# ECOLOGICAL IMPACT ASSESSMENT

## Cloonascragh Sand and Gravel Quarry

### Cloonascragh, Tuam, Co. Galway

Report prepared by Woodrow APEM Group.

Woodrow APEM Group,
Upper Offices, Ballisodare Centre,
Station Road, Ballisodare,
Co Sligo, F91 PE04.
Tel: +353 71 914 0542 | Email: info@woodrow.ie

April 2022

## DOCUMENT CONTROL



| | |
|---|---|
| Document | Ecological Impact Assessment (EcIA),<br>Cloonascragh Sand and Gravel Quarry,<br>Cloonascragh, Tuam, Co. Galway. |
| Client | Quarryplan, on behalf of McTigue Quarries Ltd. |
| Prepared by | Woodrow APEM Group,<br>Upper Offices, Ballisodare Centre,<br>Station Road, Ballisodare, Co Sligo<br>F91 PE04<br>T: +353 71 9140542 |
| Lead Author | Philip Doddy |
| Checked internally | Róisín NigFhloinn |
| Checked by client | 25-04-2022 |
| Status / Version / Date | D01 21-04-2022 |

## STATEMENT OF AUTHORITY

This report was written by Philip Doddy, Aoife Hughes and Alice Clarke.

Philip is a Senior Ecologist at Woodrow. He has completed a PhD in Aquatic Sciences, a BSc (Hons) in Freshwater & Marine Biology, and a Diploma in Amenity Horticulture. He is an Associate member of the Chartered Institute of Ecology and Environmental Management (CIEEM). Philip carries out botanical monitoring, site surveys and habitat mapping, and compiles Ecological Impact Assessments (EcIAs), Appropriate Assessment (AA) screening reports, subsequent Natura Impact Reports (NISs), and vegetation monitoring reports. He has also carried out research on calcareous lakes and pools, microbial communities, and ecological succession. Philip regularly supports local community groups in their biodiversity conservation and enhancement projects. More recently he has been instrumental in the successful application for EU conservation and environmental funding for local community groups, such as the EU Carra LIFE Project.

Aoife Hughes is an Assistant Ecologist at Woodrow. She completed a BSc (Hons) in Environmental Science at National University of Ireland, Galway. She was awarded the title of University Scholar for years one-three of her Environmental Science undergraduate course and graduated top of her class with a first-class honours degree. She is a graduate of a MSc by Research in University College Cork on how single-use plastics can be eliminated from the UCC campus. She is a graduate member of the Chartered Institute of Ecology and Environmental Management (CIEEM). Aoife regularly inputs into ecological impact reports and reports to inform the Appropriate Assessment process. More recently she has been instrumental in the strategic assessment of a 700km walking trail and has supported the team in the successful application for EU conservation and environmental funding for local community groups, such as the EU Carra LIFE Project.

Alice Clarke is an Assistant Ecologist at Woodrow. Alice has completed an MSc in Ecological Management and Conservation Biology at Queen's University, Belfast. She has gained experience

working in ecological consultancy roles in Ireland over the past three years, and has authored Appropriate Assessment (AA) Screenings, Natura Impact Statement (NIS) reports and Ecology Chapters for Environmental Impact Assessments Reporting (EIAR). She has worked for a wide range of clients, including within the forestry, wind energy, residential, business development and wastewater treatment industries. She has experience of bat survey and assessment work, and assists with bird surveys and habitat surveys, assessments and report writing.



This report has been reviewed and approved by Róisín NigFhloinn. Róisín is a Principal Ecologist with Woodrow. She has completed an honours B.Sc. specialising in Botany and M.Sc. in Ecology and Management of the Natural Environment. She is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM). She regularly carries out reporting on Ecological Impact Assessment and to inform the Appropriate Assessment process which is carried out by statutory authorities. Furthermore, she has more than 12 years' experience in habitat surveys, mammal surveys, bird and bat surveys for a number of large infrastructure schemes, commercial and residential projects. She is an experienced Project Manager, overseeing several large schemes in unison as well as supporting the development of staff within the organisation.

**Philip Doddy – Qualifications:**

PhD – Aquatic Sciences, Galway-Mayo Institute of Technology, 2019.

BSc (Hons) – Freshwater & Marine Biology, Galway-Mayo Institute of Technology, 2013.

Diploma - Amenity Horticulture, Teagasc, National Botanic Gardens, Dublin, 2001.

**Aoife Hughes – Qualifications:**

BSc (Hons) – Environmental Science, National University of Ireland, Galway, 2019
MSc (Commerce) by Research 'Plastic-Free UCC', University College Cork, 2021

**Alice Clarke – Qualifications:**

BSc (Hons) Biochemistry. Queen's University Belfast. 2016.

MSc Ecological Management and Conservation Biology. Queen's University Belfast. 2018.

**Róisín NigFhloinn – Qualifications:**

B.A. Mod (Hons) – Natural Sciences (specialising in Botany), Trinity College, Dublin, 2008.

M. Sc. – Ecology and Management of the Natural Environment, University of Bristol, England, 2011.

## CONTENTS

# 1. INTRODUCTION



## 1.1 Background and Scope

Woodrow APEM Group ('Woodrow') was commissioned by Quarryplan, on behalf of McTigue Quarries Ltd., to undertake an Ecological Impact Assessment (EcIA) for a proposed quarry development at lands at Cloonascragh, Tuam, Co. Galway. EcIA is a process of 'identifying, quantifying and evaluating potential effects of development-related or other proposed actions on habitats, species and ecosystems'[1].

