +353 719140542
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Client	Quarryplan, on behalf of Lagan Materials Ltd.
Prepared by	Woodrow APEM Group, Upper Offices, Ballisodare Centre, Station Road, Ballisodare, Co Sligo, F91 PE04 T: +353 71 9140542
Lead Author	Aoife Moroney, Emmeline Cosnett & Adrian Walsh
Checked internally	Maeve Maher-McWilliams
Approved By	Maeve Maher-McWilliams
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STATEMENT OF AUTHORITY

This report was written by Aoife Moroney, Emmeline Cosnett and Adrian Walsh.

Aoife is an Ecologist – Ornithologist with Woodrow APEM Group. She has completed a B.Sc. in Engineering at University College Dublin and M.Sc. in Environmental Engineering (specialising in Environmental Management) at the Technical University of Denmark and the Royal Institute of Technology, Sweden. She has also recently completed a Post-graduate Certificate in Ecological Survey Techniques at the University of Oxford, achieving a distinction. Aoife is highly proficient in data analysis and management as well as mapping using ArcGIS and QGIS. She regularly compiles ecological reports, including Ecological Impact Assessments and Appropriate Assessments, for a variety of small and large-scale developments.

Emmeline Cosnett QCIEEM is an Ecologist with Woodrow APEM Group and is part of their botany and habitat team. Emmeline has worked in a variety of terrestrial and aquatic environments and has excellent habitat classification skills at Fossitt, Phase 1 and IVC/NVC level, and is also experienced in undertaking mammal, bird and bat surveys. She has experience in undertaking site monitoring to assess compliance with habitat management plans and planning conditions, and has worked on a wide variety of reports for clients, including those to inform Appropriate Assessment, Natura Impact Statements, Habitat Management Plans and Ecological Impact Assessment reports.

Adrian is a Graduate Ecologist with Woodrow. He has completed an honours BSc with a focus on Zoology and an MSc in Wildlife Conservation and Management at University College Dublin. He is a Qualifying Member of the Chartered Institute of Ecology and Environmental Management (CIEEM). He has experience in bird surveys, bat surveys, terrestrial mammal surveys and regularly contributes to Appropriate Assessment and Ecological Impact Assessment reports.

This report has been reviewed and approved by Maeve Maher-McWilliams, Principal Ecologist with Woodrow. Maeve is an experienced ecologist and has worked for over ten years on complex environmental impact assessments and mitigation strategies for development projects across Ireland, Northern Ireland and Scotland. Maeve has been involved in projects across several sectors such as renewable energy; linear infrastructure; flood relief schemes and port developments; tourism and recreation; residential, pharmaceutical and data centre developments. She is proficient in ecological impact assessment and Appropriate Assessment. Maeve's specialism is ornithology.

Aoife Moroney – Qualifications:
BSc – Engineering, University College Dublin, 2015
MSc – Environmental Engineering (specialising in Environmental Management), Technical University of Denmark/Royal Institute of Technology Sweden, 2018
PGCert – Ecological Survey Techniques, University of Oxford, 2022

Emmeline Cosnett – Qualifications:
MSc – Wildlife Biology and Conservation, Edinburgh Napier University, 2020-2023 (in progress)
BSc (Hons) – Environmental Science, National University of Ireland, Galway, 2018.

Adrian Walsh – Qualifications:
BSc (Hons) Zoology, University of Galway. 2018
MSc Wildlife Conservation and Management. University College Dublin. 2020.

Maeve Maher-McWilliams – Qualifications:
BSc (Hons) – Biological Sciences, Queen's University Belfast, 2008
MSc – Evolutionary and Behavioural Ecology, University of Exeter, 2010

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1 INTRODUCTION

1.1 Background and scope

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

The proposed quarry extension site (hereafter referred to as the 'Application Site') occupies an area of *c.* 36.8 ha in size, with *c.* 22 ha of the site comprised of the existing quarry and associated overburden and landscaping areas. **Figure 1** illustrates the geographical context and **Figure 2** shows the Planning Application Boundary for the proposal.

The Applicant is submitting a planning application for the winning and working of minerals (greywacke) at Aughnacliffe Quarry, Aghamore Upper, Co. Longford. The proposed development will see the mineral won processed on site to be sold and transported off-site via HGV or used in the existing manufacturing plants on site. As such there is no requirement for additional ancillary development within the Application Site.

The Applicant has appointed a specialist planning consultancy, Quarryplan Ltd., to coordinate the production of the Environmental Impact Assessment Report (EIAR) which shall be submitted to Longford County Council in order to inform the application for winning and working of minerals (sand and gravel).

This EcIA has the following aims:

- Establish the ecological baseline for the development or activity and determine the ecological value of the features identified;
- Provide an objective and transparent assessment of the ecological impacts of the development or activity in terms of national, regional and local policies relevant to nature conservation;
- Recommend mitigation measures to avoid, reduce and remedy any ecological impacts identified;
- Identify any residual impacts of the development or activity post-mitigation; and,
- Demonstrate that a development or activity will meet the legal requirements relating to habitats and species.

1.2 Overview of Proposal and Requirement for Ecological Assessment

1.2.1 Location of the Proposal

The Application Site is located approximately 12 km to the north-east of Longford Town at Irish Grid Reference N 23978 85898. The village of Aughnacliffe is located *c.* 3 km to the north-east of the site, with the village of Ballinalee located *c.* 6 km to the south. The Application Site is *c.* 36.8 ha in size, with *c.* 22 ha of the site comprised of the existing quarry and associated overburden storage and landscaping areas. The remainder of the site (*c.*15 ha), located to the south of the existing quarry void, is comprised of lands in agricultural use. A cluster of farm

buildings, under the ownership of the applicant is located along the southern boundary of the site.

1.2.2 Description of the Proposal

The proposed quarrying operations will be undertaken across three main stages.

Stage 1 comprises establishment of the site. Site establishment involves the erection of an earthen screening bund along the southern perimeter of the Application Site and the demolition of the existing farm outbuildings located in the southern part of the site. The former dwelling building and adjacent stone shed will be retained, along with surrounding existing woodland and vegetation, in order to avoid any significant effects upon protected species of bat and allow for continued connectivity with the surrounding foraging habitat.

Access to the site will be via the existing approved quarry entrance and, as there will be no intensification of operations, there will therefore be no need for alterations to the existing quarry entrance. Furthermore, the access to the southern part of the Application Site, via the farm buildings, will be 'stopped up' and therefore all access to the site will be via the existing quarry entrance.

Stage 2 will involve the phased extraction of material with extraction progressing southwards and then eastwards from the existing quarry void. Topsoils and overburden will be stripped with the use of a 12 m-reach 360 degrees excavator and loaded into a dump truck, where it will be deposited to create the overburden landforms to the north and south of the lateral extension area. The topsoils and overburden will be removed on a campaign basis, across areas sufficient in size to facilitate 1-2 years' worth of extraction of the underlying bedrock at a time. As such, the change in the surface will be gradual with overburden and underlying bedrock removed in increments.

The underlaying bedrock will be extracted via drill and blast methodology as is the current, approved practice at the quarry. Blasting will occur on average once a month and will be undertaken under strict regulations. The mineral won will be processed at the quarry face via the use of mobile resizing plant and machinery to produce a range of single size aggregates. The aggregate products will be stockpiled on the quarry floor, prior to being sold and transported off-site via HGV or used in the asphalt and concrete plants on site.

Water at the site will continue to be managed via the established water management practices which are currently employed at the quarry. This process involves the accumulation of surface water in the quarry sump. The water is then to be pumped to a settlement pond prior to being discharged off-site into the local drainage network via a field ditch, which flows in a north-easterly direction to join Aghamore Stream, which then joins the Aghnacliffe Stream and flows into Lough Gowna (see **Figure 3**). This process is licenced by Longford County Council. under Effluent Discharge Licence Ref WP 02/20.

Finally, Stage 3 will see a restoration of the site following final extraction of materials. The overburden that was extracted and deposited to create the landforms to the north and south of the lateral extension area will be topped with soil and planted with an appropriate mix. A range of biodiverse habitats will be created in addition to a waterbody (lake) within the quarry void following the exhaustion of permitted reserves.

A plan of the Application Site which illustrates the Planning Application Boundary for this site, is shown in **Appendix I**. The Proposed Site Phasing can be seen in **Appendix II**, and the subsequent Proposed Restoration Plan is provided in **Appendix III**.

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

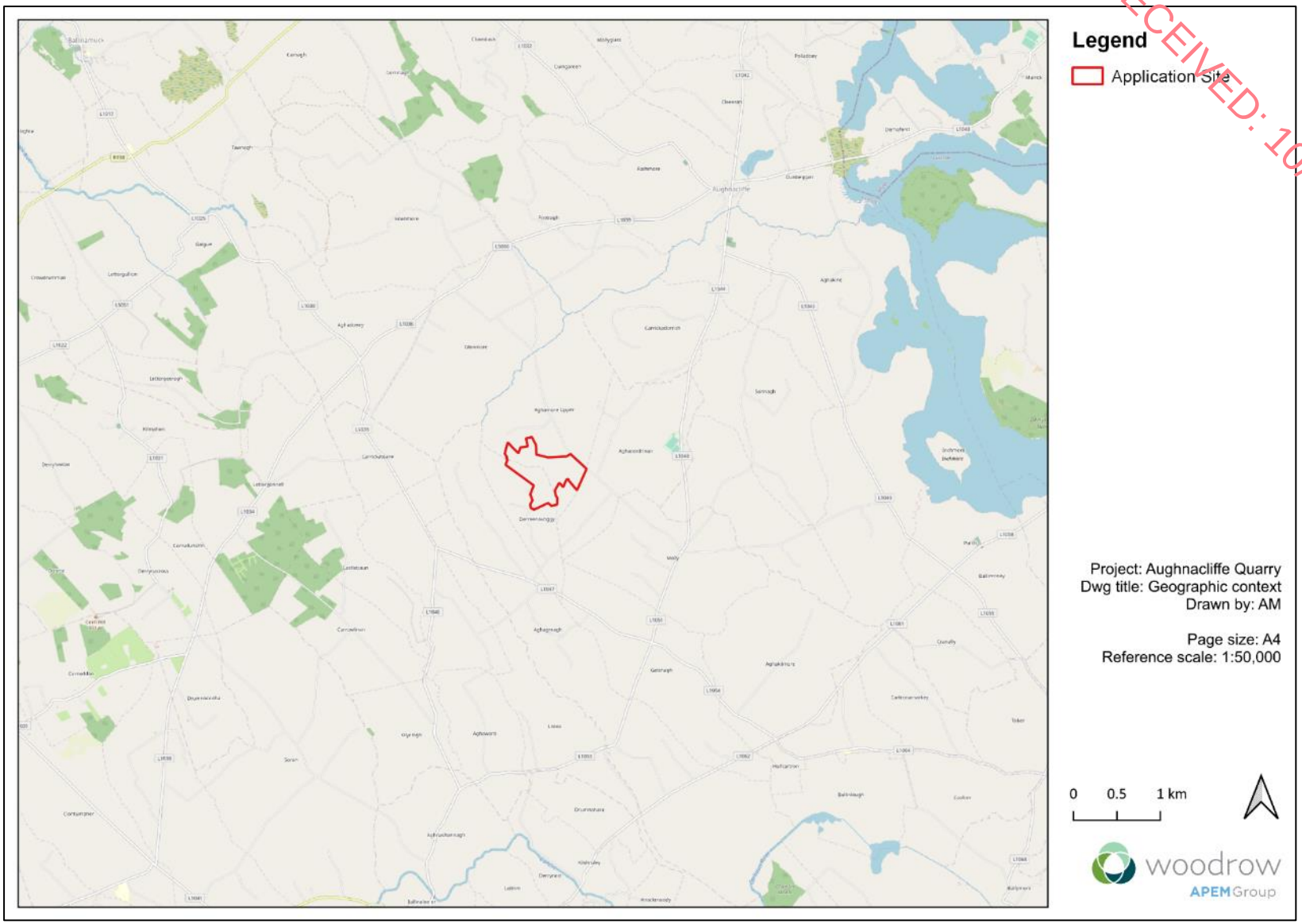


Figure 1: Geographic context for site location

Figure 2: The Application Site and surrounding landscape

Figure 3: Site drainage as per the Hydrogeology and Hydrology Report (Source: BCL Hydro, 2023)

1.3 Requirements for Assessment and Legislative Background

A number of pieces of national and international legislation and policy are applicable to quarry developments that have the potential to impact on ecological receptors. This section aims to contextualise legislation with respect to the proposal. The below legislation has been included to offer background information on the typical environmental legislation pertaining to such developments.

1.3.1 International Legislation

1.3.1.1 EU Habitats Directive

The Habitats Directive provides the basis of protection for Natura 2000 sites, namely Special Areas of Conservation ('SACs'). The full title of this Directive is 'Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora'. A development that may adversely impact the integrity of a site may not be consented except in the absence of feasible alternative solutions and in the event that a proposal is of imperative reasons of overriding public interest. The Habitats Directive also provides for the protection of species listed under Annex IV of the Directive wherever they occur. These species include otter and all bat species.

1.3.1.2 EU Birds Directive

'The Birds Directive' establishes a system of general protection for all wild birds throughout the European Union. The full title of this Directive is 'Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds'. Annex I of the Birds Directive comprises 194 bird species that are rare, vulnerable to habitat changes or in danger of extinction within the European Union. For these species, Member States must conserve their most suitable territories in number and size as Special Protection Areas ('SPAs') – which are considered to be Natura 2000 / European Sites. Similar actions should be taken by Member States regarding migratory species, even if they are not listed in Annex I.

1.3.1.3 Bern and Bonn Convention

The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982) exists to conserve all species and their habitats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was instigated to protect migrant species across all European boundaries.

1.3.1.4 EU Water Framework Directive

In response to the increasing threat of pollution and the increasing demand from the public for cleaner rivers, lakes and beaches, the EU developed the Water Framework Directive (WFD). The full title of this Directive is 'Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for community action in the field of water policy'.

This Directive is unique in that, for the first time, it established a framework for the protection of all waters including rivers, lakes, estuaries, coastal waters and groundwater, and their dependent wildlife/habitats under one piece of environmental legislation. The Water Framework Directive is linked to a number of other EU directives in several ways. These include Directives relating to the protection of biodiversity (Birds and Habitats Directives).

1.3.1.5 UN Convention on Biological Diversity (CBD)

The CBD entered into force on 29 December 1993. It has 3 main objectives:

1. The conservation of biological diversity.
2. The sustainable use of the components of biological diversity.
3. The fair and equitable sharing of the benefits arising out of the utilization of genetic resources.

Parties to the CBD are required to submit a National Biodiversity Action Plan and report annually on the status of biodiversity and measures to address and reverse loss of biodiversity. Ireland's National Biodiversity Strategy and Action Plan (2017-2021) was submitted in December 2017.

1.3.2 National Legislation

1.3.2.1 The Wildlife Act (1976) and amendments

The Wildlife Act 1976 gives protection to a wide variety of birds, animals and plants in the Republic of Ireland (RoI). It is unlawful to disturb, injure or damage their breeding or resting place wherever these occur without an appropriate licence from National Parks and Wildlife Service (NPWS). The Act (as amended in 2000) protects all birds, their nests and eggs. Wilful destruction of an active nest from the building stage until the chicks have fledged is an offence. The Act also provides a mechanism to give statutory protection to Natural Heritage Areas (NHAs). The amendment in 2000 broadens the scope of the Wildlife Acts to include most species, including the majority of fish and aquatic invertebrate species which were excluded from the 1976 Act.

1.3.2.2 EC (Birds and Natural Habitats) Regulations 2011

The EU Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive 1992), provides protection to particular species and their habitats across Europe. The Habitats Directive is transposed into Irish law through the EC (Birds and Natural Habitats) Regulations 2011.

Annex IV of the EU Habitats Directive provides protection to a number of named species wherever they occur. These species are protected under Regulations 29 and 51 of the Habitats Regulations 2011.

1.3.2.3 Planning and Development Act 2000, as amended

For the purposes of an application for planning permission the protection of biodiversity is provided for in the 2000 Act, as amended, and the Planning and Development Regulations 2001, as amended, which incorporate provisions of the Habitats and Birds Directives as well as the Wildlife Act 1976 as amended, the Water Framework Directive, and the biodiversity provisions of the County Development Plan.

1.3.2.4 Flora (Protection) Order (FPO), 2022

The current list of plant species protected by Section 21 of the Wildlife Act, 1976 is set out in the Flora (Protection) Order, 2022, which supersedes orders made in 1980, 1987, 1999 and 2015.

It is illegal to cut, uproot or damage the listed species in any way, or to offer them for sale. This prohibition extends to the taking or sale of seed. In addition, it is illegal to alter, damage or interfere in any way with their habitats. This protection applies wherever the plants are found and is not confined to sites designated for nature conservation.

1.3.2.5 The European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I. 272 of 2009) and as amended

The regulations establish legally binding quality objectives for all surface waters and environmental quality standards for pollutants, with the purpose of implementing provisions of E.U. legislation on protection of surface waters. These regulations clarify the role of public authorities in the protection of surface waters and also concern the protection of designated habitats.

1.3.3 Guidance & Sources of Information

- EPA (2022). Revised Guidelines on the information to be contained in Environmental Impact Assessment Reports. Published May 2022. Environmental Protection Agency, Dublin
- CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal. Chartered Institute of Ecology and Environmental Management (CIEEM)
- Department of Environment, Heritage and Local Government (2010). Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities
- European Commission (2021) Commission Notice - Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC
- European Commission (2021) ANNEX to the Commission Notice - Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC
- European Community Habitats Directive (92/43/EEC) – The Habitats Directive
- European Communities (Natural Habitats) Regulations 1997
- Environmental Protections Agency (EPA) Maps - https://gis.epa.ie/EPAMaps
- Marnell, F., Kelleher, *C.* & Mullen, E. (2022) Bat mitigation guidelines for Ireland v2. Irish Wildlife Manuals, No. 134. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland
- National Biodiversity Data Centre - http://www.biodiversityireland.ie
- National Parks and Wildlife Services data (including GIS datafiles) - https://www.npws.ie/maps-and-data
- Office of the Planning Regulator (OPR) (2021) OPR Practice Note PN01 Appropriate Assessment Screening for Development Management
- EPA Catchments Database– Catchments.ie

1.3.4 Policies and plans

- Longford County Development Plan 2021-2027
- National Biodiversity Action Plan 2017 – 2021
- River Basin Management Plan for Ireland 2018 – 2021

2 SURVEY AND ASSESSMENT METHODOLOGIES

Ecological surveys of the Application Site were undertaken following specific guidelines for habitats and species as outlined in the following sections, and with reference to the legislation and policy outlined in Section 1.

The importance of the habitats and species present is evaluated using the guidance document *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1* (CIEEM, 2018). This document outlines an accepted approach for the evaluation of potential impacts from such developments and is summarised in **Table 1**.

Table 1: Guidance on the evaluation of potential impacts from developments (CIEEM, 2018)

Task	Description
Scoping	Determining the matters to be addressed in the EcIA, including consultation to ensure the most effective input to defining the scope.
Establishing the baseline	Collecting information and describing the ecological conditions in the absence of the proposed project, to inform the assessment of impacts.
Important ecological features	Identifying important ecological features (habitats and species) that may be affected, with reference to a geographical context in which they are considered important.
Impact assessment	An assessment of whether important ecological features may be subject to potential impacts and characterisation of these impacts and their effects. Assessment of potential residual ecological impacts of the project remaining after mitigation and the significance of their effects, including cumulative effects.
Avoidance, mitigation, compensation & enhancement	Incorporating measures to avoid, reduce and/or compensate potential ecological impacts, and the provision of ecological enhancements.
Monitoring	Monitoring impacts of the development and evaluation of the success of proposed mitigation, compensation and enhancement measures.

2.1 Establishing the Potential Zone of Influence of the proposal

Information acquired during the desk-study and field surveys determines the ecological features potentially affected by the proposed development, and which as such occur within its 'Zone of Influence' (ZoI). In establishing the Zone of Influence of a proposed development, a standard 15 km radius from the Application Site is used as a potential Zone of Influence, within which European and nationally designated sites are screened for potential impact.

The ZoI depends on the type of development taking place, its likely impacts and the presence of ecological connections which enable such impacts to affect sensitive ecological features. The ZoI may extend a great distance (several kilometres) beyond the boundaries of the proposed development site, due to the presence of ecological connections with an ecological feature of interest. Similarly, ecological features that have no ecological connection with the proposed development are not within its ZoI, regardless of their proximity to the proposed development, as no pathway for impacts exists.

2.2 Impact assessment methodology

2.2.1 Evaluating ecological features within the Zone of Influence

Those ecological features which occur within the Zone of Influence such as nature conservation sites, habitat or species are evaluated in geographic hierarchy of importance. **Table 2** shows the categories and criteria which are used for this.

Table 2: Frame of reference used to determine value of ecological resources

Importance	Criteria
International Importance	• 'European Sites' including Special Areas of Conservation (SACs), Site of Community Importance (SCIs), or Special Protection Area (SPAs). • Proposed Special Area of Conservation (pSAC) or proposed Special Protection Area (pSPA). • Site that fulfils 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: • Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or • 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 & 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. • Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).
National Importance	• Sites, habitats and species populations of importance in a national context. • Site designated or proposed as a Natural Heritage Area (NHA) in Ireland. • Site designated as an Area of Special Scientific Interest (ASSI) in Northern Ireland. • National or statutory Nature Reserve. • Undesignated site fulfilling the criteria for designation as an Area of Special Scientific Interest (ASSI) or National Nature Reserve. • 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. • Site containing 'viable areas'[1] of habitat types listed in Annex I of the Habitats Directive. • Resident or regularly occurring populations (assessed to be important at the national level in Ireland) of the following: • Species protected under the Wildlife Acts; and/or

[2] A 'viable area' is defined as an area of a habitat that, given the particular characteristics of that habitat, was of a sufficient size and shape, such that its integrity (in terms of species composition, and ecological processes and function) would be maintained in the face of stochastic change (for example, as a result of climatic variation).

Importance	Criteria

	• Species listed on the relevant Red Data list.
	• Site containing 'viable areas' 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 in Northern Ireland) of the following:
	  ○ Species protected under the Wildlife (Northern Ireland) Order 1985; and/or
	  ○ Species listed on the relevant Red Data list.

County / Regional 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 Ireland); and/or
	  ○ Species protected under the Wildlife (Northern Ireland) Order 1985; and/or
	  ○ Species listed on the relevant Red Data list.
	• 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.
	• 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.
	• 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.
	• SLNCIs supporting county important populations of species, or viable areas of semi-natural habitats identified as Northern Ireland Priority Habitats.

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:
	  ○ 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.
	• 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 in maintaining links and ecological corridors between features of higher ecological value.
	• SLNCIs supporting locally important habitat assemblages and /or locally important populations of Northern Ireland Priority Species Sites, habitats and species populations of importance in a parish and district context, including Locally important populations of Northern Ireland Priority Species or Habitats.

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.

The status of a species as requiring protection at an international level does not necessarily impose an international conservation value on any single example of that species found at the site. Approaches to attributing nature conservation value to species have been previously developed for some species groups such as birds and bats. The approach to attributing nature conservation value to bat populations and foraging habitats is adapted from Wray et al. (2010). Bird species conservation status is attributed by the Birds of Conservation Concern (BoCCI4) list (Gilbert et al., 2021).

Only Important Ecological Features (i.e., those features evaluated as being of Local Importance (Higher Value) or greater) within the Zone of Influence are assessed with respect to potential impact.

2.2.2 Identification and characterisation of impacts

When describing ecological impacts, reference is made to the following characteristics:

- positive or negative;
- extent;
- magnitude;
- duration;
- timing;
- frequency; and
- reversibility.

However, the assessment only needs to describe those characteristics relevant to understanding the ecological effect and determining the significance; and as such does not need to incorporate all stated characteristics (CIEEM, 2018).

2.2.3 Significant effects on important ecological features

For the purpose of EcIA, a 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for those ecological features which have been identified as being an important feature of the site ('Important Ecological Features'). Conservation objectives may be specific (e.g., for a designated site) or broad (e.g., national/local nature conservation policy). As such effects can be considered significant in a wide range of geographic scales from international to local. Consequently, 'significant' effects are qualified with reference to the appropriate geographic scale (CIEEM, 2018).

2.2.4 Assessment of residual impacts and effects

After characterising the potential impacts of the development and assessing the potential effects of these impacts on the 'Important Ecological Features', avoidance or mitigation measures are proposed to avoid and / or mitigate the identified ecological effects. Once measures to avoid and mitigate ecological effects have been finalised, assessment of the residual impacts and effects is undertaken to determine the significance of their effects on the 'Important Ecological Features'.

2.2.5 Assessment of cumulative impacts and effects

Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location (CIEEM 2018). Different types

of actions can cause cumulative impacts and effects. As such, these types of impacts may be characterised as:

- Additive/incremental – in which multiple activities/projects (each with potentially insignificant effects) add together to contribute to a significant effect due to their proximity in time and space (CIEEM 2018).
- Associated/connected – a development activity 'enables' another development activity, e.g., phased development, as part of separate planning applications. Associated developments may include different aspects of the project which may be authorised under different consent processes. It is important to assess impacts of the 'project' as a whole and not ignore impacts that fall under a separate consent process (CIEEM 2018).

2.3 Desktop Survey

A desk survey was carried out to gather relevant information on nearby protected areas and the likely distribution of species in the general area prior to the survey visits, so that a targeted survey approach could be undertaken. The desktop survey enabled an assessment of the likely issues and concerns relating to the project and provided information on the species and habitats that might be impacted by the proposal.

Primary sources of information included drawings and scope of works provided by Quarryplan, orthophotographs, datasets on designated areas available from NPWS, species records from the National Biodiversity Data Centre (NBDC) database and a records request from Bat Conservation Ireland (BCI).

2.3.1 Existing Ecological Baseline

The Application Site is within the 2 km National Grid squares N28I, N28H, N28N and N28M. The National Biodiversity Data Centre (NBDC) 'Biodiversity Maps' resource was consulted for all species records within these 2 km squares to establish historic records of important and protected species and the likelihood of their occurrence within the Application Site. Important and protected species include those identified in the Wildlife Act 1976 (as amended) and in the EU Habitats and Species Directive, as well as Bird Watch Ireland's *Birds of Conservation Concern in Ireland* (BoCCI4) (Gilbert et al., 2021). The National Biodiversity Data Centre (NBDC), which incorporates records from a number of different sources, was interrogated for all records within both of these grid squares.

To enhance information on the recorded distribution of bats obtained from the NBDC database, additional information on the suitability of habitat in the surrounding area for bats was also obtained from the database in the form of a habitat suitability map (Lundy et al., 2011), which provides a picture of the broad scale geographic patterns of occurrence and local roosting habitat requirements for Irish bat species.

Due to the nature of the works and the types of habitats on site, the above records were deemed sufficient to inform this assessment, when supplemented by detailed field surveys, allowing direct observations to be made at the site.

2.3.2 Designated Sites

Information on areas designated for their ecological features within 15 km of the site, as well any designated sites with a hydrological connection were obtained, using NPWS data and maps[2] and the EPA map viewer[3] as well as the associated hydrology report for this site (BCL Hydro, 2023). The potential for connectivity with the Application Site was assessed using the available datasets and professional judgement (such as resulting from adjoining watercourses or those in close proximity to the site). Shapefiles of designated areas including Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) in the ROI were downloaded and imported onto GIS.

2.3.3 Active and Inactive Quarries in the Vicinity of the Application Site

A desktop survey of the 2 km area surrounding the Application Site was undertaken on GIS with the purpose of identifying any quarries in the vicinity of the proposal, either active or inactive. Data on quarries was drawn from an online dataset on the Geological Survey Ireland website, by reviewing online spatial data provided through their 'Quarry Directory' map-viewer[4]. Data was reviewed using GIS to assess connectivity between the Application Site, other active quarries, and downstream designated sites.

2.4 Field Survey Methodologies

Field surveys were conducted within the Application Site as detailed in the following sections**.** **Table 3** shows the details of the surveys undertaken. All surveys were conducted according to best practice, following CIEEM Guidance (CIEEM, 2018).

Field tablets were used for mapping with QField mapping software, before being transferred to ArcGIS Pro for finalisation and output. The ArcGIS Survey123 application was utilised on both tablet and mobile phones throughout the surveys. This allowed for geo-referenced photographs and notes to be taken. These were then transferred to ArcGIS Pro for mapping purposes.

Table 3: Ecological surveys conducted at the Application Site

Survey date	Survey type	Surveyors
21/04/2022	Initial Phase 1 survey to identify potential constraints, including bird survey and amphibian suitability.	F. Murphy, A. Walsh
25/05/2022	Extended phase 1 habitat survey	E. Cosnett
05/05/2022 24/05/2022 28/07/2022	Mammal surveys	F. Murphy, G. Mazzotti
17/05/2022 24/05/2022	Breeding bird surveys	A. Moroney
24/05/2022	Deployment of SM2 static bat detectors	F. Murphy

[2] NPWS Designations Viewer. Available at: https://www.npws.ie/maps-and-data/designated-site-data (Accessed January 2023)
[3] EPA Map viewer. Available at: https://gis.epa.ie/EPAMaps/ (Accessed January 2023)
[4] Geological Survey Ireland: Quarry Directory. Available at: https://dcenr.maps.arcgis.com/home/webmap/viewer.html?url=https%3A%2F%2Fsecure.dccae.gov.ie%2Farcgis%2Frest%2Fservices%2FMinerals%2FActiveQuarries2014%2FMapServer&source=sd

Survey date	Survey type	Surveyors
22/06/2022 - 23/06/2022 18/07/2022 30/08/2022	Bat emergence, transect and re-entry surveys Bat emergence survey Bat re-entry survey	R. O'Connell; A. Walsh; R. O'Connell; E. Cosnett; R. O'Connell; C. Barry.

2.4.1 Habitat Surveys

An Extended Phase 1 habitat survey was carried out within the Application Site on 25/05/2022. The Application Site was walked, ecological features of interest were noted, and habitats were classified into recognised communities as outlined in Fossitt (2000). The habitat survey gave cognisance to the potential presence of any habitats which had the potential to correspond to EU Habitats Directive Priority Habitats[5]. Consideration was also given to identifying habitats that could be used by protected species.

2.4.2 Bird Surveys

Two breeding bird surveys were carried out at the Application Site on 17/05/2022 and 24/05/2022, in line with Gilbert et al. (1998). The surveys involved the compilation of singing or displaying birds at the site and recording of possible presence of nesting birds. This survey was cognisant of a standard transect survey methodology (Gilbert et al., 1998; Bibby et al., 2000) and data was collated to provide a bird species list for this site. The surveys were carried out by an experienced surveyor, under appropriate weather conditions, with no heavy rain or strong winds.

2.4.3 Mammal Surveys (excluding bats)

A thorough mammal survey was conducted by experienced Woodrow ecologists on 21/04/2022, 24/05/2022 and 28/07/2022. The primary focus of these surveys was to determine the presence of badger *Meles meles*, including latrines, snuffle holes, prints and/or their resting places/setts (Smal, 1995). The surveys also included the recording of any incidental observations or detected evidence for other mammals of conservation concern which might be using the Application Site (e.g., Irish hare *Lepus timidus hibernicus*, pine marten *Martes martes*, Irish stoat *Mustela erminea* Hibernica and hedgehog *Erinaceus europaeus*).

The survey approach entailed a systematic walkover of the site and adjacent habitats. This included the identification of suitable habitat, detection of field signs such as tracks, markings, feeding signs, droppings and scent points (e.g., fox *Vulpes vulpes*), as well as direct observation. All mammal target notes were accompanied by a photo and six figure grid reference.

The surveys were undertaken in line with guidelines referenced by *Competencies for Species Survey: Badger* CIEEM (2013) and in line with Irish survey guidelines including *Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes* (NRA, 2005). Every effort was made, through repeat visits where possible, to assign the level of use and

[5] EUNIS classification. Available at: https://www.eea.europa.eu/data-and-maps/data/eunis-habitat-classification

the status of a sett. Where this was not possible, the precautionary principle has been used and the sett was considered active. This has been highlighted where relevant within this report.

2.4.4 Bat Surveys

An assessment of trees and structures within the Application Site, known as a Potential Roost Feature (PRF) survey, was undertaken during the extended phase 1 surveys, as per Bat Conservation Trust (BCT) Guidelines (Collins, 2016). This assigned trees and structures within the Application Site (or potentially affected by the proposed works) as 'low', 'moderate' or 'high' status in terms of their potential for roosting bats, i.e., the presence of PRFs. Two emergence and two re-entry surveys were undertaken on 22/06/2022, 23/06/2022, 18/07/2022 and 30/08/2022 at features identified during the PRF surveys, see **Table 4**.

Table 4: Summary of timing and weather conditions during the emergence/re-entry surveys

Survey Date	Survey type	Sunset	Start Time	End Time	Weather Conditions
22/06/2022	Emergence	22.06	21:50	23:36	Dry, 17°C, F2, SW, 4 Okt.
23/06/2022	Re-entry	05:02	03:40	05:17	Misty, drizzle, 14°c, F2, SW
18/07/2022	Emergence	21:49	21:30	23:20	Dry, 23°C, F3
30/07/2022	Re-entry	06:35	05:05	06:50	13°C, F2, E

A transect survey was also undertaken using a Batlogger handheld bat detector on 22/06/2022 during suitable weather conditions (see **Table 5**), in accordance with BCT Guidelines. Two surveyors walked around boundaries of the existing quarry and the agricultural fields to the south, where the highest amount of commuting bat activity would be expected, with particular attention paid to the hedgerow/treeline boundaries and areas of scrub, which are due to be removed as a component of this proposal.

Table 5: Summary of timing and weather conditions during the bat transect survey

Survey Date	Sunset	Start Time	End Time	Weather Conditions
23.06.2022	22.12	23.52	01.05	Dry, 16°C, F2, SW, 4 Okt.

Three SM2 static detectors were deployed between 24/05/2022 and 10/06/2022. Their locations are shown in **Figure 4** and **Table 6.**

Table 6: Summary of static detector survey effort at the Application Site

Detector No.	Latitude	Longitude	Associated Feature
1 (WSS011)	-7.642851	53.82361	On tree in middle of patch of scrub in the west of the site
2 (WSS005)	-7.638976	53.820916	On gate attached to western side of vacant farmhouse
3 (WSS0019)	-7.631232	53.821693	On tree directly adjacent to old gravel track

Figure 4: Locations of static detectors deployed at the Application Site in May 2022

Figure 5: Bat transect survey route

2.4.5 Amphibian Habitat Suitability Survey

Elements within the application site were examined for their suitability to support breeding amphibians, namely smooth newt *Lissotriton vulgaris* and common frog *Rana temporaria*. Particular attention was given to waterbodies, as breeding newt require standing water with vegetation for their aquatic young (DEARA, 2017).

The suitability assessment was carried out by an experienced Woodrow surveyor, who determined whether or not the environmental conditions were suitable for breeding amphibians. Criterion for waterbodies with breeding newt suitability are outlined in the Irish National Smooth Newt Survey report (Meehan, 2013) and shown in **Table 7.**

Table 7- Conditions needed for suitable breeding newt habitat (Meehan, 2013)

Criteria	Condition
Water-flow	Very slow-moving or still water (essential)
Vegetation	Some aquatic vegetation present
Fish	Very few or no fish present
Age	Sites over five years in age
Size	Sites of a manageable size (essential - no lakes)

2.4.6 Limitations

All surveys undertaken at this site were carried out at the appropriate times of year for the identified species. It is considered that timing and content of surveys were appropriate and are sufficient to inform this planning application.

3 BASELINE ECOLOGICAL CONDITIONS

The following sections describe the existing ecological baseline within the Application Site following the desk study, botanical and faunal surveys undertaken according to the methodologies outlined in Section 2.3.

Baseline conditions are the existing environmental state within the Application Site before the commencement of the proposed development. This section of the report provides information regarding these baseline conditions.

3.1 Description of the Application Site

The Application Site is located in an undulating rural setting characterised by agricultural fields interspersed with blocks of forestry. There are a small number of residential properties located sporadically throughout the surrounding area. The Application Site itself is surrounded by agricultural fields on all sides, with boundaries comprised of hedgerows. The topography across the northern part of the site is dictated by quarry workings to date, with ground levels ranging from *c.*162 mAOD at the quarry entrance to *c.*141 mAOD in the quarry floor. Previous overburden landforms are located at the eastern and western ends of the quarry void and have become vegetated and greened up over time. The eastern end of the quarry is used for the stockpiling of processed materials, with extraction works focused in the western part of the quarry.

The Application Site is accessed via the existing and approved quarry entrance, located along the north-eastern boundary of the site, providing access to a local road network which ultimately connects to the R198 to the north and R194 to the south. Access to the farm buildings in the southern part of the site is afforded via an un-named single lane road to the south-east of the buildings.

The Application Site lies on the boundary between the Cavan Groundwater Body (GWB) (IE_NW_G_061), which is on the north side of the divide and has an area of 1,410 km^2, and the Longford Ballinalee GWB (IE_SH_G_149), which is on the south side and has an area of 340 km^2.

To the north-northeast of the site, the Aghnacliffe Stream and its tributaries flow to Lough Gowna. The source of the Aghnacliffe Stream is at the northwest boundary of the landholding. One of its tributaries, which arises close to the northeast corner of the quarry, is hereafter referred to as Aghamore Stream. The larger part (*c.* 90%) of the existing quarry void is on the north side of the watershed i.e., the pre-development footprint would have drained to the Aghnacliffe Stream and Aghamore Stream. It should be noted that the source of the Aghnacliffe Stream was seen to be dry on 11 October 2022 (BCL Hydro, 2023).

To the south southwest, the slopes are drained in a southerly direction by un-named tributaries that join the Camlin River. The main river flows from east to west, passing to the north of Ballinalee. The stream that descends from the southern end of the Application Site is hereafter referred to as Derreenavoggy Stream. The Hydrological and Hydrogeological Impact Assessment (BCL Hydro, 2023) noted that the site's connectivity to the Derreenavoggy Stream was via a minor drainage ditch, with an estimated flow rate of 0.02 l/s and sluggish movement. The catchment boundaries and drainage network of the area are shown in **Figure 6**.

The status of Aghnacliffe Stream and Aghamore Stream (RWB European Code IE_NW_36A060400), taken together, is 'Q4-5, High' river waterbody status from the Water Framework Directive (WFD) 2016-2021 reporting period and is considered 'not at risk'. The status of the Derreenavoggy Stream (IE_SH_26C010200) is classed as moderate (not at risk) according to the WFD 2016-2021 reporting period.

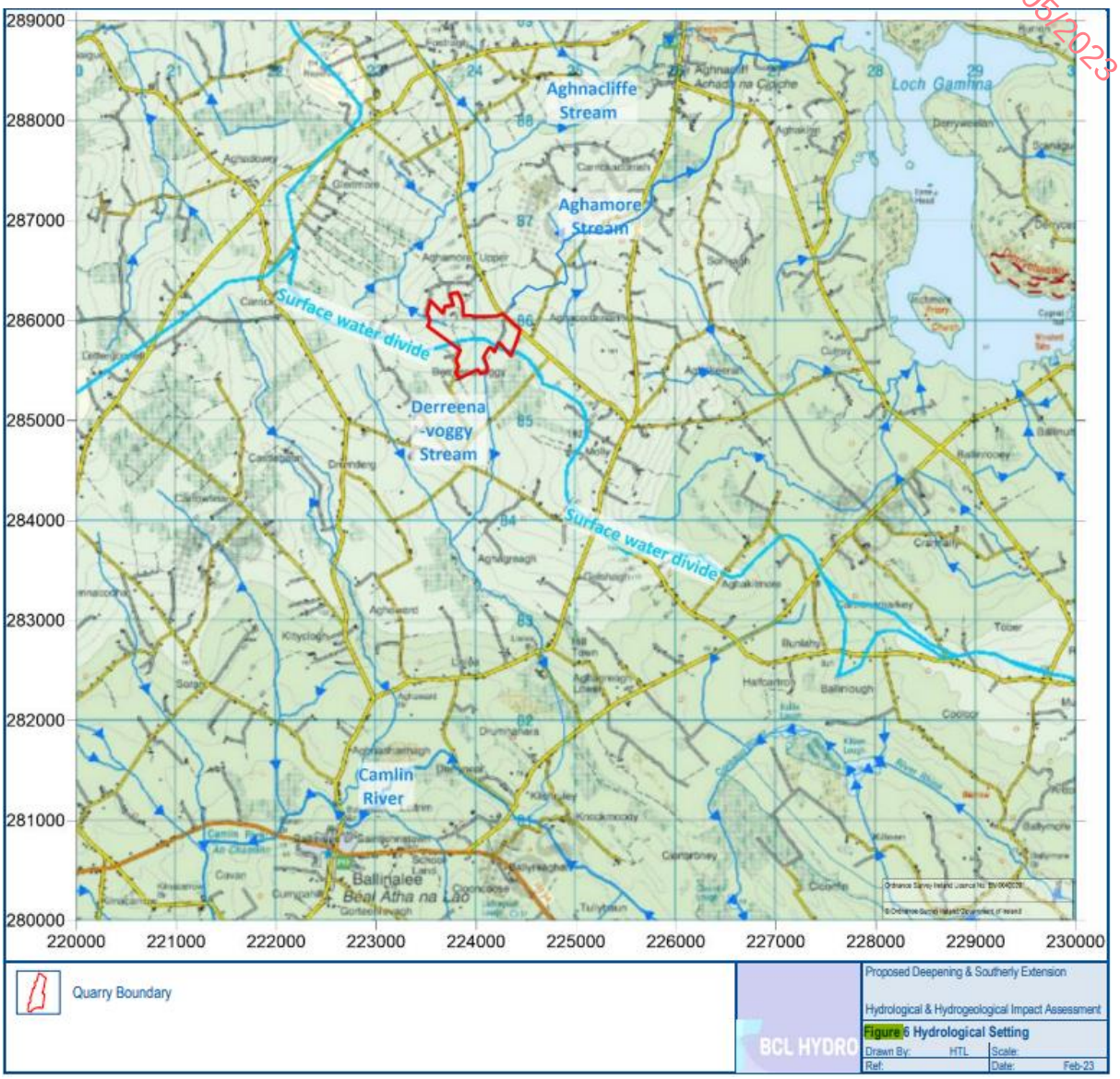


Figure 6: Catchment boundaries and drainage network (Source: BCL Hydro)

3.2 Existing ecological records

Records of protected species and species of notable conservation concern, as well as any Invasive Alien Species (IAS), within 2 km (and 10 km for bats) of the Application Site are provided in **Table 8.**

Table 8: Species of conservation interest recorded within 2 km (10 km for bats) of the Application Site

Species	Scientific Name	Habitats Dir. Annex II / IV	Birds Dir. Annex I	Wildlife Act	Red List Status	BoCCI (2021 – 2026)	Most recent record	Record Source
Mammals								
Daubenton's bat	*Myotis daubentonii*	Y	-	Y	LC	-	2009	NBDC
Natterer's Bat	*Myotis nattereri*	Y	-	Y	LC	-	2008	NBDC
Common pipistrelle	*Pipistrellus pipistrellus sensu lato*	Y	-	Y	LC	-	2009	NBDC
Soprano pipistrelle	*Pipistrellus pygmaeus*	Y	-	Y	LC	-	2009	NBDC
Eurasian badger	*Meles meles*	Y	-	Y	LC	-	2007	NBDC
Pine marten	*Martes martes*	Y	-	Y	LC	-	2011	NBDC
Birds								
Swallow	*Hirundo rustica*	N	N	Y	LC	Amber	1991	NBDC
Kestrel	*Falco tinnunculus*	N	N	Y	LC	Red	2011	NBDC
Chaffinch	*Fringilla coelebs*	N	N	Y	LC	Green	1991	NBDC
Pheasant	*Phasianus colchicus*	N	N	Y	LC	-	1991	NBDC
Common Swift	*Apus apus*	N	N	Y	LC	Red	1991	NBDC
Eurasian Curlew	*Numenius arquata*	N	N	Y	NT	Red	1991	NBDC
House Martin	*Delichon urbicum*	N	N	Y	LC	Amber	1991	NBDC
Blackbird	*Turdus merula*	N	N	Y	LC	Green	1991	NBDC
Bullfinch	*Pyrrhula pyrrhula*	N	N	Y	LC	Green	1991	NBDC
Chiffchaff	*Phylloscopus collybita*	N	N	Y	LC	Green	1991	NBDC
Jackdaw	*Corvus monedula*	N	N	Y	LC	Green	1991	NBDC
Robin	*Erithacus rubecula*	N	N	Y	LC	Amber	1991	NBDC
Dunnock	*Prunella modularis*	N	N	Y	LC	Green	1991	NBDC
Common Starling	*Sturnus vulgaris*	N	N	Y	LC	Amber	1991	NBDC
Common Wood Pigeon	*Columba palumbus*	N	N	Y	LC	Green	1991	NBDC
Skylark	*Alauda arvensis*	N	N	Y	LC	Amber	1991	NBDC
Spotted Flycatcher	*Musciapa striata*	N	N	Y	LC	Amber	1991	NBDC
Rook	*Corvus frugilegus*	N	N	Y	LC	Green	1991	NBDC
Meadow Pipit	*Anthus pratensis*	N	N	Y	LC	Red	1991	NBDC
Willow Warbler	*Phylloscopus trochilus*	N	N	Y	LC	Green	1991	NBDC
Mallard	*Anas platyrhynchos*	N	N	Y	LC	Amber	2011	NBDC
Amphibians								
Common Frog	*Rana temporaria*	N	-	Y	LC	-	2003	NBDC
Invasive Alien Species								
Indian Balsam	*Impatiens glandulifera*	-	-	-	-	-	2013	NBDC

Key to Red List Status: CR = Critically Endangered; NT = Near Threatened; VU = Vulnerable; LC = Least Concern; DD = Data Deficient

For bat species, all records from the 10 km National Grid Square N28, in which the site is located, were included. To enhance information on the distribution of bats within the area, and the suitability of the area for bat species, a habitat suitability (or 'bat landscape') map (**Figure 7**) was obtained from the NBDC database. This uses a 'habitat suitability' index (Lundy et al., 2011) and provides a picture of the broad scale geographic patterns of occurrence and local roosting habitat requirements for Irish bat species. On this basis, the area which contains the Application Site was of medium suitability for bats.

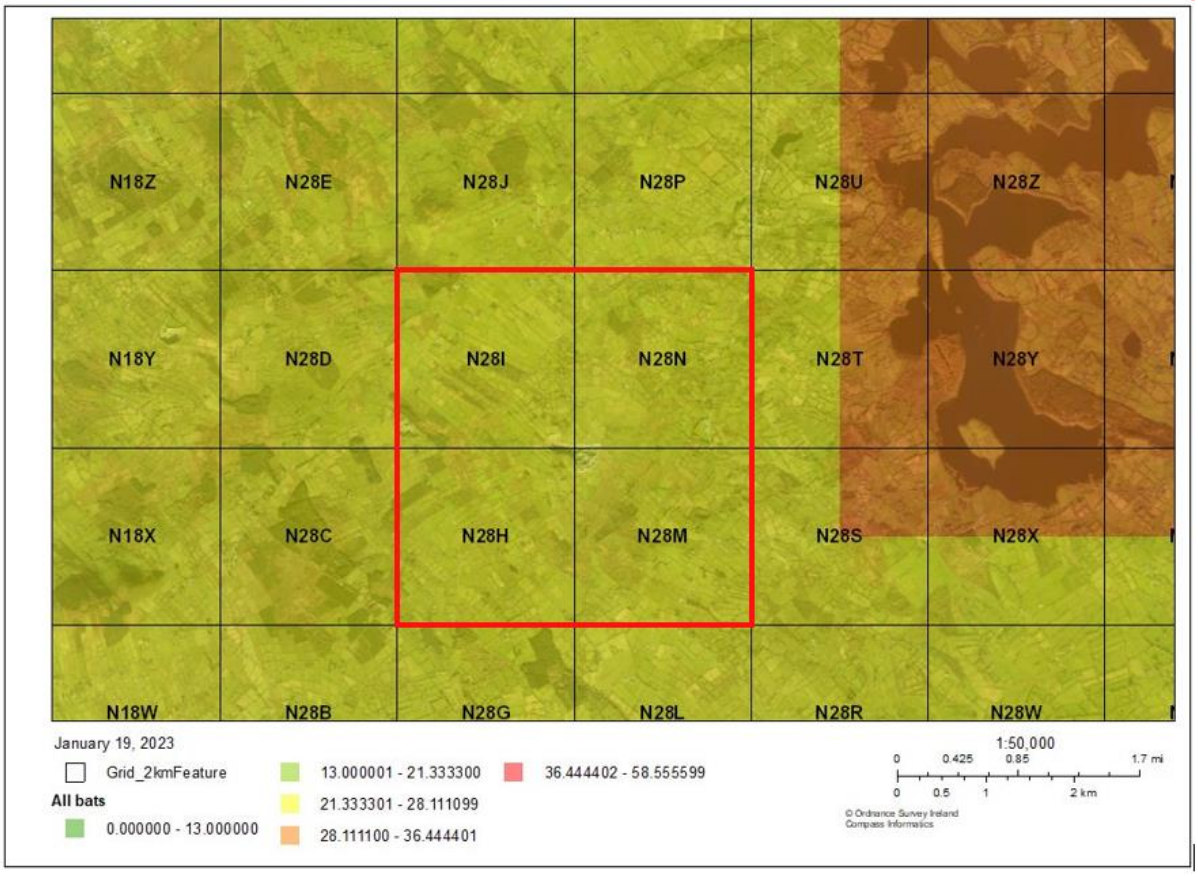


Figure 7: Habitat suitability ('bat landscape') map at Aughnacliffe Quarry (Squares N28I, N28H, N28N & N28M) (source: NBDC/Lundy et al., 2011)

A data request to BCI for all bat records within a 10 km radius of the site was carried out as part of the desk study. A total of 52 bat records were provided from this records request, of which 9 were bat roosts. The closest roost to the site is within 4 km. All other roosts are located ≥8.1 km from the site. The BCI data shown in **Table 9** provides bat data recorded in ad hoc surveys, with distances from site provided.

This desk study revealed that eight species of bat have been recorded within 10 km of the Application Site, including:

- Common pipistrelle *Pipistrellus pipistrellus*;
- Soprano pipistrelle *Pipistrellus pygmaeus*;
- Leisler's bat *Nyctalus leisleri;*
- Brown long-eared bat *Plecotus auritus;*
- Daubenton's bat *Myotis daubentonii*;

- Natterer's bat *Myotis natterreri*;
- Nathusius's pipistrelle *Pipistrellus nathusii*; and
- Whiskered Bat *Myotis mystacinus*.

All bat species and their roosts are strictly protected under both national and international law. The key legislation that provides protection to bats is as follows:

- Wildlife Act (1976) and subsequent amendments which makes it unlawful to intentionally disturb, injure or kill a bat or disturb its resting place without a licence to derogate from Regulation 23 of the Habitats Regulations 1997, issued by NPWS.
- The EU Habitats Directive (which has been transposed into Irish law with the European Communities (Birds and Natural Habitats) Regulations 2011) which seeks to protect rare species, including bats, and their habitats and requires that appropriate monitoring of populations be undertaken. All Irish bat species are listed in Annex IV, while Annex II provides additional protection for the Lesser Horseshoe Bat.

Table 9: BCI Roost and Survey data within 10km of the site

ROOSTS			
Name	**Dist. From site**	**Species observed**	
Bridge over stream between Fearglass and Clooncose Lough	*c.* 8.3 km	*Pipistrellus spp., Myotis daubentonii*	
Bridge over stream into Corglass Lough	*c.* 8.1 km	*Pipistrellus spp*.	
Bridge over tributary to Camlin River	*c.* 4 km	*Myotis natterreri*	
Private	*c.* 11.6 km	*Myotis natterreri*	
Private	*c.* 11.5 km	*Pipistrellus pygmaeus*	
Private	*c.* 11.5 km	*Myotis natterreri*	
Private	*c.* 11.5 km	*Pipistrellus pygmaeus*	
Private	*c.* 11.5 km	*Pipistrellus nathusii*	
Private	*c.* 11.5 km	*Plecotus auritus*	
Ad-hoc observations			
Survey	**Dist. From site**	**Species observed**	**Date**
BATLAS 2010	*c.* 11.8 km	*Pipistrellus pygmaeus*	18/09/2009
BATLAS 2010	*c.* 8.9 km	*Pipistrellus pipistrellus, Pipistrellus pygmaeus*	27/05/2017
BATLAS 2010	*c.* 8 km	*Pipistrellus pipistrellus, Pipistrellus pygmaeus,Myotis spp.*	27/05/2017
BATLAS 2010	*c.* 8.1 km	*Pipistrellus pipistrellus, Nyctalus leisleri,Pipistrellus spp.*	28/05/2017
BATLAS 2010	*c.* 8.1 km	*Pipistrellus pipistrellus , Pipistrellus pygmaeus,Myotis spp.*	25/09/2009
BATLAS 2010	*c.* 9 km	*Pipistrellus pipistrellus, Pipistrellus pygmaeus,Myotis daubentonii*	07/05/2018
BATLAS 2010	*c.* 10.8 km	*Pipistrellus pipistrellus, Pipistrellus pygmaeus,Pipistrellus nathusii,Nyctalus*	17/07/2004

		leisleri,Myotis daubentonii,Myotis natterreri,Plecotus auritus	
BATLAS 2010	*c.* 8.4 km	*Pipistrellus pygmaeus,Myotis daubentonii*	18/09/2009
BATLAS 2010	*c.* 8.3 km	*Pipistrellus pipistrellus, Pipistrellus pygmaeus,Myotis spp.*	07/09/2018
BATLAS 2010	*c.* 5.8 km	*Pipistrellus pipistrellus ,Nyctalus leisleri,Myotis spp.*	28/05/2017
BATLAS 2010	*c.* 5.8 km	*Pipistrellus pipistrellus, Pipistrellus pygmaeus,Myotis spp.*	25/09/2009
BATLAS 2010	*c.* 8.6 km	*Pipistrellus pipistrellus, Pipistrellus pygmaeus*	07/09/2018
BATLAS 2010	*c.* 2 km	*Pipistrellus spp.*	25/09/2009
BATLAS 2010	*c.* 2 km	*Pipistrellus pipistrellus*	25/07/2018
BATLAS 2010	*c.*4.6km	*Pipistrellus pipistrellus, Pipistrellus pygmaeus,Nyctalus leisleri,Myotis spp.,Pipistrellus spp.*	25/07/2018
BATLAS 2020	*c.* 6.5 km	*Pipistrellus pipistrellus, Pipistrellus spp.*	22/06/2018
BATLAS 2020	*c.* 9.1 km	*Pipistrellus pipistrellus*	22/06/2018
BATLAS 2020	*c.* 6.5 km	*Pipistrellus pipistrellus, Pipistrellus pygmaeus,Myotis spp.*	22/09/2009
BATLAS 2020	*c.* 4.3 km	*Pipistrellus pipistrellus, Pipistrellus pygmaeus*	22/09/2009
BATLAS 2020	*c.* 2.3 km	*Pipistrellus pipistrellus, Pipistrellus pygmaeus,Myotis spp.*	25/07/2018
BATLAS 2020	*c.* 8.2 km	*Pipistrellus pipistrellus, Myotis spp.,Pipistrellus spp.*	24/07/2018
BATLAS 2020	*c.* 8.4 km	*Myotis daubentonii*	07/05/2018
BATLAS 2020	*c.* 3.7 km	*Pipistrellus pygmaeus,Myotis daubentonii*	25/09/2009
BATLAS 2020	*c.* 5.7 km	*Pipistrellus pipistrellus, Pipistrellus pygmaeus,Nyctalus leisleri,Pipistrellus spp.*	24/07/2018
BATLAS 2020	*c.* 5.7 km	*Pipistrellus pipistrellus, Pipistrellus pygmaeus*	07/05/2018
BATLAS 2020	*c.* 3.6km	*Pipistrellus pipistrellus, Pipistrellus pygmaeus*	25/09/2009
BATLAS 2020	*c.* 3.5 km	*Pipistrellus pipistrellus, Pipistrellus pygmaeus,Pipistrellus spp.*	24/07/2018
BATLAS 2020	*c.* 5.7 km	*Pipistrellus pipistrellus, Pipistrellus spp.*	24/07/2018
BATLAS 2020	*c.* 5.9 km	*Pipistrellus pipistrellus, Pipistrellus pygmaeus,Nyctalus leisleri,Myotis daubentonii,Pipistrellus nathusii*	13/08/2022
BATLAS 2020	*c.* 5.8 km	*Pipistrellus pipistrellus, Pipistrellus pygmaeus,Nyctalus leisleri,Myotis daubentonii,Myotis spp.,Pipistrellus spp.*	24/07/2018
BATLAS 2020	*c.*7.7 km	*Pipistrellus pipistrellus, Pipistrellus pygmaeus,Myotis daubentonii*	25/09/2009
BATLAS 2020	*c.* 5.6 km	*Pipistrellus pipistrellus, Pipistrellus pygmaeus,Nyctalus leisleri,Plecotus auritus,Myotis natterreri,Myotis mystacinus,Pipistrellus nathusii*	13/08/2022
BATLAS 2020	*c.* 8.3 km	*Pipistrellus pipistrellus, Myotis daubentonii*	17/09/2009
BATLAS 2020	*c.* 8.4 km	*Pipistrellus pygmaeus*	24/07/2017
BATLAS 2020	*c.* 7.3 km	*Pipistrellus pipistrellus, Pipistrellus pygmaeus*	17/09/2009
BATLAS 2020	*c.* 8.7 km	*Pipistrellus pygmaeus,Nyctalus leisleri*	17/09/2009

BATLAS 2020	*c.* 8.8 km	*Pipistrellus pipistrellus, Pipistrellus pygmaeus,Myotis daubentonii*	26/06/2018
BATLAS 2020	*c.* 8.7 km	*Pipistrellus pipistrellus, Myotis daubentonii*	17/09/2009
Consultancy Surveys	*c.* 10.2 km	*Pipistrellus pipistrellus, Myotis daubentonii,Myotis spp.*	26/06/2018
Nathusius Pipistrellye Co. Cavan Project	*c.* 12.1 km	*Pipistrellus pipistrellus, Pipistrellus pygmaeus,Myotis daubentonii*	26/06/2018
Nathusius Pipistrellye Co. Cavan Project	*c.* 10.4 km	*Pipistrellus pygmaeus*	25/07/2017
Nathusius Pipistrellye Co. Cavan Project	*c.* 5.8 km	*Pipistrellus pipistrellus, Pipistrellus pygmaeus,Nyctalus leisleri,Pipistrellus nathusii*	13/08/2022

3.3 Designated Sites

3.3.1 Sites of International Importance

In the Republic of Ireland, internationally designated sites are Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). SACs are designated under the EU Habitats Directive and are intended to give protection to a suite of habitats and species listed on Annex I and Annex II of the Directive. SPAs are designated under the EU Birds Directive and provide protection to birds listed on Annex I of the Birds Directive, as well as populations of migratory species regularly occurring at a site. An Appropriate Assessment screening report (Woodrow, 2023) has been prepared for the proposed development, within which summaries of all internationally and nationally designated sites occurring within 15 km of the proposal, including their principal features of interest, are provided. Connectivity to these sites is shown in **Figure 8**.

The proposed Aughnacliffe quarry extension development occurs within 15 km of or has a hydrological connection to 12 no. European Sites, comprising five SACs, five SPAs and two Ramsar Sites, as listed in Woodrow (2023). Of these European Sites, six are considered to lie within the potential ZoI of the proposed works:

- Lough Forbes Complex SAC (Site Code: 001818);
- Lough Oughter and Associated Loughs SAC (Site Code: 000007);
- Lough Ree SAC (Site Code: 000440);
- Lough Oughter Complex SPA (Site Code: 004049);
- Lough Ree SPA (004064); and
- Lough Oughter Ramsar Site (Site Number: 853).

This is based on hydrological connectivity via the Aghamore and Aghancliffe Streams and the Derreenavoggy Stream. It should be noted that, though hydrological connectivity exists between the Derreenavoggy Stream and the Middle Shannon Callows SPA/SAC, these European Sites were not included within the assessment due to their being located a considerable distance from the works (>70 km via watercourse, with intervening lakes).

Further information on potential significant effects and connectivity to European Designated Sites can be found in the Appropriate Assessment Screening Report (Woodrow, 2023).

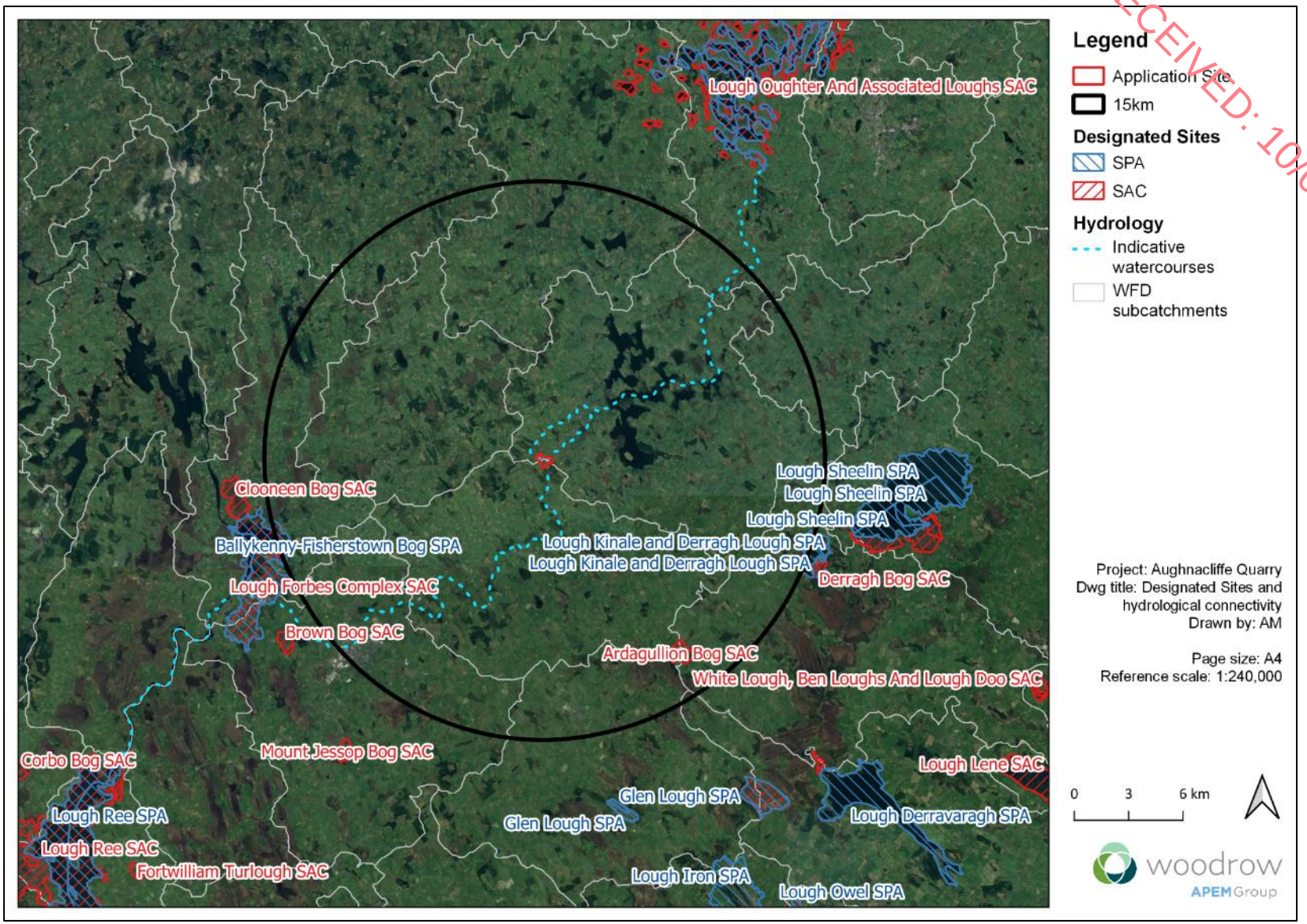


Figure 8: European sites within 15 km of or with a source-pathway-receptor linkage to the Application Site

3.3.2 Sites of National Importance

In the Republic of Ireland (ROI) National Heritage Areas (NHAs) are designated under the Wildlife Amendment Act (2000) as areas considered important for the habitats present or areas which support plants and animals whose habitat needs protection. Proposed National Heritage Areas (pNHAs) are recognised on a non-statutory basis but have not been statutorily proposed or designated. They are of ecological value for their habitats or species.

All nationally designated sites within 15 km of the Application Site, and those with hydrological or ecological connections, are shown in **Figure 9**. Further details on these are provided in **Table 10**. The following nationally designated sites lie within the Zone of Influence of the proposed extension works:

- Lough Forbes Complex pNHA (001818);
- Lough Ree pNHA (000440);
- Lough Oughter And Associated Loughs pNHA (000007); and
- Lough Gowna pNHA (000992).

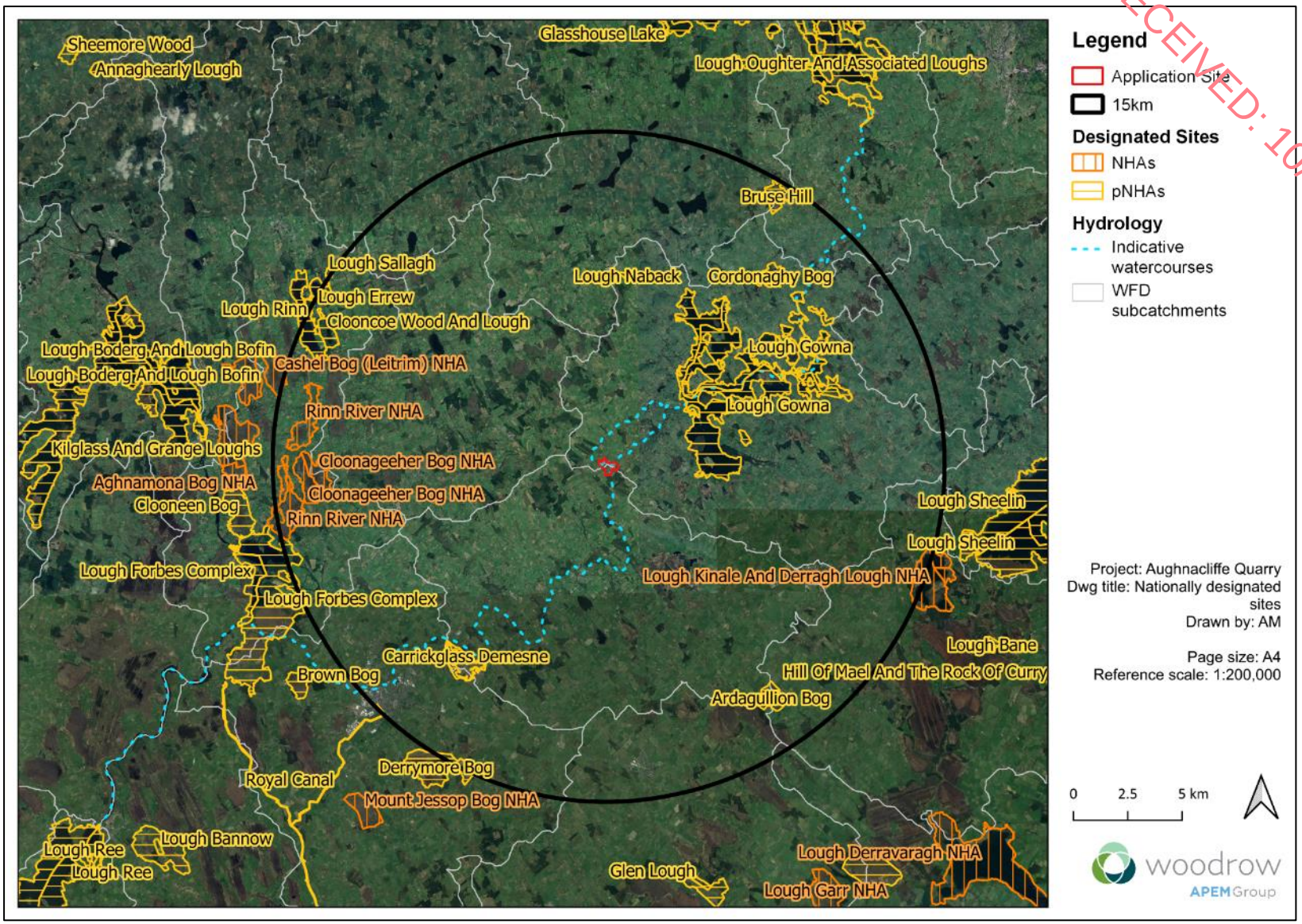


Figure 9: Nationally designated sites within 15 km of the Application Site

Table 10: Summary of nationally designated areas within 15 km of the Application Site, and those with a hydrological/ecological connection

Site name and code	Summary of qualifying features	Closest distance from Application Site	Hydrological connectivity with Application Site?	Potential for significant effects?
National Heritage Areas (NHAs)				
Cloonageeher Bog NHA [001423]	Peatlands [4]	*c.* 12.4 km west of Application Site	**No** – There is an upstream hydrological connection with this site, which precludes a pathway for the propagation of impacts.	**None.**
Rinn River NHA [000691]	Peatlands [4]	*c.* 13 km west– direct distance	**No** – There is an upstream hydrological connection with this site, which precludes a pathway for the propagation of impacts.	**None.**
Lough Kinale and Derragh Lough NHA [000985]	Peatlands [4] Birds [12]	*c.* 14.4 southeast – direct distance	**No** – There is no hydrological connection with this site.	**None.**
Proposed National Heritage Areas (pNHAs)				
Lough Forbes Complex pNHA [001818]		*c.*14.3 km southwest (direct distance) *c.* 32.5 km via watercourse.	**Yes –** there is a downstream hydrological connection with this pNHA via the Derreenavoggy Stream.	**None.** The current water quality measures on site, absence of a strong hydrological connection and assimilative capacity of the 32.5 km of intervening waters will preclude any hydrological impacts to this pNHA.
Lough Ree pNHA [000440]		*c.* 28.4 km southwest (direct distance) *c.* 49.5 km southwest via watercourse	**Yes –** there is a downstream hydrological connection with this pNHA via the Derreenavoggy Stream.	**None.** The current water quality measures on site, absence of a strong hydrological connection and assimilative capacity of the 49.5 km of intervening waters will preclude any hydrological impacts to this pNHA.
Lough Oughter And Associated Loughs pNHA [000007]		*c.* 19.1 km northeast (direct distance) *c.* 28.4 km northeast via watercourse	**Yes** – there is a downstream hydrological connection with this pNHA via the Aghnacliffe Stream and Aghamore Stream.	**None.** The current water quality measures on site, absence of a strong hydrological connection and assimilative capacity of the 28.4 km of intervening waters will preclude any hydrological impacts to this pNHA.
Lough Gowna pNHA [000992]	**Habitat of ornithological importance.**	*c.* 3.6 km east of Application Site *c.* 5 km via watercourse	**Yes** – there is a downstream hydrological connection with this pNHA via the Aghnacliffe Stream and Aghamore Stream.	**Yes**. Due to the proximity of the site to the pNHA, and a direct surface water connection, there is considered to be potential for significant effects.
Lough Naback pNHA [001449]	Habitat of ornithological importance.	*c.* 8.2 km north of Application Site	**No** - There is an upstream hydrological connection with this site,	**None.**

Site name and code	Summary of qualifying features	Closest distance from Application Site	Hydrological connectivity with Application Site?	Potential for significant effects?
			which precludes a pathway for the propagation of impacts.	
Cordonaghy Bog pNHA [000978]	Peatlands [4]	*c.* 10.5 km northeast of Application Site	**No** - There is an upstream hydrological connection with this site, which precludes a pathway for the propagation of impacts.	**None.**
Bruse Hill pNHA [000002]	Habitat of botanical importance.	*c.* 13.5 km northeast if Application Site	**No** – There is no hydrological connection with this site.	**None.**
Ardagullion Bog pNHA [002069]	Peatlands [4]	*c.* 12 km southeast of Application Site	**No** - There is an upstream hydrological connection with this site, which precludes a pathway for the propagation of impacts.	**None.**
Carrickglass Demesne pNHA [001822]	Broadleaved woodland habitat	*c.* 10.2 km southwest of Application Site	**No** – There is no hydrological connection with this site.	**None.**
Clooncoe Wood and Lough pNHA [000424]	Habitat of botanical importance	*c.* 13.1 km northwest of Application Site	**No** - There is an upstream hydrological connection with this site, which precludes a pathway for the propagation of impacts.	**None.**
Lough Rinn [001417]	Habitat of ornithological and botanical importance	*c.* 13.2 km northwest of Application Site	**No** - There is an upstream hydrological connection with this site, which precludes a pathway for the propagation of impacts.	**None.**

3.4 Habitats

The habitats recorded within the Application Site are shown in **Table 11.** A description of each habitat is then given. The distribution of habitats on the site is shown in **Figure 10**.

Table 11: Habitats within the Application site. Habitat classification is in accordance with Fossitt (2000)

Approx area (ha/km/m)	Habitat Code	Habitat Classification	EU Habitats Directive Annex I Habitat
0.53	PF2	Poor Fen and Flush	None*
0.52	GS2	Dry Grassy Verge	None
3.90	GS4	Wet Grassland	None
7.97	GS1	Semi-improved Neutral Grassland	None
7.69	WS1	Scrub	None
c. 365 m	WL2	Treeline	None
c. 1.76 km	WL1	Hedgerow	None
13.85	ED4	Active Quarry	None
0.11	BL3	Buildings	None

* Please Note: 'Although poor fen and flush is not listed in Annex I of the Habitats Directive, it is very limited in extent in Ireland and should be regarded as being of special conservation importance' (C. Ó Críodáin, pers. Comm), (Fossitt, 2000).

The Application Site is divided into three main parts; an existing active quarry site to the north surrounded by scrub and grassland mosaic to the east and west, with agricultural farmland to the south. The site lies within a rural setting, with scattered residential housing/farm buildings in the environs of the proposed quarry extension. The below paragraphs provide a description of the habitats located on this site. The results of the habitat survey can be seen in **Figure 10**.

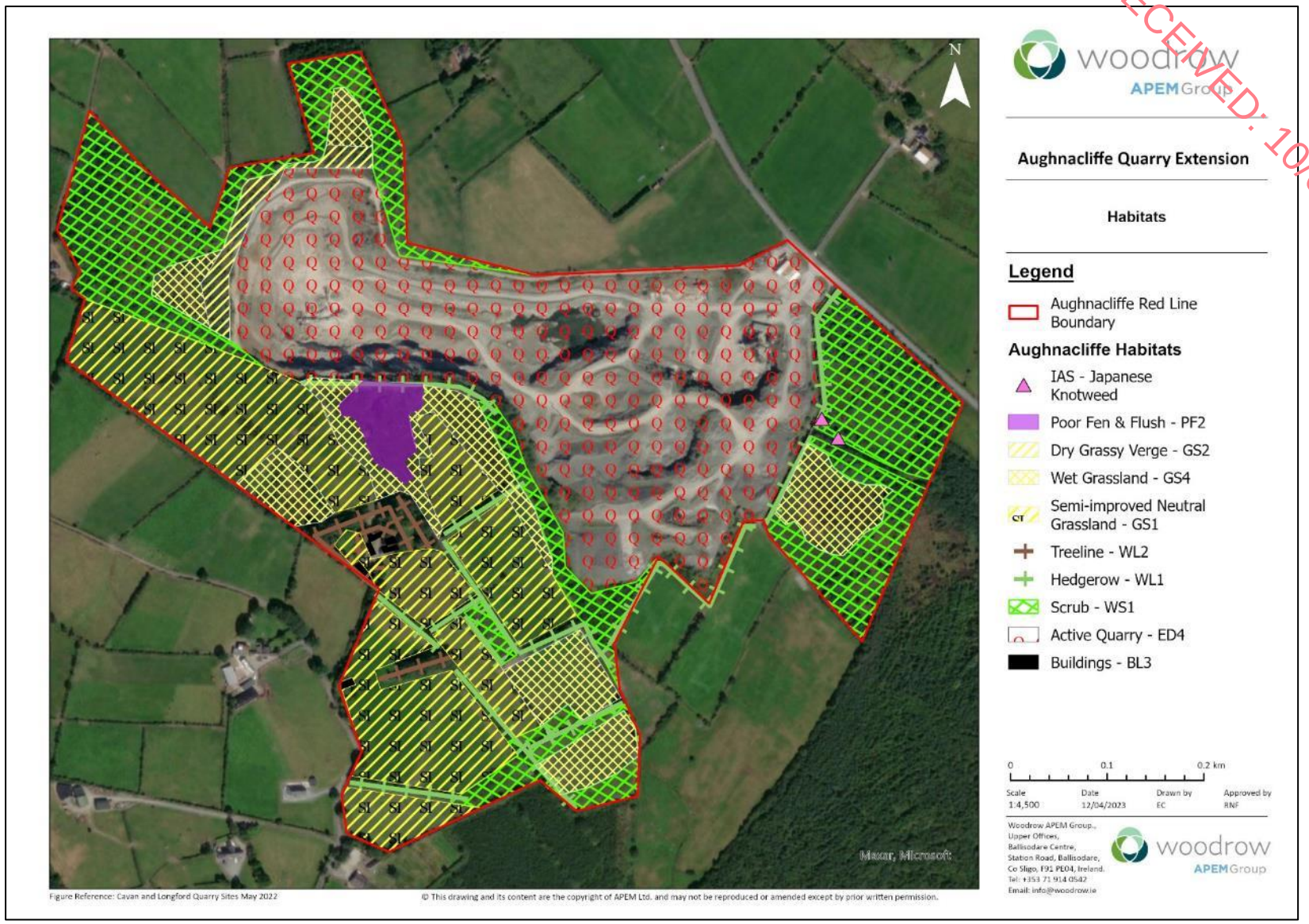


Figure 10: Habitats identified at the Application Site

3.4.1 ED4 – Active Quarry

The majority of the northern half of the Application Site consists of an existing, cleared, active quarry site consisting of bare stone and ground revealing shale, soil and gravel (**Plate 1**). This area is bordered by steep, stepped sides (>8m high). Recently disturbed and unvegetated earthen and shale banks remain visible across this area. The existing quarry site is then surrounded by a gravel bund (**Plate 2**), vegetated in parts, which transitions into dense scrub, hedgerows and farmland.

Plate 1: Existing quarry site showing cleared expanse of exposed shale, stone and gravel

Plate 2: Gravel bund surrounding existing quarry site

3.4.2 WS1 – Scrub

Two areas of dense scrub *c.* 6 ha in total, lie to the east and west of the existing quarry site. The dense scrub habitat to the east is dominated by willow *Salix* spp., gorse *Ulex europaeus* and bramble *Rubus fruticosus* providing excellent cover and habitat for mammals and birds (**Plate 3**). This scrub habitat transitions into an area of wet grassland and borders an existing farm access track with mature hedgerows.

The scrub habitat to the west of the existing quarry consists of a similarly dense mosaic of willow *Salix* spp., gorse *Ulex europaeus* and bramble *Rubus fruticosus* with a thick graminoid and hypnoid moss understory. Species noted here included red-stemmed feathermoss

Pleurozium schreberi, common tamarisk-moss *Thuidium tamariscinum* and springy turf-moss *Rhytidiadelphus squarrosus* as well as several rank ungrazed graminoid species including cock's-foot grass *Dactylis glomerata*, sweet vernal grass *Anthoxanthum oderatum* and soft rush *Juncus effusus*. The ground condition remained damp but firm underfoot within these areas.

Similar habitat patches of scattered willow, gorse and bramble scrub (**Plate 4**) exist across the site in areas of succession on unmanaged grassland habitat and within overgrown hedgerows.

Plate 3: Gorse, willow and bramble dominated dense scrub habitat to the east of the site

Plate 4: Gorse, willow and bramble dominated dense scrub habitat to the west of the site

3.4.3 GS1 – Semi-improved Neutral Grassland

The farmland to the south of the Application Site consists of several semi-improved neutral grassland fields totalling *c.* 8 ha, that are regularly grazed by cattle (**Plate 5**). These fields are divided by a mixture of hawthorn *Crataegus monogyna* and blackthorn *Prunus spinosa* dominated hedgerows with bramble *Rubus fruticosus* scrub. The grassland sward remains short and species poor within these areas. Species noted included perennial rye grass *Lolium perenne*, red fescue *Festuca rubra*, soft rush *Juncus effusus*, Yorkshire fog *Holcus lanatus*, sweet vernal grass *Anthoxanthum oderatum*, meadow foxtail *Alopecuris pratensis*, creeping

buttercup *Ranunculus repens*, white clover *Trifolium repens*, cuckoo flower *Cardamine pratense,* ragwort *Senecio jacobaea*, thistle *Cirsium* spp. and dock *Rumex* spp.

Plate 5: Semi-improved neutral grassland farmland habitat

3.4.4 GS2 – Dry Meadows and Grassy Verge

To the west of the site, the existing quarry transitions into a dry grassy verge (**Plate 6**) with a dense hypnoid moss layer with rush dominated wet grassland in damp hollows and then into encroaching bramble, gorse and willow scrub. Species noted within the dry grassy verge included; sweet vernal grass *Anthoxanthum oderatum*, cock's-foot grass *Dactylis glomerata*, crested dog's-tail *Cynosurus cristatus*, bird's-foot trefoil *Lotus corniculatus*, red clover *Trifolium pratense*, bush vetch *Vicia sepium*, ribwort plantain *Plantago lanceolata*, meadow buttercup *Ranunculus acris*, field wood-rush *Luzula campestris*, red-stemmed feathermoss *Pleurozium schreberi*, common tamarisk-moss *Thuidium tamariscinum* and springy turf-moss *Rhytidiadelphus squarrosus.*

Plate 6: Dry grassy verge with a dense hypnoid moss layer

3.4.5 GS4 – Wet Grassland

Several smaller patches of species-poor wet acid grassland habitat exist within the wider habitat mosaic (**Plate 7**). These areas are dominated by a dense sward of soft rush *Juncus effusus* with grasses including Yorkshire Fog *Holcus lanatus* and creeping bent grass Agrostis

stolonifera. The area of bramble and willow scrub to the east of the site transitions into a wet grassland pasture with soft rush *Juncus effusus* and articulated rush *Juncus articulatus* dominant, fireweed *Chamaenerion angustifolium* and yellow iris *Iris pseudacorus* noted as frequent throughout. The ground remains poorly drained and wet underfoot. Similarly, the gorse dominated scrub to the west of the site transitions into a tall sward of soft rush dominated wet grassland (**Plate 8**), before becoming a dry grassy verge as it borders the existing quarry site.

Plate 7: Wet grassland transitions dominated by soft rush *Juncus effusus*

Plate 8: Scrub habitat transitions into soft rush dominated grassland

3.4.6 PF2 – Poor Fen and Flush

A small patch of acidic poor fen and flush habitat has been classified bordering the existing quarry site and within an area of wet/neutral grassland mosaic currently grazed by cattle. The ground either side is sloping towards the fen and flush habitat which has formed in the hollow (**Plate 9**). The habitat consists of a bryophyte-dominated carpet overlain by sedges and rushes. The water level remains at or near the surface with pooling and signs of recent poaching by cattle (**Plate 10**). The ground remains wet and spongy underfoot with a shallow <0.5 m peaty soil. Species noted here include; soft rush *Juncus effusus*, sweet vernal grass *Anthoxanthum oderatum*, velvet bent *Agrostis canina*, hare's tail cotton grass *Eriophorum vaginatum,* common cotton grass *Eriophorum angustifolium*, common sedge *Carex nigra*,

glaucous sedge *Carex flacca*, star sedge *Carex echinata*, field wood-rush *Luzula campestris*, heath wood-rush *Luzula multiflora*, birds foot trefoil *Lotus corniculatus*, bog stitchwort *Stellaria alsine*, tormentil *Potentilla erecta* and lousewort *Pedicularis sylvatica.*

The herbaceous and graminoid species overlay a carpet of bryophytes including; flat-topped bog moss *Sphagnum fallax,* feathery bog moss *Sphagnum cuspidatum*, common haircap moss *Polytrichum commune*, red-stemmed feathermoss *Pleurozium schreberi*, spear moss *Calliergonella cuspidata* and springy turf-moss *Rhytidiadelphus squarrosus.*

Plate 9: Poor Fen and Flush habitat in a wet hollow on site

Plate 10: Pooling underfoot within PF2 habitat

3.4.7 WL1 – Hedgerows and WL2 - Treelines

Numerous hedgerows and treelines were noted across the site (see **Figure 10**). These were noted as typically species-rich, mature native hedgerows which border the farmland and grassland habitats as well as several mature planted treelines including those surrounding the abandoned farm buildings and sheds. Hedgerow species recorded include hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa*, willow *Salix* spp., alder *Alnus glutinosa*, birch *Betula pubescens* and elder *Sambucus nigra* with a good herb layer on an earthen bank or ditch throughout much of these consisting of bush vetch *Vicia sepium*, dog violet *Viola riviniana*, ivy *Hedera helix*, germander speedwell *Veronica chamaedrys*, Yorkshire fog *Holcus*

lanatus, cock's foot grass *Dactylis glomerata*, devil's- bit scabious *Succisa pratensis* and willowherb *Epilobium* spp. The mature planted treelines surrounding the farm buildings on site consist predominantly of non-native horse chestnut *Aesculus hippocastanum* (**Plate 11**), with some Scots pine *Pinus sylvestris* and hawthorn *Crataegus monogyna*. An old apple tree *Malus domestica* spp., was noted adjacent to the abandoned farmhouse (**Plate 12**).

Plate 11: Mature horse chestnut treelines surrounding old farmhouse

Plate 12: Mature apple tree adjacent to farm buildings

3.4.8 Invasive species recorded within the site boundary

Two stands; approximately 4 m^2 and 6 m^2 respectively, of Japanese knotweed *Fallopia japonica* (**Plate 13**), which is a Third Schedule invasive species of the Habitats Regulations S.I. 477 of 2011, were noted to the east of the site bordering the existing farm access track with hedgerows and scrub – as indicated in **Figure 10**. A small patch of Montbretia *Crocosmia x crocosmiiflora* which is an introduced lesser invasive flowering herb, was similarly noted within this area.

Plate 13: Stand of Japanese knotweed on site

3.5 Birds

Bird species recorded at the Application Site during surveys are listed in **Table 12** according to their BoCCI4 status (Gilbert et al., 2021), along with a description of their occurrence and breeding status within the Application Site.

The Application Site provides a mosaic of suitable habitat for breeding passerines and hirundines, in the form of scrub, wet grassland, hedges, treelines, derelict buildings and sandy banks/crevices/holes associated with quarry faces. Hedges and treelines support nesting and foraging habitat for common species such as robin, great tit, song thrush and chaffinch, as well as amber-listed species such as spotted flycatcher. The small area of wet grassland, surrounded by scrub, in the east of the Application Site hosts the predominantly wetland species sedge warbler and reed bunting. The areas of agricultural wet grassland in the centre of the site also have the potential to support the ground-nesting, red-listed species meadow pipit. In terms of man-made structures, a derelict shed supports a barn swallow nest, and the other farm buildings provide suitable nesting habitat for species such as house martin, house sparrow, and starling, though no nest sites were confirmed for these species during the 2022 breeding season. The quarry faces provide suitable crevices and holes for breeding grey wagtail and pied wagtail, both of which were recorded within the quarry. The sandy banks in the east of the quarry also contain a sand martin colony (see **Figure 11** and **Plate 14**).

Two falcon species were recorded nesting along the quarry ledges: the Annex I listed species peregrine and red-listed species kestrel. Peregrine were confirmed to be successfully breeding during the surveys by the presence of two chicks in a nest along the northern quarry ledge. A pair of kestrels were observed nesting on the southern ledge of the quarry. Though no chicks could be seen in the nest during the surveys, the pair were observed exhibiting territorial behaviour (mobbing) towards a peregrine which perched in close proximity to the nest site. The approximate locations of these nest sites are shown in **Figure 11**.

Other species confirmed breeding within the quarry included a pair of ravens nesting on quarry infrastructure in the east of the site (see **Figure 11**). The pair were confirmed to have successfully bred in summer 2022 by the presence of a chick in the nest.

Plate 14: Sand martin colonies present within Application Site

Figure 11: Breeding bird territories of note occurring within the Application Site in summer 2022

Table 12: Bird species recorded at the Application Site during the breeding bird surveys

Common Name	Latin Name	BoCCI4	EU Birds Directive Annex I	Breeding within the site?	Breeding within the footprint of the works?	Occurrence within the Application Site
Grey wagtail	*Motacilla cinerea*	Red	N	Possible	Possible	One observation of a bird next to a quarry pool. Possible breeding along quarry ledges.
Kestrel	*Falco tinnunculus*	Red	N	**Yes**	**Yes**	One pair breeding along a ledge in the south-east of the quarry (see **Figure 11**)
Meadow pipit	*Anthus pratensis*	Red	N	**Yes**	**Yes**	Up to 3 territories estimated within the Application Site during the 2022 breeding season. Works will result in the loss of breeding habitat.
Goldcrest	*Regulus regulus*	Amber	N	**Yes**	**Yes**	Breeding within treeline habitats in the Application Site. Works overlap with a minimum of two breeding territories.
Herring gull	*Larus argentatus*	Amber	N	No	No	All records of birds flying over the site. No suitable breeding habitat and no birds recorded foraging.
Linnet	*Carduelis cannabina*	Amber	N	**Yes**	No	Minimum of one pair breeding within scrub and gorse habitats in the north-west of the site. No birds recorded and limited habitat suitability within the extension area – much of the scrub/gorse habitat will be retained.
Sand martin	*Riparia riparia*	Amber	N	**Yes**	No	Confirmed breeding within the Application Site. Active colony in the east of the site (see **Figure 11**), does not overlap with the extension area.
Skylark	*Alauda arvensis*	Amber	N	No	No	Male seen displaying in the grassland habitats to the north of the Application Site boundary. Not recorded foraging or breeding within the site.
Spotted flycatcher	*Musciapa striata*	Amber	N	**Yes**	No	Breeding within a mature treeline next to the derelict farm building. Territory will be retained as part of embedded/design stage mitigation.
Starling	*Sturnus vulgaris*	Amber	N	Possible	No	One observation of the bird perched at the quarry site entrance. Suitable breeding habitat in the form of derelict buildings will be retained within the Development. Not recorded as breeding within the site in summer 2022.
Swallow	*Hirundo rustica*	Amber	N	**Yes**	**Yes**	Nest recorded within a shed in the south of the Application Site (see **Figure 11**). Works will result in the loss of nesting habitat.
Willow warbler	*Phylloscopus trochilus*	Amber	N	**Yes**	**Yes**	Breeding throughout scrub habitats and treelines within the Application Site. Likely a minimum of one territory within the proposed development area.
Blackbird	*Turdus merula*	Green	N	**Yes**	**Yes**	Common resident, breeding within scrub and hedgerow habitats. Minimum of one pair breeding within the proposed development area.
Blackcap	*Sylvia atricapilla*	Green	N	**Yes**	**Yes**	Breeding within hedgerows, treelines and scrub habitats. Minimum of one pair breeding within the proposed development area.

Common Name	Latin Name	BoCCI4	EU Birds Directive Annex I	Breeding within the site?	Breeding within the footprint of the works?	Occurrence within the Application Site
Blue tit	*Cyanistes caeruleus*	Green	N	**Yes**	**Yes**	Probable breeding within treelines surrounding the derelict farmhouse in summer 2022. Minimum of one pair breeding within the proposed development area.
Bullfinch	*Pyrrhula pyrrhula*	Green	N	**Yes**	**Yes**	Probable breeding within treelines surrounding the derelict farmhouse in summer 2022. Minimum of one pair breeding within the proposed development area.
Chaffinch	*Fringilla coelebs*	Green	N	**Yes**	**Yes**	Breeding within hedgerows and treelines within the Application Site. Minimum of 2-3 pairs within the footprint of the proposed development area.
Chiffchaff	*Phylloscopus collybita*	Green	Y	Possible	Possible	Recorded outside of the Application Site boundary. Potential suitable breeding habitat within well vegetated hedgerows and trees surrounding the derelict farm.
Coal tit	*Periparus ater*	Green	N	**Yes**	Possible	One observation of a bird singing in the scrub habitat in the east of the Application Site. No birds recorded within the footprint of the extension. Some suitable habitat within the extension area in the form of treelines, in particular conifer trees.
Dunnock	*Prunella modularis*	Green	N	**Yes**	Possible	Breeding within scrub habitat in the east of the Application Site. No birds recorded within the footprint of the extension. Some suitable habitat within the extension area in the form of treelines and hedgerows.
Goldfinch	*Carduelis carduelis*	Green	N	**Yes**	**Yes**	Recorded within grassland habitats of the extension area and within scrub habitats in the east of the site. Proposed development area likely overlaps with a minimum of one territory.
Great tit	*Parus major*	Green	N	**Yes**	**Yes**	Breeding within hedgerows and treelines within the Application Site. Minimum of 1 pair within the footprint of the extension area.
Hooded (grey) crow	*Corvus cornix*	Green	N	No	No	Only observed flying over the Application Site. No nest sites identified within the footprint of the works.
Jackdaw	*Corvus monedula*	Green	N	Possible	Possible	Low numbers recorded during the surveys, but species commonly nest in quarries. Possible breeding habitat within the footprint of the extension area.
Magpie	*Pica pica*	Green	N	Possible	Possible	No nest sites identified, but bird recorded alarm calling from within the footprint of the extension area. Footprint possibly overlaps with one territory.
Peregrine	*Falco peregrinus*	Green	Y	**Yes**	**Yes**	Confirmed breeding along the northern ledge of the quarry by the presence of two chicks in the nest (see **Figure 11**). Though the nest occurs within the footprint of the works, the works involve a southerly extension of the quarry, which will not remove the current nest site.

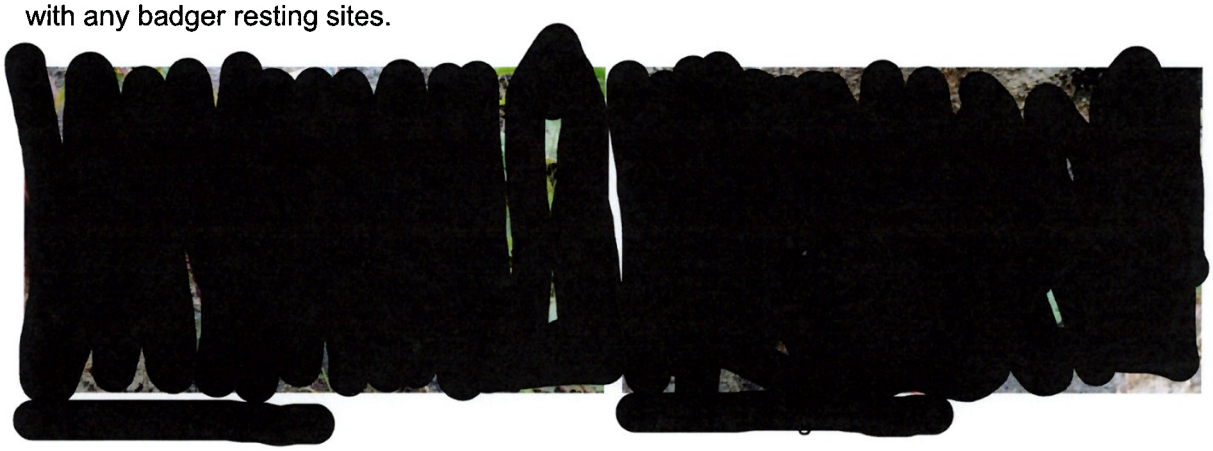
Common Name	Latin Name	BoCCI4	EU Birds Directive Annex I	Breeding within the site?	Breeding within the footprint of the works?	Occurrence within the Application Site
Pheasant	*Phasianus colchicus*	Green	N	**Yes**	**Yes**	Yes, pair recorded within the grassland habitats in the extension area. Extension area overlaps with one breeding territory.
Pied wagtail	*Motacilla alba yarrellii*	Green	N	**Yes**	**Yes**	Yes. Minimum of two pairs nesting within holes/crevices along the quarry ledges.
Raven	*Corvus corax*	Green	N	**Yes**	No	Yes. Pair confirmed breeding on quarry infrastructure in the east of the site (see **Figure 11**). One chick present during the breeding bird surveys. The nest is not located within the footprint of the works.
Reed bunting	*Emberiza schoeniclus*	Green	N	**Yes**	No	Minimum of one pair breeding within wet grassland habitat in the east of the Application Site. Territory does not fall within the footprint of the works.
Robin	*Erithacus rubecula*	Green	N	**Yes**	**Yes**	Yes. Common resident, breeding in treelines and hedgerows. Footprint of the works overlap with a minimum of one breeding territory.
Rook	*Corvus frugilegus*	Green	N	No	No	Recorded flying over the Application Site, no nest sites confirmed within the site or footprint of the works.
Sedge warbler	*Acrocephalus schoenobaenus*	Green	N	**Yes**	No	Yes. Male seen singing in the wet grassland habitat in the east of the Application Site. The footprint of the works does not overlap with this territory.
Song thrush	*Turdus philomelos*	Green	N	**Yes**	**Yes**	Yes. Common resident, footprint of the works overlaps with a minimum of one breeding territory.
Stonechat	*Saxicola torquata*	Green	N	Possible	No	Possible breeding within areas of scrub and gorse.
Treecreeper	*Certhia familiaris*	Green	N	**Yes**	**Yes**	Probable breeding within treelines surrounding the derelict farmhouse in summer 2022. Minimum of one pair breeding within the proposed development area.
Woodpigeon	*Columba palumbus*	Green	N	**Yes**	Possible	Not recorded within the footprint of the extension, but has the potential to breed within treelines in the extension area.
Wren	*Troglodytes troglodytes*	Green	N	**Yes**	**Yes**	Yes. Common resident breeding within scrub and hedgerows throughout the Application Site. Footprint of the works overlaps with a minimum of two breeding territories.

3.6 Mammals (excluding bats)

3.6.1 Badgers

The mammal surveys yielded few signs of badger activity within 150 m of the Application Site, the standard search radius for sites within the Republic of Ireland where blasting or piling is to occur (NRA, 2005). Two badger setts, which were considered to be *inactive* during the field surveys, were observed within the existing quarry footprint (see **Plate 15**, **Plate 16** and burrow 1 and 2 in **Figure 12**). This was based on no observed field signs (prints, hairs etc.) in the vicinity of the setts and vegetation growth around the entrance holes. Additionally, two occurrences of suspected badger droppings were observed in areas of scrub in the west and east of Application Site. Both the inactive setts and field signs were recorded outside of the footprint of the extension.

As such, there is limited evidence to indicate that the Application Site provides important foraging or breeding habitat for badger at present, and that the footprint of the works overlaps with any badger resting sites.



3.6.2 Other Mammals

Some, albeit limited, evidence of fox activity was found within the Application Site, including a print, faeces, mammal trails and one potential inactive fox burrow (burrow 3), identified alongside the inactive badger setts within the existing quarry footprint (see **Figure 12**). There was also an inactive, unidentified mammal burrow (burrow 4) located in the southern edge of the Application Site, with the potential to be a fox den. There were no active dens located within the footprint of the extension or within the Application Site boundary.

Hares were observed several times during field surveys and trails frequently used by them were also recorded throughout the southern section of the Application Site, within the agricultural lands in addition to the field margins.

Existing data from the National Biodiversity Data Centre contained records of pine marten in the 2 km National Grid Squares N28N in which the Application Site is located. Field surveys yielded no evidence of pine marten activity within the Application Site and thus there is no indication that pine martens are utilising the site for resting or foraging. Additionally, though this species can utilise scrubland, there is limited suitable habitat within the Application Site in the form of woodland and forestry plantation.

Figure 12: Mammal burrows identified within 150 m of the Application Site boundary

3.7 Bats

The Application Site contains suitable habitat for both foraging and roosting bats, in the form of boundary features such as treelines/hedgerows, mature trees and derelict farm buildings. The boundary features also maintain connectivity to the wider area for foraging bats.

The initial PRF surveys identified five locations within the Application Site which had the potential to support roosting bats, as summarised in **Table 15**. The only 'high' suitability structure for roosting bats identified was the derelict farmhouse, which was found to have some cracks in the sofit box and access for bats to the interior of the house. In accordance with the BCT guidelines, two emergence and one re-entry survey were carried out, during which a single soprano pipistrelle was seen re-entering the north-east facing gable of the house on 30/08/2022. This is likely a transitional roost, as no other bats were seen emerging from/re-entering the house during the surveys carried out on 22/06/2022 and 18/07/2022. Based on a single bat seen re-entering, and the fact that soprano pipistrelle are a common species in the Irish context, this roost would be assigned a low conservation significance, in accordance with Marnell et al. (2022).

A Natterer's bat roost was confirmed in a small shed adjacent to the derelict farmhouse on 30/08/2022, when a surveyor observed 6 bats exhibiting swarming behaviour inside the shed before sunrise. During the emergence surveys carried out at the derelict house adjacent to this shed on 22/06/2022 and 18/07/2022, *Myotis* sp. passes were also frequently recorded, which indicates that this roost has the potential to be a maternity roost. Due to the roost being identified late in late August, when females start leaving maternity roosts, it was not possible to confirm this, or to determine the size of the maternity roost. As such, on a precautionary basis, the roost was considered to be a maternity roost of 6 or more bats. Maternity roosts are the most significant type of roost, and a maternity roost of 6+ Natterer's bats would be assigned a significance of significant-very significant in accordance with NRA (2006). According to Bat Conservation Ireland[6], *Myotis* sp. are considered to be rare in an Irish context. This would assign a conservation status of moderate-high for this roost (*'Maternity sites of rarer species'*), as per Marnell et al. (2022).

All other PRFs identified and surveyed were not considered to be occupied during summer 2022. However, it should be noted that tree roosts can often be largely transitional, and the absence of bats during the surveys does not mean that roosts may not be occupied during the works.

To assess the suitability of the site for foraging/commuting bats, three static detectors were deployed along hedgerows/treelines (**Figure 4**), supplemented by a transect survey along boundary features (**Figure 5**). **Table 13** summarises the bat species recorded and activity levels during transect surveys conducted across the site and **Table 14** details bat activity during the static detector deployments. Given that the detectors stopped recording at slightly different dates due to battery life (WSS011 on 10/06/2022, WSS005 on 9/06/2022 and WSS019 on 07/06/2022), the number of bat passes per hour (BPH) has been included in the table, to allow for a more clear comparison between the deployments.

[6] BCI Website. Available at: https://www.batconservationireland.org/irish-bats/distributions

A minimum of four species were recorded using the site by both the static detectors and the transect surveys, namely, common pipistrelle, soprano pipistrelle, Leisler's bat and *Myotis* sp. Common pipistrelle was the most commonly recorded species during the transect survey (17 passes), followed by Leisler's bat (16 passes). Common pipistrelle passes were associated with the areas of scrub in the east and west of the Application Site, while the Leisler's bat passes were recorded along the track along the northern ledge of the quarry. No soprano pipistrelles and only one *Myotis* sp. pass were recorded during the transect survey. Overall, the level of activity during the transect surveys was relatively low, which reflects the results of the static detectors deployed within the areas of scrub, which similarly recorded low activity.

According to BCI, Common pipistrelle and Soprano pipistrelle are both considered to be common species within an Irish context, with soprano pipistrelle being found in the majority of 10 km grid squares surveyed within the country. While Leisler's bat may be considered rare in the UK (Wray et al., 2010), in Ireland, it is a fairly common species.

The highest number of recordings during the static deployment were attributed to common pipistrelle activity at the derelict farmhouse (see WSS005 in **Figure 4**). This can likely be attributed to the mature treelines, which provide good foraging and commuting opportunities for bats. Recordings at the proposal site also included a low number of passes of *Myotis* sp. at the derelict farmhouse, corresponding to the roost identified within the shed. Though roosting activity was noted on 30/08/2022 during an emergence survey, the static detector revealed relatively low *Myotis* sp. activity throughout the deployment period of 2.5 weeks. Natterer's bat are considered to be a late emerging species (Collins, 2016), with emergence from roosts reaching a peak about one hour after sunset (BCT, 2010). As the detector recorded calls less than one hour after sunset, this indicates the presence of a roost during this period. Though the latest pass was at 01:20, it should be noted that during the maternity period when there are young present, bats can return to their roosts earlier, sometimes shortly after emergence (BCT, 2010). Additionally, Natterer's bats are reported to be generally quiet in their roosts (Smith & Racey, 2014) and therefore activity within the roost itself may not be picked up by the static detector. Natterer's bat are also a species which change roosts frequently, and can have multiple roosts within a colony's home territory, returning to these sites year on year (Smith & Racey, 2014). As such, the low levels of activity recorded during the static survey do not rule out the importance of this roost site to the colony.

In conclusion, activity levels were low in general across the site, with the highest levels of activity associated with the mature trees and derelict farm buildings. Areas of wet grassland/scrub recorded low levels of activity, which may reflect the lack of linear features for foraging bats.

Table 13: Bat species recorded during the transect survey conducted in June 2022

Species	Bat Passes
Leisler's Bat	16
Common pipistrelle	17
Myotis sp.	1
Total bat passes	**34**

Table 14: Static bat detector results for deployment units WSS011, WSS005 and WSS019

Species	Static Detector 1 (WSS011) Area of scrub in west of site			Static Detector 2 (WSS005) Area surrounding farmhouse			Static Detector 2 (WSS019) Area of scrub in east of site		
	Bat passes	**Bat passes/ hour**	**Timing**	**Bat passes**	**Bat passes/ hour**	**Timing**	**Bat passes**	**Bat passes/ hour**	**Timing**
Deployment: 24/05/2022-10/06/2022**. Sunset:** 21:40 – 22:00**, sunrise** 5:02 – 5:17									
Leisler's bat	12	0.01	Earliest pass: 22:05 Latest pass: 00:34	149	0.15	Earliest pass: 22:04 Latest pass: 03:36	15	0.02	Earliest pass: 22:19 Latest pass: 00:27
Soprano pipistrelle	8	0.01	Earliest pass: 22:38 Latest pass: 03:36	168	0.16	Earliest pass: 22:00 Latest pass: 04:41	1	0.00	Earliest pass: 01:28 Latest pass: 03:48
Common pipistrelle	17	0.02	Earliest pass: 22:50 Latest pass: 03:06	1391	1.36	Earliest pass: 22:13 Latest pass: 04:47	7	0.01	Earliest pass: 22:41 Latest pass: 03:55
Myotis species	0	0	N/A	12	0.01	Earliest pass: 22:32 Latest pass: 01:20	0	0	N/A

Table 15: Structures and trees identified as having PRFs within the Application Site and results of emergence/re-entry surveys

Feature	Suitability (Collins, 2016)	Location	Picture	Description	Date of survey	Results of surveys
House	High	Not provided		• Uninhabited house • Potential entrances on gables • Windows slightly open • Some cracks in sofit box. • Roof tiles look fairly intact and no visible gaps in chimney • No droppings or other bat signs found.	• Dusk 22/06/2022 • Dusk 18/07/2022 • Dawn 30/08/2023	One soprano pipistrelle seen re-entering the north-east facing side of the house on 30/08/2022.
Shed 1	Low	Not provided		• Corrugated roof with timber frame • No doors or windows, • Used by cattle • Some crevices in stonework • Assigned low on a precautionary basis due to small number of crevices and high foraging suitability in the surrounding area.	• Dawn 23/06/2022	One bat recorded foraging around the shed, no bats seen re-entering during the dawn survey.
Shed 2	Low	Not provided		• Corrugated roof with timber frame • No doors or windows, • Used by cattle • High foraging suitability in the area	• Covered during the transect survey on 22/06/2022	No bats seen emerging.

Shed 3	Low	Not provided		• Corrugated roof with timber frame • No doors or windows. • Some crevices within the stonework • High foraging suitability and connectivity in the surrounding area.	• Dawn 30/08/2023	• Natterer's bat roost identified during the re-entry survey. • 6 natterer's bats seen exhibiting swarming behaviour.
Beech trees	Low	53.819753, -7.638297		• Line of mature beech trees with some cracks and knots.	• Dawn 23/06/2022	• No bats seen re-entering any features within the treeline.

3.8 Amphibians

According to the NBDC searches, common frog *Rana temporaria* has been recorded within the 2 km Grid Square N28I, in which the Application Site is located. No frogs were observed during field surveys of the Application Site and the surrounding area.

Smooth newt *Lissotriton vulgaris* has a widespread distribution on the island of Ireland, with localised populations that may be unrecorded, but which can be abundant where they occur (King et al., 2011). Surveys of the ponds on the site within the active quarry showed that smooth newts were present, with at least 11 individuals recorded (comprising males and females) within two different ponds (see **Plate 17**). The ponds also were considered to contain vegetation suitable for breeding newt.

Plate 17: Newts observed within quarry pools on the existing quarry floor

4 ECOLOGICAL VALUE OF FEATURES OCCURRING AT THE SITE

This section is intended to provide a value assessment of the habitats and species at the Application Site, based on the survey results set out in Section 3 and the valuation methodology set out in Section 2.

This information provides the basis for the impact assessment that will follow in Section 5, in which the ecological value of the site for target habitats and species will be assessed, and the potential impacts upon them that may result from the proposed project will be considered. Ecological features are considered under the general categories of International, National, Regional, and Local Importance (where relevant). Species of conservation importance recorded within the Application Site during site visits are considered in **Table 16.** Potential impacts on internationally designated sites are discussed further within the Appropriate Assessment screening report, which concluded that there was no potential for significant effects on European designated sites as a result of the proposal (Woodrow, 2023). As such, internationally designated sites are not considered any further within this report.

Table 16: Valuation of Ecological Features

Assessment undertaken in relation to the Application Site and Potential for Direct Impacts / Source Pathway Receptor Links. (Those outlined in **Bold** are potentially affected 'Important Ecological Features' and will be brought through to the impact assessment section.)

Feature	Highest Evaluation / Importance	Potential Direct Impact or Source Pathway Receptor Link? Y/N	Important Ecological Feature (IEF)? Y/N
Designated Sites			
Lough Gowna pNHA	**County**	**Y – Hydrologically connected via the Aghnacliffe Stream and Aghamore Stream.**	**Y**
Habitats			
GS1 Semi-improved Neutral Grassland (species-poor example)	Local Importance (Lower Value)	Y – Direct impact through habitat loss	N
WL1/WL2 Hedgerows and Treelines	**Local Importance (Higher Value)**	**Y - Supports nesting birds and other species. Direct impact through habitat loss.**	**Y**
WS1 Scrub	**Local Importance (Higher Value)**	**Y - Supports nesting birds and other species. Direct impact through habitat loss.**	**Y**
GS4 Wet Grassland	Local Importance (Lower Value)	Y – Direct impact through habitat loss	N
GS2 Dry Grassy Verge	Local Importance (Lower)	Y – Direct impact through habitat loss	N
PF2 Poor Fen and Flush	**Local Importance (Higher)**	**Y – Direct impact through habitat loss**	**Y**
ED4 Active Quarry	Local Importance (Lower)	N	N

Feature	Highest Evaluation / Importance	Potential Direct Impact or Source Pathway Receptor Link? Y/N	Important Ecological Feature (IEF)? Y/N
BL3 Buildings	**Local (Lower)**	**Y – Supports roosting bats. Direct impact through habitat loss**	**Y**
Species			
Breeding birds – Red/Amber listed species	**Local (Higher)**	**Y – Potential for direct impacts e.g., destruction of breeding sites and indirect impacts e.g., disturbance.**	**Y**
Terrestrial mammals (foraging)	**Local (Higher)**	**Y – Potential for direct impacts in the form of habitat loss.**	**Y**
Bats (roosting) [7]	**County**	**Y – Potential for direct mortality and roost destruction to a significant roost and loss of habitat.**	**Y**
Bat commuting/foraging	**Local (Higher)**	**Y – Potential for direct loss of commuting/foraging habitat.**	**Y**
Smooth newt	**Local (Higher)**	**Y - Potential for direct impacts (mortality, destruction of eggs and habitat loss).**	**Y**
Invasive Species	Local (Lower)	N – these species occur outside of the footprint of the works. No potential for spreading due to the works.	N

[7] Bat habitat evaluation adapted from Wray et al. (2010).

5 ASSESSMENT OF IMPACTS

The Ecological Impact Assessment is undertaken in this section. The methodology set out in Section 2 is applied to the Important Ecological Features identified in **Table 16**. Where it is possible to describe ecological impacts with reference to the following characteristics (both before and after mitigation, for construction and operation of this site) this has been undertaken in accordance with CIEEM (2018): Positive or negative; Extent; Magnitude; Duration; Timing; Frequency; and Reversibility.

5.1 Overview of potential ecological impacts

This assessment refers to potential impacts from quarrying proposals at Aughnacliffe, Co. Longford, specifically the extraction of greywacke material from lands at Aghamore Upper via a phased excavation illustrated in Appendix II. The following sections detail the potential direct and indirect impacts on ecological features resulting from the proposal both within and outside the Application Site.

The potential impacts that the proposal may have on the receiving environment are:

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

Impacts may arise both directly, from the actual quarrying process, or indirectly, from use of machinery, transportation of material etc.

The site restoration plan, which is designed to deliver positive impacts for local biodiversity, is also considered.

5.1.1 Potential impacts from dust deposition

Quarrying activities generate dust and, in the absence of mitigation, dust emissions have the potential to exceed permitted levels, with impacts on the flora in the vicinity. The greatest proportion of fugitive dust, comprising larger particles (>30 microns) is deposited within 100 m. Large amounts of dust deposited on vegetation over a prolonged period results in adverse effects on plant productivity, which can lead to the degradation of sensitive habitats, including linear features such as hedges and treelines, which in turn can be important for a range of species. The chemical composition of the dust can also have an effect on the flora, for example by altering pH levels in the soil.

A Dust Impact Assessment has been prepared for the proposed development (AONA Environmental, 2023). This report notes that dust control measures currently form an integral part of the existing sites operational procedures for the existing quarrying and processing operations, and that these measures will also be standard for the proposed extension. In terms of impacts, the report concluded that the potential for nuisance impact has been and is limited

to the immediate vicinity of the existing activities because of the quarried materials predominantly coarse nature, with dust suppression measures already in operation, as required. Overall, the Dust Impact Assessment concluded that the proposed quarry extension development has the potential for a **slight adverse effect** at the receptors in the surrounding area (IAQM, 2016).

5.1.2 Potential hydrological impacts

In terms of water quality impacts, a Hydrological & Hydrogeological Impact Assessment (H&HIA) has been prepared for this proposal by BCL Hydro (2023). This report outlines that the pre-existing quarry operates below the water table; however, the bedrock at the quarry has very low hydraulic conductivity, which restricts the groundwater inflow rate within the quarry excavation. Pumping is principally of rainwater and surface water runoff. Hence interaction with groundwater will be **negligible**.

The dewatering operation is conducted under Discharge Licence WP 02/20 (dated October 2020), issued by Longford County Council. Water is discharged into a field ditch, which flows in a north-easterly direction to join Aghamore Stream, which then joins the Aghnacliffe Stream and flows into Lough Gowna. Any rainfall runoff intercepted by the quarry and temporarily lost from the Aghamore – Aghnacliffe Sub Basin will be collected in the quarry sump; and, after settlement, it will be directed to the consented discharge point and returned to the same sub basin (immediately downstream of the quarry). Quarry dewatering is a non-consumptive abstraction and there will be no reduction in flow rates in the sub basin.

Water quality in the receiving watercourse is protected under the terms and conditions set by the Discharge Licence. As a result, it is considered that no waterbodies or adjacent habitats will be impacted as a result of runoff or a deterioration in water quality as a result of the proposal.

5.1.3 Potential impacts from disturbance

Disturbance to ecological features can be caused by high levels of activity, movement, noise or inappropriate lighting on the site. Site activities can reduce opportunities for foraging or feeding by some animals. Excessive noise levels can also deter animals from certain parts of the site and inappropriate lighting can disturb or deter bat species. As blasting will occur as a result of the works, there is considered to be potential for noise-related disturbance. It should be noted, however, that the site is located within an existing, active quarry. As such, species occurring within the site and wider area are likely to be somewhat habituated to higher noise levels.

No ancillary buildings are proposed within the planning application and hence no lighting is proposed as part of the development. Therefore, there is not considered to the potential for additional light disturbance to bat species.

5.2 Potential impacts on designated sites

The Application Site has a direct hydrological connection (*c.* 5 km) to Lough Gowna pNHA via the Aghnacliffe Stream, which arises in the west of the site, and the Aghamore Stream, via which surface water run-off is discharged under the existing water management practices at the site. As surface water discharge to the Aghamore Stream occurs in a controlled, licenced,

manner, there is considered to be limited potential for significant effects on water quality, should current water management practices continue. In terms of connectivity to the Aghnacliffe Stream, an assessment by BCL Hydro (2023) found the source of the stream in the north-west boundary of the landholding to be dry on 11/10/2022. As such, there is not considered to be a strong surface water connection to Lough Gowna via the Aghnacliffe Stream. The Application Site is, however, located within the same river sub-catchment as Lough Gowna and the majority of the development will drain into these streams. Additionally, the Lake Waterbody WFD Status (2016-2021) for Lough Gowna is 'Moderate (At risk)'.

The hydrological and hydrogeological report concluded that the proposed extension and deepening will not have an adverse impact on flow rate or water quality in the Aghamore-Aghnacliffe Stream, which feed into Lough Gowna (BCL Hydro, 2023). The magnitude of impact on the hydrology of the Lough was concluded to be **negligible** and therefore the significance of the impacts of the proposed development on designated sites is considered to be **not significant**.

5.3 Potential Impacts on habitats

The various ecological habitat types that occur within the Application Site are listed in **Table 16**. Those that are considered to be sensitive Important Ecological Features (IEF's) of Local (Higher) significance, or more are highlighted in **bold** in this table, and the impacts upon these are discussed in further detail below. These have the potential to be directly impacted upon the proposal, either through their removal, physical damage or modification. **Table 17** quantifies the expected areas/lengths of habitats lost as a result of the proposed development.

Table 17: Habitat impacts as a result of the Proposed Development
Those outlined in Bold are potentially affected 'Important Ecological Features'

Habitat	Approximate total area / length of habitat within Application Site	Approximate total area / length impacted
WS1 – Scrub	**7.7 ha**	**2 ha**
GS1 – Semi-improved Neutral Grassland	8 ha	8 ha
GS2 – Dry Grassy Verge	0.52 ha	-
GS4 – Wet Grassland	3.90 ha	2.4 ha
PF2 – Poor Fen and Flush	**0.53 ha**	**0.53 ha**
WL1 – Hedgerows and WL2 - Treelines	**2.13 km**	**1.5 km**

5.3.1 WS1 – Scrub

Direct Impacts – A large proportion of the Application Site, *c.* 7.7 ha, consists of a dense willow, gorse and bramble dominated scrub habitat. Approximately 25% (2 ha) of scrub habitat will be permanently lost due to the proposed quarry extension works.

Indirect Impacts – In the absence of mitigation, the quarry proposal has the potential to result in dust deposition on foliage of similar scrub habitat throughout agricultural landscape surrounding the site within a *c.* 100 m radius.

Impact significance – Scrub is considered to be of low botanical value, being relatively common and widespread both in the wider area and in an Irish context. As such, the loss of 2 ha of scrub habitat is considered to be **not significant**. This habitat does, however, provide shelter and/or foraging habitat for bats and terrestrial mammals, birds and invertebrates, the impacts of which are considered separately within Section 5.4-5.7.

5.3.2 WL1 – Hedgerows and WL2 – Treelines

Direct Impact – Approximately 70% (1.5 km) of the of mature, species-rich hedgerow and treeline linear boundary features will be directly lost due to the proposal. An estimated 0.5 km of this habitat will be permanently lost, with *c.*1 km temporarily lost for area utilisation as tip/rock traps during the phased development.

Indirect Impacts –In the absence of mitigation, the quarry proposal has the potential to result in dust deposition on foliage of similar linear hedgerow and treeline boundary within a 100 m radius of the Application Site.

Impact significance – Species rich treelines and hedgerows are of high botanical value, and the loss permanent loss of these habitats is considered to be **significant** at the local level. These habitats also provide shelter and foraging habitat for bats and terrestrial mammals, birds and invertebrates, the impacts of which are considered within Section 5.4-5.7.

5.3.3 PF2 – Poor Fen and Flush

Direct Impact – All of the poor fen and flush (0.53 ha) will be directly, and permanently lost as a result of the proposed development.

Indirect Impacts – In the absence of mitigation, there is considered no potential for indirect impacts, as all of this habitat is due to be removed as a component of the proposal.

Impact significance – *'Although poor fen and flush is not listed in Annex I of the Habitats Directive, it is very limited in extent in Ireland and should be regarded as being of special conservation importance' (C. Ó Críodáin, pers. Comm), (Fossitt, 2000).*

Based on the permanent loss of a habitat of special conservation importance, the impact is **significant** at the local geographic scale. This habitat also provides shelter and foraging habitat for terrestrial mammals, birds, amphibians and invertebrates, the impacts of which are considered within Section 5.4-5.7.

5.4 Potential impacts on birds

5.4.1 Direct Impacts

Approximately 1.5 km of hedgerow and treeline habitat, as well as the southern ledge of the quarry, will be directly removed as a result of the proposal. This could result in destruction of nests if undertaken during the bird breeding season (1st March – 31st August). Based on the results of the breeding bird surveys carried out in summer 2022, the footprint of the works has the potential to result in the direct loss of a *minimum* of one grey wagtail, one kestrel, one

meadow pipit, two goldcrest, one spotted flycatcher, one willow warbler, one blackbird, one blackcap, one blue tit, one bullfinch, three chaffinch, one goldfinch, one great tit, one pheasant, two pied wagtail one robin, one song thrush, one treecreeper and two wren breeding territories. The works will also result in the removal of a derelict shed containing a swallow nest. As such, in the absence of mitigation, there is potential for direct impacts in the form of nest destruction, nest abandonment and chick mortality to these species.

These species are largely common and widespread and, although may return to the same breeding locations year after year, will readily nest in nearby suitable habitat if previously used locations are unavailable. Though red-listed, grey wagtail and meadow pipit numbers registered a crash thought to be linked with consecutive cold winters in 2009/10 and 2010/11, with more recent data indicating the species is staging a recovery (Lewis et al., 2019). As such, they are still considered to be relatively common and widespread species in Ireland.

The conservation status of kestrel was upgraded from amber to red in the most recent BoCCI4 assessment (Colhoun & Cummins, 2013; Gilbert et al., 2021). Both breeding numbers and distribution of kestrels have declined significantly, which is thought to have been driven by changes in prey availability due to agricultural intensification (Wilson-Parr & O'Brien, 2019), as well as secondary rodenticide poisoning. As such, in the absence of mitigation, there is considered to be potential for significant effects resulting from disturbance to/destruction of a kestrel nest during construction.

In terms of the Annex I listed species peregrine, the current nest site is located along the northern ledge of the quarry. As the proposal is for a southerly extension, this nest site will remain intact as part of the proposed works. As such, the proposal will not result in the loss of a peregrine nest, or in direct impacts to this species. Other nest sites that will be retained within the proposal are the sand martin colony and raven nest which lie outside of the footprint of the works.

Approximately 1.5 km of hedgerow and treeline habitat in addition to 17 ha of scrub/immature woodland and 2.4 ha of wet grassland, considered suitable habitat for foraging and nesting birds, will be removed as a component of the proposal, resulting in the permanent, direct loss of habitat.

5.4.2 Indirect Impacts

There will be some disturbance during construction and during the operational phases on the surrounding area, although this will largely be screened by surrounding treelines and hedgerows. As the Application Site is an existing, active quarry, species occurring within the quarry and immediate vicinity, such as peregrine and kestrel, are likely to be habituated to high levels of noise and human disturbance already. Peregrine and kestrel are species which regularly occur in active quarries, and sensitivity to disturbance is likely to be dependent on the regularity of disturbance that individuals are exposed to (Goodship & Furness, 2022). For peregrine, there will be no removal of the current nest site, and Moore et al. (1997) states that in the absence of direct interference to nest sites or birds, breeding peregrines will ignore most human disturbance. For kestrel, it is considered that this species is relatively tolerant to relocating, provided that there are suitable nesting opportunities available.

5.4.3 Impact significance

Unmitigated, the potential direct disturbance to/destruction of nesting habitat, in particular for the red-listed species kestrel, and loss of breeding/foraging habitat for birds is considered to be **significant** at the local level.

5.5 Potential impacts on mammals (excluding bats)

5.5.1 Direct Impacts

Unmitigated, it is unlikely that the proposed development will have direct impacts on badger. No evidence of active resting places for badger were observed during the field surveys. Additionally, no inactive resting places were observed within the footprint of the proposed extension. It is therefore considered that there is no risk of direct impacts as a result of this development through the loss of setts/burrows. Operating hours of the quarry (restricted to daytime) mean that cases of direct mortality are unlikely.

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

The proposal will also result in the direct loss of foraging habitat for protected mammals, such as hedgerows, grassland and scrub.

5.5.2 Indirect Impacts

Field surveys obtained some limited evidence of foraging badger and fox, in the form of droppings and mammal trails, within areas of scrub in the east and west of the Application Site. Additionally, Irish hare were observed on a number of occasions by surveyors. As such, there is considered to be potential for temporary, indirect impacts to foraging mammals as a result of the development, in the form of displacement due to disturbance.

5.5.3 Impact significance

Based on the regular presence of hare within the Application Site, the potential for the proposed development to result in the direct destruction of a hare form is considered to be **significant** at the local level.

In terms of loss of habitat and temporary displacement of mammals, given the availability of ample alternative foraging habitat (scrub, hedgerows, forestry) in the vicinity of the Application Site, this is considered to be **not significant**.

5.6 Potential impacts on bats

5.6.1 Direct Impacts

Two bat roosts were identified within the footprint of the works. A single soprano pipistrelle was observed re-entering the eaves of the farmhouse (low conservation significance) and a potential Natterer's bat maternity roost of unknown size (moderate-high conservation significance), was observed in a small shed adjacent to the farmhouse. These roosts were considered within the design stage of the proposed development and will be retained in order

to avoid direct impacts. Additionally, a 20 m buffer will be placed around the Natterer's bat roost, within which no felling/other works will occur.

Though no bats were seen emerging from/re-entering crevices within the mature treeline, tree roosts are often transitional, and there is potential for these crevices to be used by bats occasionally. As such, there is potential for significant direct effects in the form of disturbance to roosting bats.

There will also be a loss of *c.* 1.5 km of foraging/commuting habitat in the form of treelines and hedgerows as a result of the proposed works.

5.6.2 Indirect Impacts

In terms of indirect impacts due to disturbance, based on the quarry being operational during the daytime, there is unlikely to be significant disturbance to foraging bats during establishment phase and subsequent operation of the quarry, and bat species are likely to continue utilising the Application Site for foraging and commuting. Additionally, there is no lighting proposed within the planning application. As such, indirect impacts to bats are considered to be **not significant**.

5.6.3 Impact significance

Unmitigated, the potential for direct mortality/disturbance to roosting bats due to inappropriate felling is considered to be **significant** at the local level. Additionally, the loss of a considerable amount (1.5 km) of foraging habitat, in particular in an area containing a significant roost, would constitute a **significant** impact at the local level.

5.7 Potential impacts on amphibians

5.7.1 Direct impacts

Smooth newts were recorded in some of the quarry pools on the site as described in Section 3.8. Both males and females were recorded, and suitable vegetation was present, showing that the newts, which breed in shallow, vegetated water bodies during spring and early summer, had the potential to breed within these pools. As such, the proposal has the potential to result in direct mortality to this species and their eggs, in the absence of mitigation. While these pools were created as part of previous quarry operations on the site, and the newt habitat would not otherwise exist there, it is still important to protect breeding opportunities for this species in the area.

As the proposal will result in the removal of the pools currently inhabited by smooth newt, the proposed development will also result in a loss of breeding habitat, in the absence of mitigation. This may be temporary, should quarry pools be left to establish vegetation over time.

5.7.2 Indirect impacts

Impacts to newts as a result of the proposed development are considered to be direct in nature.

5.7.3 Impact significance

Unmitigated, the potential direct mortality to adult smooth newts, destruction of eggs, and loss of breeding habitat would result in a **significant** impact, at the local geographic scale.

5.8 Potential cumulative impacts

CIEEM Ecological Assessment Guidelines (CIEEM, 2018) state that:

'Other development projects (besides the one being assessed) can influence the baseline and need to be taken into account. This will be the case in circumstances where another development has been consented or recently constructed and is predicted to have an impact on an ecological feature being considered as part of an environmental assessment. The baseline may also be affected where another development has an ongoing incremental 'operational' phase effect'.

The Longford County Council Planning Viewer was consulted for planning applications surrounding the Application Site and adjacent to the unnamed stream downstream of the Site. Two other significant developments were identified in proximity to the Application Site which could result in cumulative effects on the integrity of the previously identifies European Sites.

Table 18: Proposed developments in the vicinity of the Application Site.

Application Reference and Status	Location	Description	Potential Impacts
2279 Conditional (2022)	Aughnacliffe Quarry, Aghamore Upper, Longford	The installation and operation of a readymix concrete batching plant and all ancillary works within an application area of c. 0.25 hectares	Potential to cause a release of hydrocarbons, effluent, and wastewater into the surface water system.
22195 Conditional (2023)	Aughnacliffe Quarry, Aghamore Upper, Longford	The installation of an aggregate storage shed (area 902 m^2) and partial realignment of existing private laneway, within an application area of c. 0.2 ha, at the existing quarry landholding	Potential to cause a release of hydrocarbons, effluent, and wastewater into the surface water system.

As shown in **Table 18,** the proposed quarry extension development may have the potential to act in conjunction with the other proposals directly adjacent with the Application Site to result in cumulative impacts from hydrocarbon/chemical spillage. However, such combined effects are unlikely given the small scale and localised nature of both projects, appropriate water quality measures in place, and the absence of a strong and direct hydrological connection between these projects and the nearest international and national designated sites.

The site will be accessed via the existing approved quarry entrance which is utilised by quarry traffic including HGV's. No intensification of operations is proposed as a result of the proposed operations and therefore no alteration to the existing quarry entrance is necessary.

5.8.1 Active and inactive quarries in the vicinity of the Application Site

A desktop survey of the 2 km area surrounding the Application Site was undertaken on GIS with the purpose of identifying any quarries in the vicinity of the proposal, either active or inactive. It was determined that there is one inactive quarry *c.* 1.3 km west from the Application Site boundary.

5.8.2 Associated/connected developments

CIEEM (2018) defines an associated / connected project as:

'a development activity [which] enables another development activity e.g., phased development as part of separate planning applications. Associated developments may include different aspects of the project which may be authorised under different consent processes. It is important to assess impacts of the project as a whole and not ignore impacts that fall under a separate consent process'.

No proposals for further developments associated or connected with the development are evident.

6 MITIGATION, COMPENSATION AND RESIDUAL IMPACTS

This section of the report outlines mitigation and/or enhancement measures, which aim to avoid, reduce and compensate for effects on Important Ecological Features within the Zone of Influence of the proposed development.

6.1 Embedded (design-stage) mitigation

Embedded (design-stage) mitigation allowed for the conservation of a large proportion of habitats considered to be of Local (Higher) significance within the Application Site. As highlighted in **Table 16**, the majority of the existing bramble, gorse and willow dominated scrub habitat is to be retained within the north-western corner site. Additionally, a small area of wet grassland inhabited by wetland species, such as reed bunting and sedge warbler, will be retained. In terms of boundary features, 0.53 km of existing, mature, species-rich hedgerow and treelines are to be retained.

The retention of the derelict house and adjacent shed was considered within the design stage in order to avoid direct impacts on a small soprano pipistrelle roost and potential Natterer's bat maternity roost. Additionally, a 20 m buffer will be placed around the maternity roost, within which no quarrying works/felling will occur. This will avoid disturbance to roosting bats, as well as retaining *c*. 130 m of the mature trees surrounding the buildings for a 'screening' effect.

The conservation of a number of breeding territories for nesting birds were also retained within the development such as the sand banks in the east of the site containing a sand martin colony and the peregrine nest on the north face of the quarry.

6.2 Mitigation/compensation for potential direct impacts on habitats

6.2.1 Mitigation by replanting

As Phase 1 and Phase 2 of the Development Plan progresses, the earthen screening bunds in the south-west of the Application Site will be planted with a mix of pioneer native woodland and livestock hedgerow species including birch *Betula* spp., alder *Alnus glutinosa*, blackthorn *Prunus spinosa,* hawthorn *Crataegus monogyna*, Scot's pine *Pinus sylvestris* and willows *Salix* spp. covering an area totalling approx., 1.8 ha.

Phase 3 and Phase 4 of the Development Plan will see restoration planting of all peripheral habitats and field boundaries with pioneer woodland (4.51 ha), wet woodland (0.61 ha) and gorse and thorn scrub (0.74 ha) as well as reseeding of species-rich neutral grassland habitat (4.56 ha).

In time, new biodiverse habitats will be created, and these will in turn provide positive benefits for foraging, commuting, and breeding species.

6.2.2 Mitigation by dust management

A Dust Impact Report was produced as part of this assessment to ensure that, in the event of dry weather, dust is managed appropriately on the site to control the levels which might impact upon local vegetation at this site, including all intact woodland, hedgerows and treelines which remain *in situ* during the proposed operation of this quarry.

Advanced earthen screening bunds along the south-western boundary of the site will be constructed along the frontage of the site at a maximum height of *c.* 4 m above current ground levels. The bunding will act as a barrier, containing dust and noise associated with the operations to within the void. Additionally, these bunds will be seeded with native woodland species as previously described, at the earliest opportunity which will further prevent dust from escaping into the wider environment. Furthermore, as the quarry deepens, effects from dust will be lessened.

6.3 Mitigation for the protection of birds

- Hedgerow, scrub and the derelict buildings will be removed outside of the bird breeding season i.e., during September to February inclusive, to ensure that no nesting birds are disturbed, or nests destroyed, during the proposed works.
- Earthen screening bunds created early into the proposed development will be planted with native woodland species which will provide additional foraging and nesting habitat within the site.
- Peregrines are known to become habituated to a range of human activity, including quarrying; however nesting birds can be sensitive to disturbance in the early stages of the breeding season (late March to early May). The implementation of minimal blasting schedule over this early period will limit disturbance to breeding peregrines. The following measures will be employed to protect nesting peregrines:
    - There will be no blasting within 100 m of any peregrine nest during the sensitive period of the breeding season.
    - Blasting within the quarry will be limited to once per month during the breeding season (March to June inclusive).
- Destruction of the kestrel nest along the southern boundary of the quarry will occur outside of the bird breeding season. Kestrels do not build their own nests and will therefore readily relocate when nest sites become unsuitable. They have also been shown to willingly inhabit nest boxes (Rzępała et al., 2023). Kestrels have a high site fidelity, remaining within close proximity to their natal sites. As such, nest boxes have been shown to have a positive impact on local population growth. A minimum of two kestrel nest boxes[8], the location of which will be determined by an experienced ecologist, will be erected as early as possible, prior to the commencement of the works to compensate for the loss of a kestrel nest site along the southern ledge of the existing quarry. The nest boxes should be south-west facing, *c.* 8 m from the ground, and lined with a light layer of sandy/gravel substrate. The nest boxes will be monitored by an experienced ecologist in years 1, 2 and 3 post-planning, involving one visit during the breeding season to assess occupancy. Should the nest boxes be occupied, they will be

[8] See https://www.rspb.org.uk/birds-and-wildlife/advice/how-you-can-help-birds/nestboxes/nestboxes-for-owls-and-kestrels/kestrel-nestboxes/ for recommended design

cleaned out at the end of the bird breeding season. If no occupancy is recorded after year 3, the nest boxes will be moved to a new location by an experienced ecologist. After year 3, an experienced ecologist will determine if additional monitoring is required. Nest boxes will continue to be checked at the end of each breeding season for cleaning purposes.

- A variety of other nest boxes will be provided to compensate for the loss of 1.5 km of treelines/hedgerow and the derelict farm shed containing a swallow nest. The number and types of nest boxes will be recommended and erected by an experienced ecologist prior to the commencement of the works. These nest boxes will be tailored to the species recorded breeding within the footprint of the works e.g.:
    - Swallow nest box[9], installed *inside* one of the retained buildings which allows easy access via an open door or window.
    - Open front nest boxes for robins, wrens and pied wagtail.
    - Small hole nest boxes of varying sized holes for blue tits, great tits, coal tits, starlings and house sparrows.
- The creation of compensatory newt ponds in the north-east of the Application Site will create increased foraging opportunities for birds.

6.4 Mitigation for the protection of mammals (excluding bats)

- A site walkover by an experienced ecologist will be carried out prior to the removal of any suitable hare habitat, to ensure that there are no forms present and to flush any hares.

6.5 Mitigation for the protection of bats

- Monitoring of the potential maternity roost will occur during years 1, 2 and 3 post-planning. This will involve a visit by a licenced bat ecologist during the maternity period, and use of an endoscope/thermal camera. After year 3, an experienced ecologist will determine if additional monitoring is required. Monitoring data will be shared with Bat Conservation Ireland (BCI).
- Blasting should not occur within 100 m of the potential maternity roost during the sensitive maternity period (April to August).
- Compensatory planting of trees will be carried out along the margins of the quarry adjacent to the bat roosts, to provide additional screening and protection from the quarry works. These should be native species and should not be too close to the roost so as not to change the immediate surrounding area or access to the roost.
- Hedgerows, treelines and derelict buildings will be removed outside of the active bat season (April to October inclusive).
- Prior to felling/demolition, pre-construction inspections will be carried out by a licenced bat ecologist at all trees/structures identified during the baseline surveys as having PRFs. This will be by endoscope or emergence/re-entry surveys.
- When carrying out felling, best practice guidance should be applied. This involves sectional felling, as shown in **Figure 13**, whereby sections removed from trees during felling are left in situ for 24 hours post felling, to allow any potential roosting bats to emerge safely.

[9] See https://birdwatchireland.ie/product/swallow-nestbox/

- New roost opportunities should be created in a 1:1 ratio of number of PRFs lost. Roost opportunities should be created by an experienced ecologist in the form of woodcrete bat boxes or the veteranisation (the act of intentionally causing damage to trees to create roosting opportunities for bats) of retained trees, with preferably *c.* 50% created through veteranisation.
- Approximately *c.* 0.53 km of existing mature, species-rich hedgerow and treelines are to be retained, which will minimise potential impact on bat foraging habitat as a result of the proposal.
- The planting of woodland, including on overburden earth bunds, will provide new foraging habitat for bat species during the operational phase of the quarry.
- The creation of compensatory newt ponds will create increased foraging opportunities for bats within the Application Site.

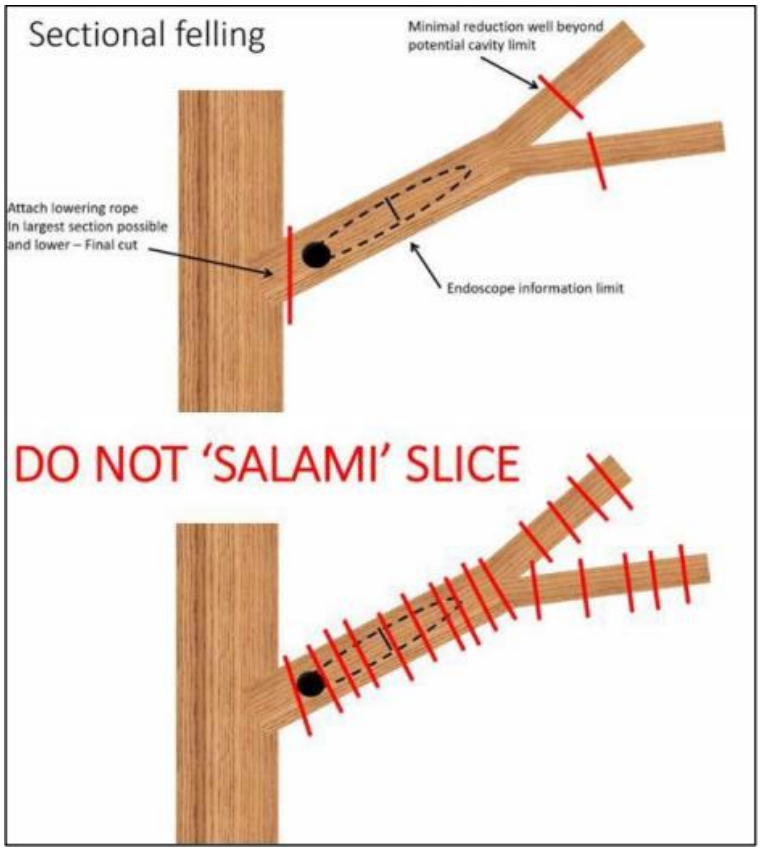


Figure 13: Sectional felling procedure for features on low roost potential trees

6.6 Mitigation for the protection of smooth newt

6.6.1 Pond creation for newts

Two suitable ponds will be created in a designated area in the north-east of the site, *c.* 250 m east of the existing standing water inhabited by newts, as shown in **Figure 15**. According to Langton et al. (2001), ponds should ideally be situated within 500 m of a known newt breeding pond, which this new pond will achieve. This newly-created pond will be designed to be of optimal value for breeding newts. Newt-friendly attributes that the new pond will have are described below.

- The size of a permanent pond is important in influencing its capacity for adults and juveniles throughout the year. The aim will be for a pond of 10 x 10 m (area approximately 100 m²).
- The pond will be allowed a year to develop some vegetation before being required by newts, as submerged plants are important as egg-laying sites for this species, as well as providing a habitat for invertebrates on which newts can feed. Typical aquatic species found at ponds inhabited by newts are illustrated in **Figure 14**.
- The pond will be situated so that no runoff water from elsewhere on the site can enter it, and there will be no surface drains in proximity to the pond.
- During the installation of the pond, it will be ensured that this pond will hold sufficient water during springtime for breeding newts.
- There will be a deeper and shallower end to the pond, with gently sloping sides on some edges to allow this species to gain access to the surrounding environs for the terrestrial period of their life cycle (and for hibernation on land).
- Two to three newt hibernacula[10], such as deadwood, logs or brash, covered in soil, will be installed on the site surrounding the pond (away from the quarry workings), in order to provide locations where this species can gain resting sites for hibernation.

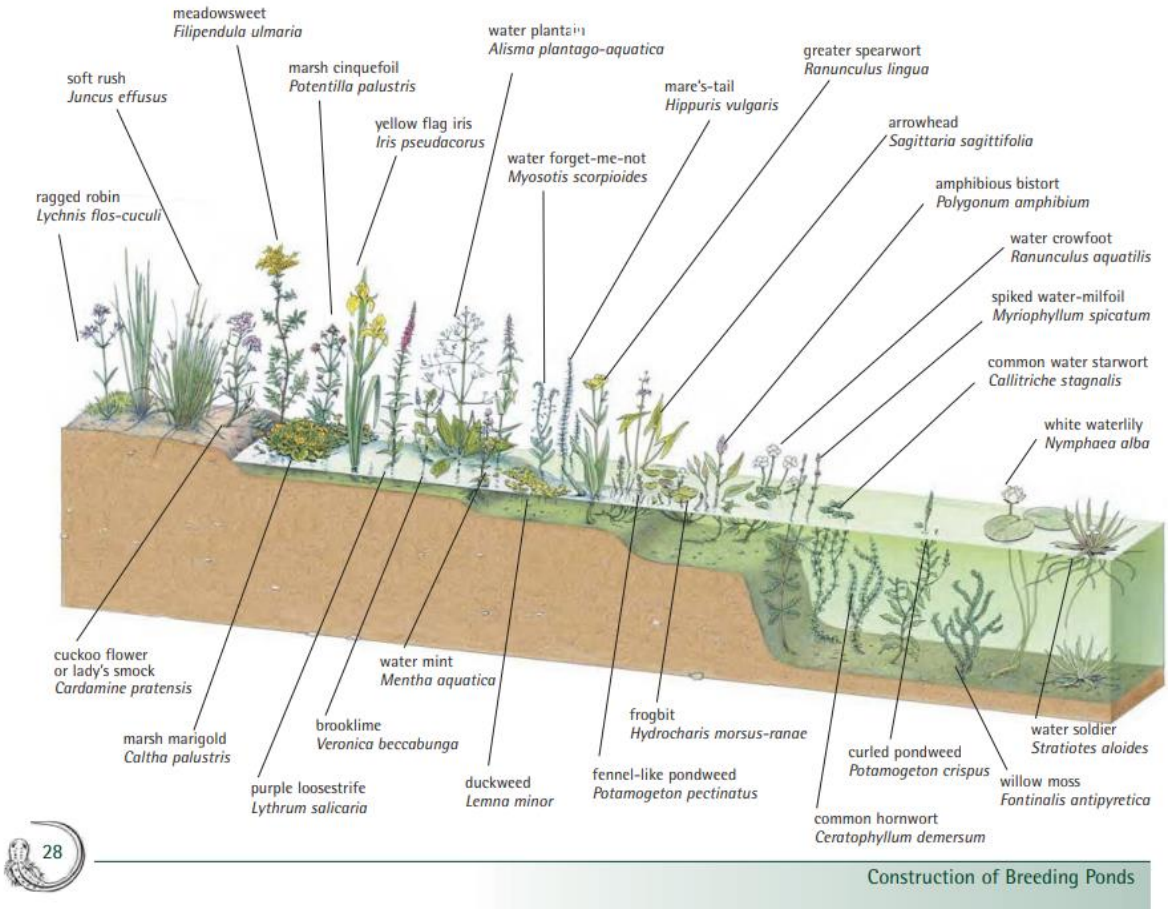


Figure 14: Typical aquatic plant species at newt ponds (Source: Froglife)

[10] Guidance available from RSPB: http://ww2.rspb.org.uk/hfw/factsheets/HFW22.pdf

The proposed method of pond creation, following the guidance outlined for the creation of ponds for smooth newts[11], is outlined below and in **Figure 15**.

Pond excavation will be supervised by an ecologist to ensure an appropriate size and profile for amphibians and colonisation by vegetation. As in pond restoration, an excavator with a large bucket will normally be able to load dumper trucks or lorries with soil. The 'turn around' time for moving soil away will need to be matched to the rate of excavation. Ponds could be dug in late autumn, left to fill with rain over the winter and given time for the pond edge to be colonised naturally with plants.

Liners are essential on free-draining soils or disturbed ground. Butyl liners with protective matting are considered appropriate for such ponds. Lining large ponds is best done by specialist firms. The proposed process of excavation and pond creation is illustrated in **Figure 15.**

It should be noted that post-restoration the site will also offer several wetlands and ponds for amphibians to colonise.

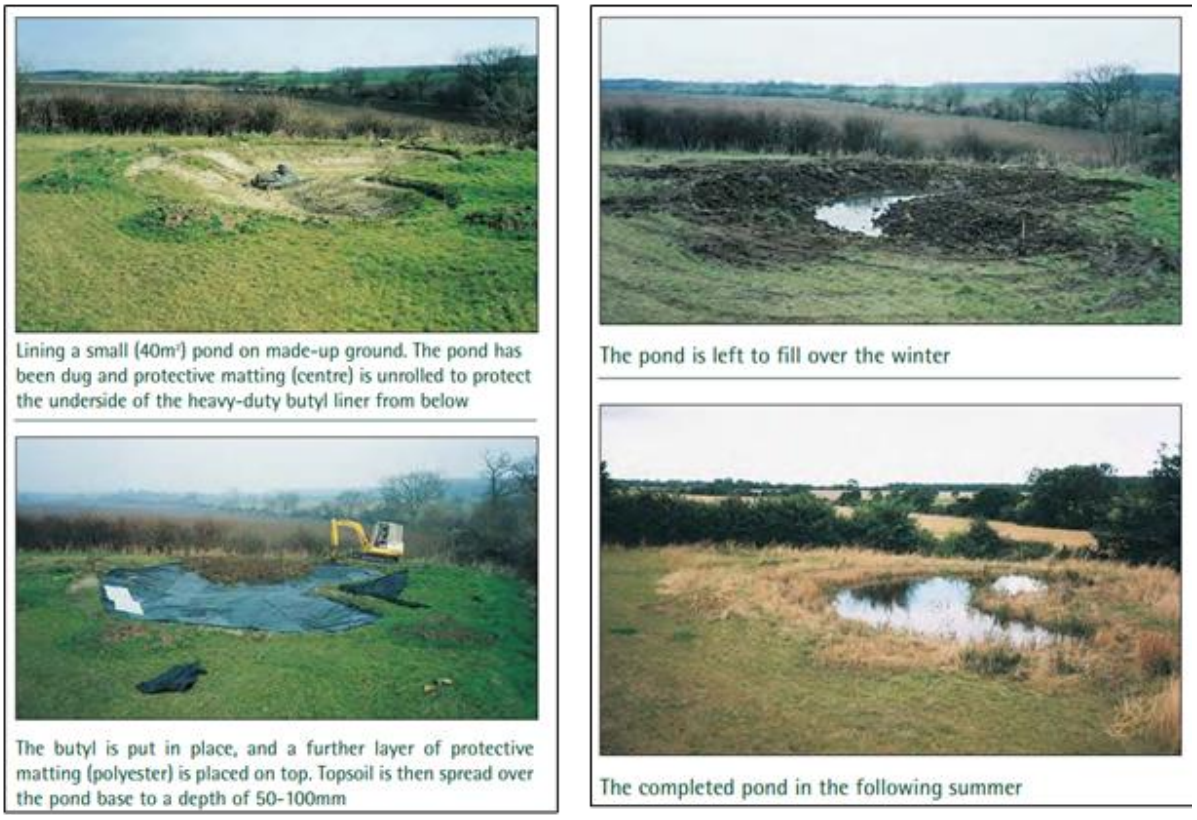


Figure 15: Potential sequence of compensatory pond creation for smooth newt

[11] Freshwater Habitats Trust – Creating ponds for amphibians and reptiles. Available at: https://freshwaterhabitats.org.uk/wp-content/uploads/2013/09/Amphibians-_Common-Toad-Great-Crested-Newt-and-Grass-Snake_-new-logo.pdf

6.6.2 Exclusion from existing ponds

Existing ponds in which newts have been recorded will be fenced off in August to January pre-works, with newt-proof fencing prior to the commencement of the breeding season for this species (which generally runs from March to July) prior to the undertaking of any proposed works that may affect such ponds. Hy-Tex Ecofender Newt Fence[12] or similar can be used for the exclusion process. This aims to reduce their potential use as breeding locations for these species.

A survey will be undertaken by a suitably experienced ecologist once the ponds have been fenced off, to identify the presence or absence of newts prior to the commencement of any works which will lead to destruction of suitable habitat for these species within the site. The survey will establish whether smooth newts are present, and if applicable, their status in the waterbody. If newts are identified as breeding in a waterbody in which works are proposed, a derogation license must be obtained from NPWS to translocate the newts to the new pond as these species are protected under the Wildlife (1976 & amendments) Act.

6.6.3 Translocation of newts

Should translocation of newts be required, an exclusion and translocation plan will be drawn up and implemented prior to any destruction or exclusion of waterbodies within the quarry. This exclusion and translocation programme will use methodology agreed with NPWS and will be conducted under licence issued by NPWS.

6.7 Restoration of the site

A detailed Site Restoration Plan has been provided in Appendix 3 of this report.

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

In time, new biodiverse habitats will be created, and these will in turn provide positive benefits for foraging, commuting, and breeding species of animals as outlined in the restoration plan (**Appendix III**).

6.8 Residual Impacts on Important Ecological Features

The embedded mitigation, in combination with the additional mitigation and compensation measures described in this section, will ensure that there are limited negative residual effects on ecological receptors. A summary of potential impacts, proposed mitigation and compensation, and residual effects is given in **Table 19**.

[12] Newt-proof fencing example (Hy-Tex website): https://www.hy-tex.co.uk/product/ecofender-newt-fences/

Table 19: Summary of potential impacts, potential effects, mitigation undertaken and residual effects

Important Ecological Features	Evaluation	Potential Effect	Potential Significance	Mitigation / Compensation	Significance of Residual Effect
Lough Gowna pNHA	Local (Higher)	Water quality impacts.	Not significant.	Standard water quality mitigation measures will preclude any impacts to Lough Gowna pNHA.	Not significant.
Habitat WS1 – Scrub	Local (Higher)	Loss of *c.*2 ha of habitat, loss of foraging and nesting areas for local species	Not significant.	Embedded (design stage) mitigation has resulted in the retention of *c.* 5.7 ha of scrub habitat. Dust management on site.	Not significant
Habitat WL1/WL2 – Hedgerows and Treelines	Local (Higher)	Loss of *c.* 1.6 km of habitat, loss of foraging and nesting areas for local species	Significant	Embedded (design stage) mitigation has resulted in the retention of *c.* 0.53 km of this habitat. Compensatory planting during the construction phases. Dust management on site.	Not significant
Habitat PF2 – Poor Fen and Flush	Local (Higher)	Loss of *c.* 0.53 ha of habitat, loss of foraging and breeding habitat for local species	Significant	None.	Significant at the local level
Breeding birds	Local (Higher)	Nest destruction/chick mortality. Loss of nesting areas, with reduced breeding opportunities for birds. Loss of foraging habitat. Disturbance to breeding/foraging birds.	Significant.	Tree clearing, hedgerow removal, building demolition and removal of kestrel nest to take place outside of bird breeding season which is the 1st March- 31st August inclusive. Blasting limited in the immediate vicinity of the peregrine nest, during the sensitive nesting period. Erection of kestrel, swallow and passerine species nest boxes to compensate for loss of nesting habitat and monitoring of kestrel nest boxes for occupancy. Compensatory planting for increased foraging/nesting opportunities.	Not significant.

Important Ecological Features	Evaluation	Potential Effect	Potential Significance	Mitigation / Compensation	Significance of Residual Effect
Bats (roosting)	County	Potential for destruction of/disturbance to a roost due to inappropriate timing of felling and felling practices.	Significant.	Embedded mitigation to retain bat roosts. Monitoring of the potential maternity roost and limited blasting in the vicinity of the roost during the sensitive maternity period. Pre-construction surveys by a licenced bat ecologist prior to felling. Sectional felling, leaving PRF in-situ to allow bats to emerge safely. Creation of new roosting opportunities through bat boxes and veteranisation of retained trees, Compensatory planting for increased foraging opportunities.	Not significant
Bats foraging/ commuting	Local (Higher)	Loss of potential foraging/roosting habitat.	Significant.	Planting of trees to compensate for loss of foraging/roosting habitat. The creation of newt ponds will provide additional foraging opportunities for bats.	Not significant
Smooth newt	Local (Higher)	Direct mortality to smooth newt, destruction of eggs. Loss of breeding habitat.	Significant.	Creation of compensatory habitat outside of the Application Site. Exclusion of newts from existing ponds. Translocation of newts from existing ponds.	Not significant

7 CONCLUSIONS

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

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

Subsequent to implementing all of the recommended mitigation provided in **Section 6** of this report, including the implementation of a restoration plan upon cessation of works, the majority of adverse impacts potentially posed by the proposal will be negated, with the exception of the loss of a small area of poor fen and flush habitat of significance on a local level. Some minor, temporary impacts at a local level will also remain, as a result of temporary dispersal of foraging species, during the operational phase of the excavation and of a temporary reduction in suitable breeding/roosting habitat for birds and bats.

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

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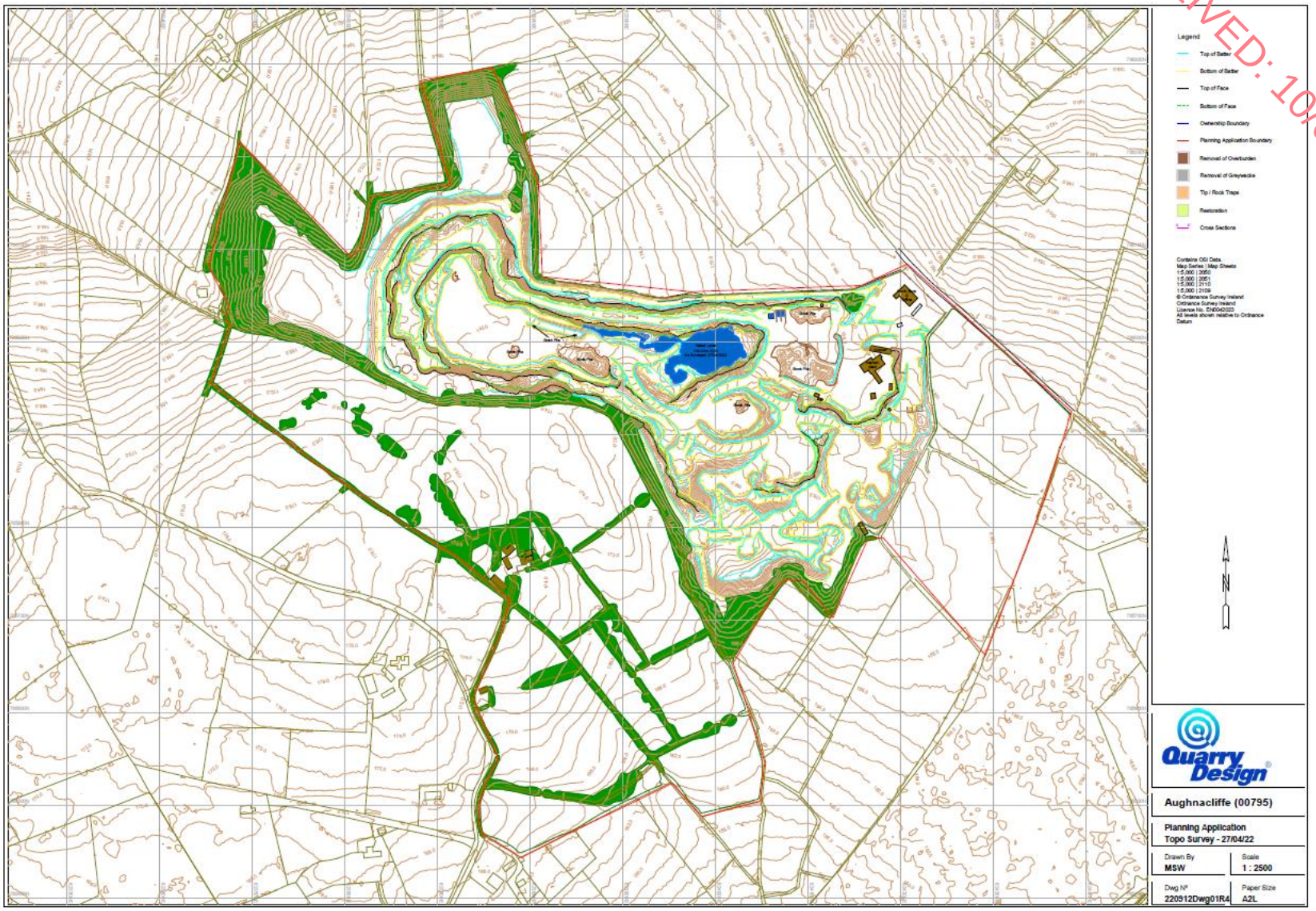
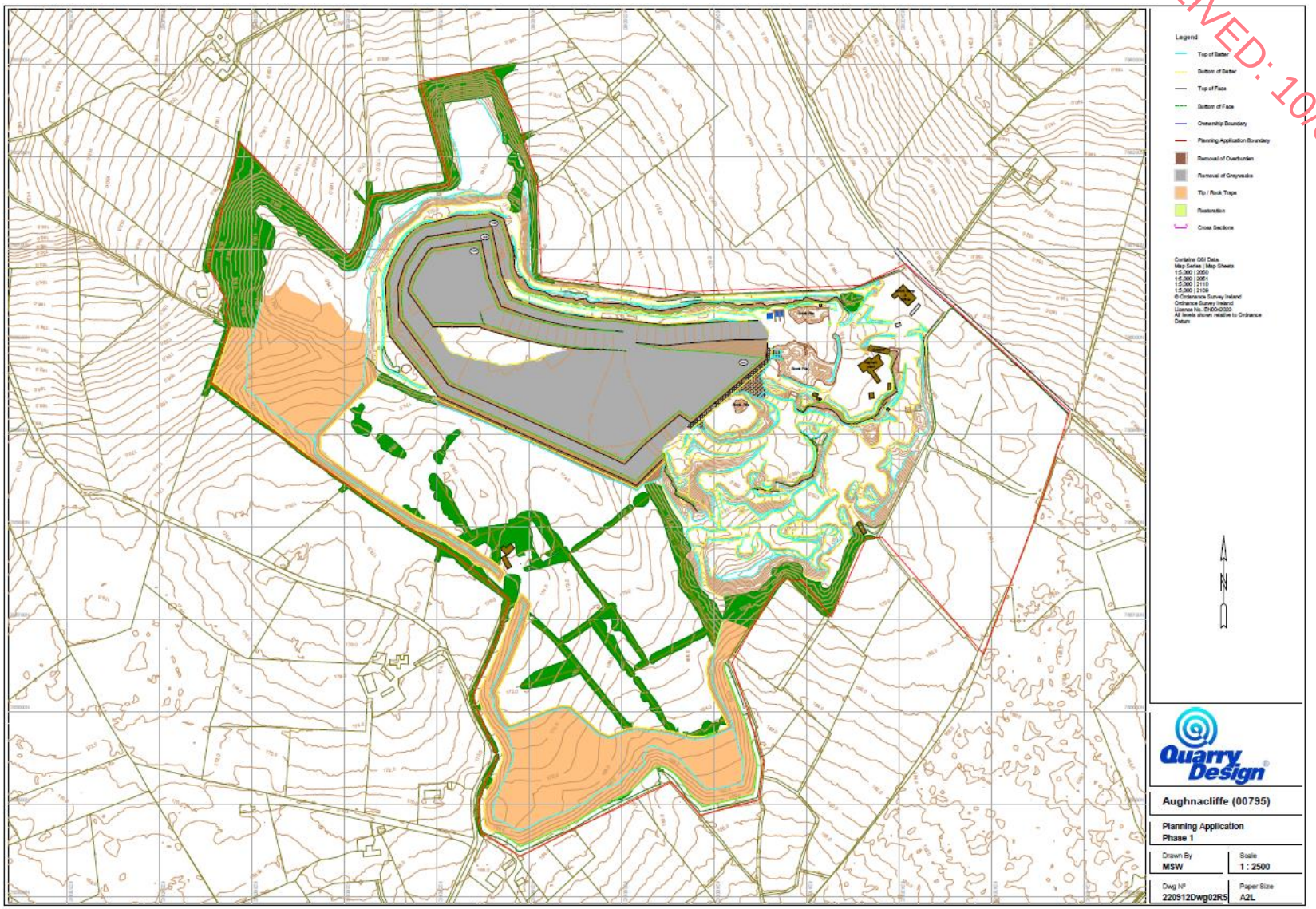
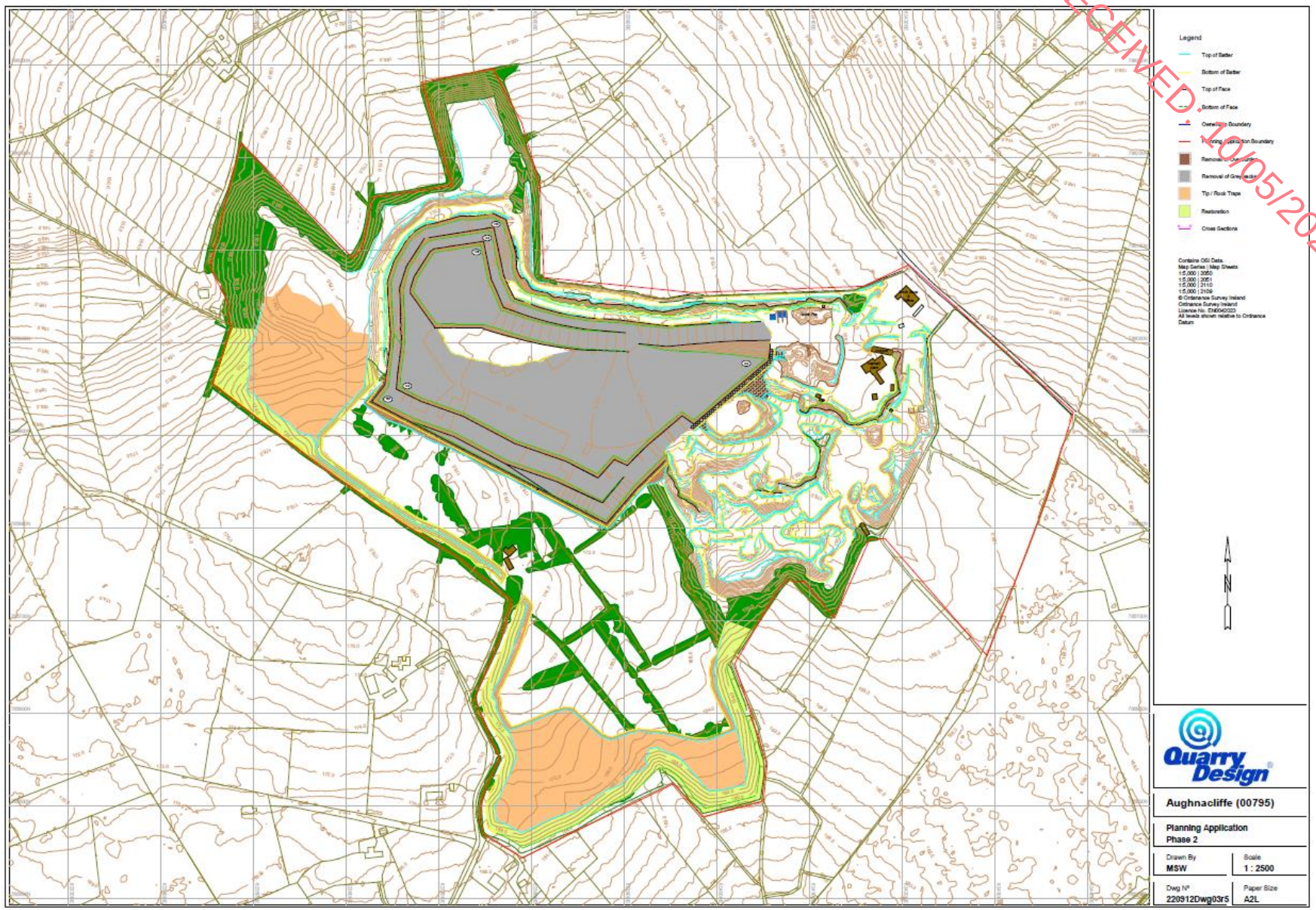
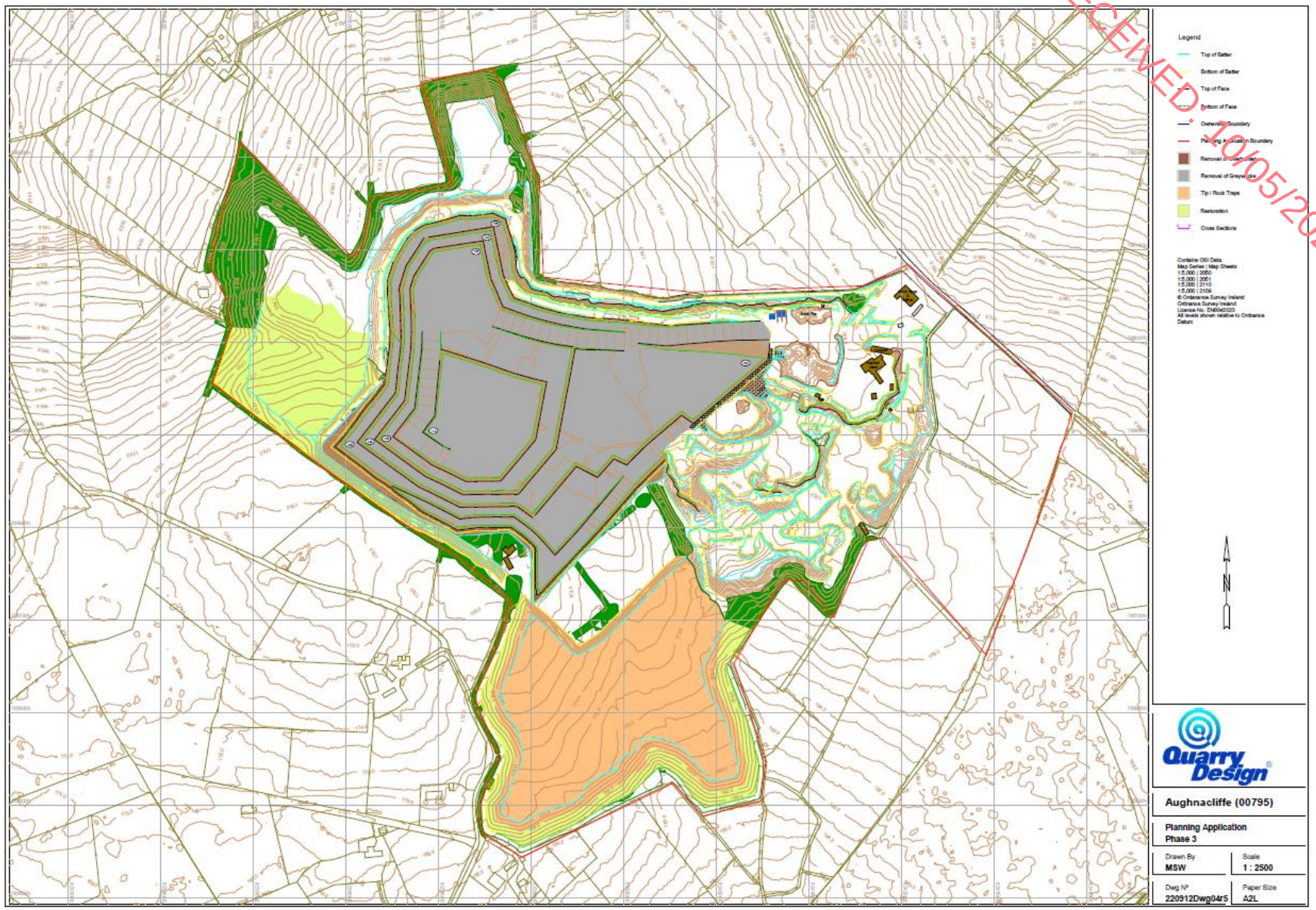
APPENDIX I – EXISTING DEVELOPMENT AT AUGHNACLIFFE QUARRY

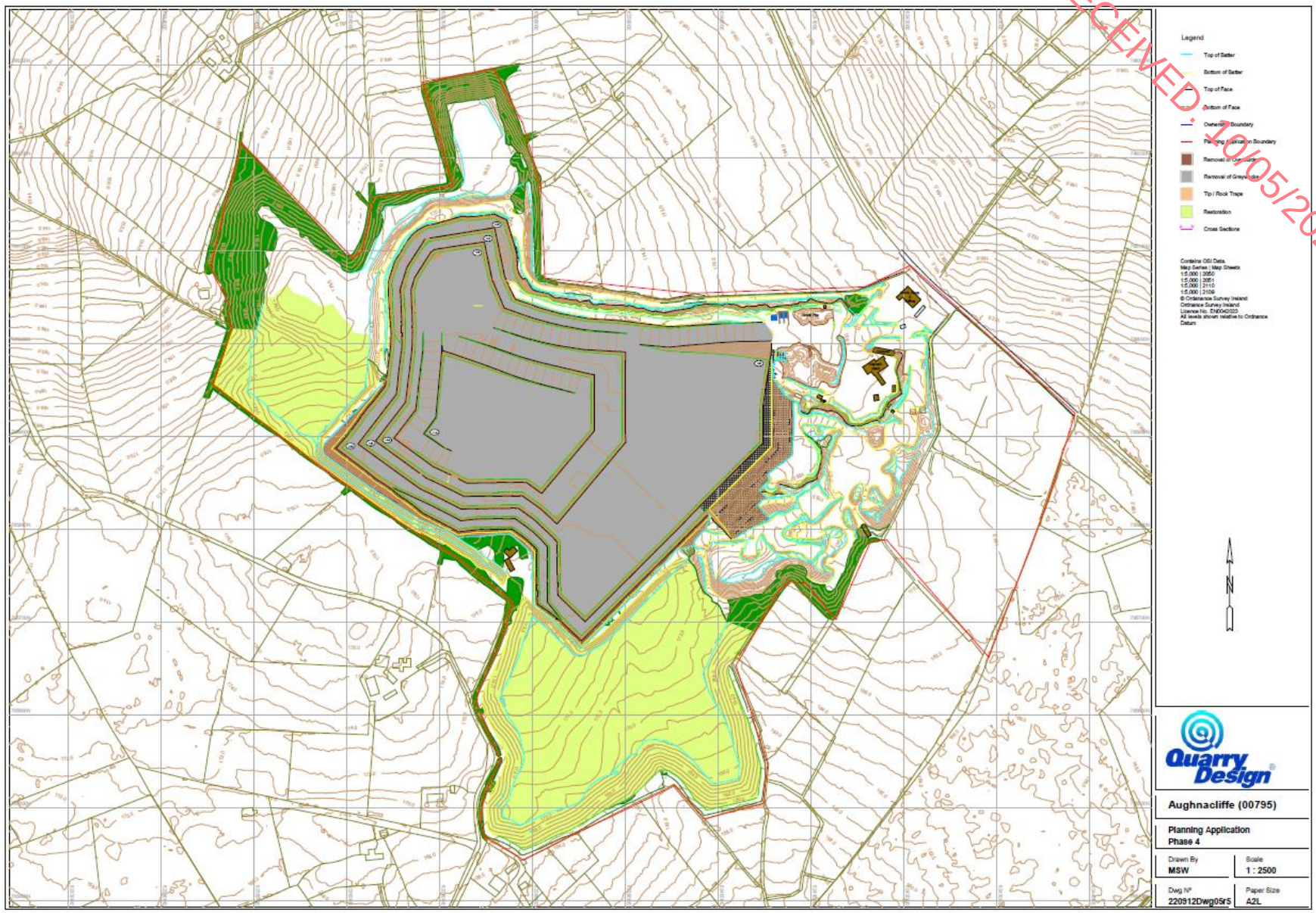


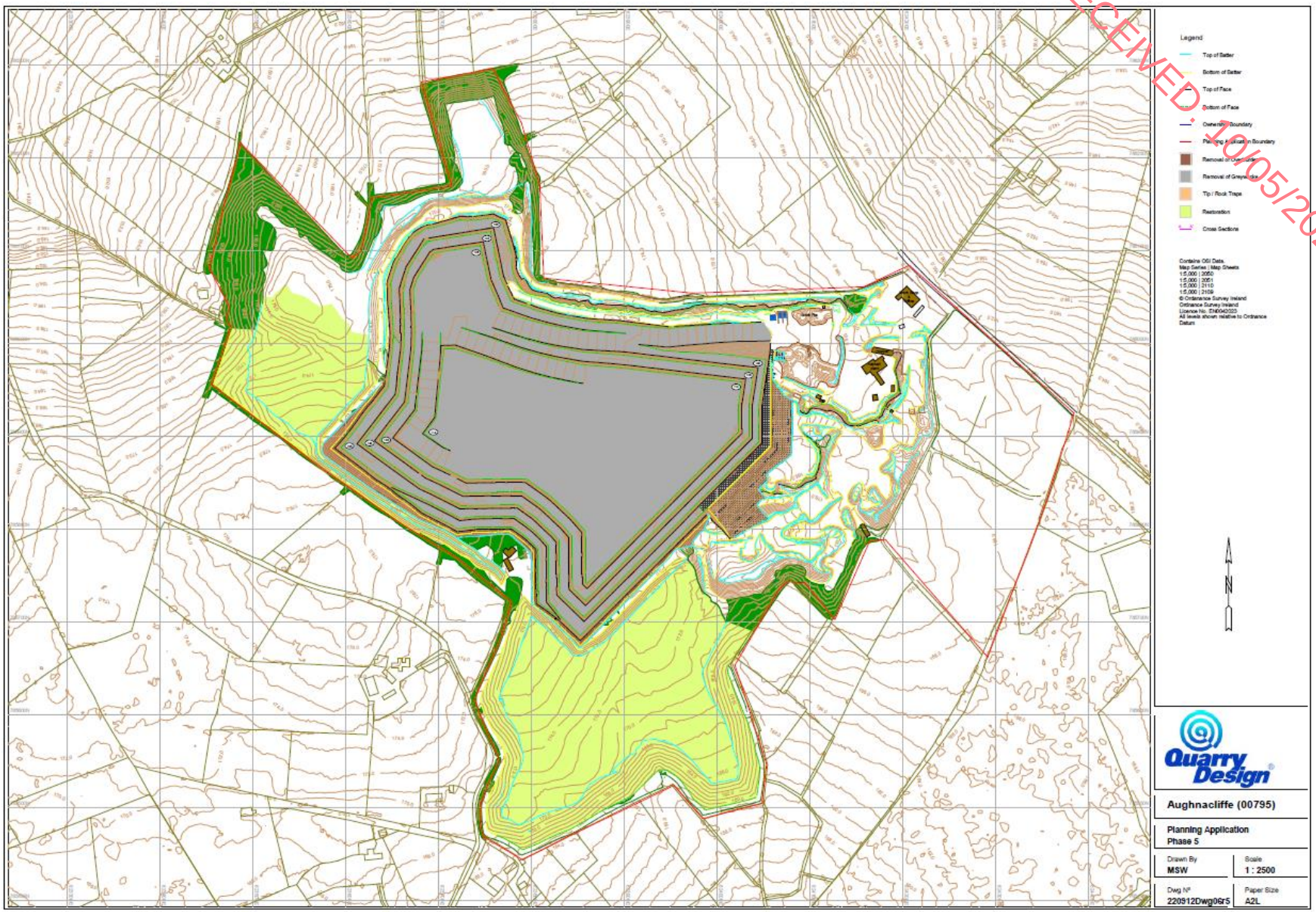
APPENDIX II – PHASES OF THE PROPOSED DEVELOPMENT











APPENDIX III –SITE RESTORATION PLAN (MDA, 2023)