## 1.2 Site location & description

The sand and gravel quarry is located approximately 2.6 km south of the town of Tuam, Co. Galway. The site is located at Irish Grid Reference M 44278 48264, equivalent to Lat. 53.481658, Long. -8.8401712 or X: 544233, Y: 748287 (ITM). The site is accessed from the R347 regional road. The surrounding area is generally rural in character and mainly used for agriculture and turf-cutting. A number of scattered dwellings occur in the vicinity of the site (along the R347 and local roads). The site is located adjacent to a pre-cast concrete operation.

The Application Site is within an existing quarry which has previously been used for the extraction of sand and gravel, and which has been in operation since before 1963. A site office and workshop are present to the north of the site, as is the area previously used for processing excavated material. A settlement lagoon system is also evident, with old ponds located in the northern part of the site, some of which are partly dried-up and overgrown, as well as more recent ponds which are unvegetated.

The topography of the site is characterised by the extent of the existing excavations at the site and the void created via the workings to date, with levels ranging from 52 m above Ordnance Datum (AOD) in the north east corner, to 36 m AOD in the pit floor.

The Application Site lies within the WFD sub-catchment Clare SC 040, which is itself within the Corrib catchment. The groundwater quality was considered of "Good" ground waterbody status from the 2013-2018 Water Framework Directive (WFD) reporting period. The groundwater vulnerability rating of the proposed quarry area is classed as "High", meaning there is a high risk that groundwater could be easily contaminated by human activities.[2] The groundwater in the area is considered 'At Risk'.[3]

The Barnacurragh River runs *c.* 490 m east of the Application Site boundary, and flows into the Grange [Galway] River (EPA code reference 30G02), part of the Lough Corrib SAC. There are no direct surface water connections between the Application Site and the Barnacurragh River or the Grange River. The aforementioned rivers are of "Good" river waterbody status from the 2013-2018 Water Framework Directive (WFD) reporting period and are considered 'not at risk' under the most recent reporting period.

The Application Site occupies an area of *c.* 6.5 ha and consists of the northern end of an existing sand and gravel pit on the site.

[1] CIEEM (2019) Guidelines for Ecological Impact Assessment in the UK and Ireland
[2] National Groundwater Vulnerability Ireland, Available at: https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef (Accessed November 2021)
[3] EPA Mapping Tool Available at: https://gis.epa.ie/EPAMaps/ (Accessed November 2021)

The Applicant is submitting a planning application for three main elements:

- the extraction of sand and gravel over an area of *c.* 6.5 ha
- the importation, recycling and processing of inert construction and demolition waste
- the progressive restoration of the site to agricultural use.



**Figure 1** and **Figure 2** show the Application Site.

***Figure 1: The Application Site at Cloonascragh, Tuam, Co. Galway***

***Figure 2: The Application Site and surrounding landscape***

## 1.3 Description of the Proposed Development

The existing quarry at Cloonascragh has a total site area of *c.* 12 ha. The planning application area is situated within this, and covers an area of *c.* 6.5 ha toward the northern and western end of the site. The proposed development consists of the following elements.

### Extraction & Processing of Sand & Gravel

The application involves the extraction and processing of the remainder of the sand and gravel resource within the part of the established sand and gravel pit under the applicant's ownership, to a maximum depth of 34 m AOD, which is above the water table. The sand and gravel will be extracted with the use of a 12 m reach 360˚ excavator and loaded into dump trucks / HGVs. No blasting is required. Access to the pit floor will be via a small ramp adjacent to the plant site. Excavated material will be hauled to the screening and washing plant site in the north-western part of the existing pit. This material will then be washed, sized and screened into single-sized products. Suspended quarry fines (silts etc.) resulting from the washing process will be deposited in the existing silt ponds and left to settle before being utilised in the progressive restoration of the site. Extraction will progress in a northerly direction from the southern extent of the application area. The proposed development will take place wholly above the water table, with an appropriate buffer of sand and gravel retained to deliver a dry operation that avoids the requirement for dewatering at the site. No additional buildings are proposed. The existing ancillary buildings (site office and workshop) in the northern part of the site will be retained. There are two fuel tanks at the site which are located under cover in the workshop shed which has a hard floor. The proposed site works are shown in **Figure 3**.

### Importation & Processing of Construction and Demolition Waste

The application also seeks to allow for the importation of inert construction and demolition waste (C&DW). This would be brought to the site via return loads within the delivery fleet, for storage in a dedicated, prepared area prior to processing, utilising the same processing plant, which has been specified to accept both C&DW and indigenous sand and gravel, in preparation for resale as recycled aggregate. The applicant is a registered waste haulier and it is intended that returning lorries will have the capacity to collect construction and demolition wastes from the construction sites which they are delivering aggregates to, meaning that no additional vehicles or vehicle movements are required. The applicant proposes to construct a concrete pad with individual bays for the receipt and sorting of construction and demolition waste (**Figure 3**). The C&DW, once sorted and held in sufficient quantities, will be processed through the crushing and screening facilities. The finer materials will then pass through the on-site processing plant for washing and screening. The site will accept wastes only from its own hauliers and no third parties will deliver waste to the site. The site will operate at a maximum capacity of 50,000 tonnes per annum with all C&DW arriving via the applicant's 20-tonne capacity lorries.

It is proposed that the following European Waste Categories will be accepted onto the site:

17 01 CONCRETE, BRICKS, TILES AND CERAMICS

- 17 01 01 concrete
- 17 01 02 bricks
- 17 01 03 tiles and ceramics

- 17 01 07 mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06

17 05 SOIL (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES), STONES AND DREDGING SPOIL

- 17 05 04 soil and stones other than those mentioned in 17 05 03 (i.e. soil and stones **not** containing hazardous substances)



There will be strict management controls and a waste acceptance procedure implemented to ensure that the waste is suitable for use. Checks prior to importation will include:

- Pre-determined specifications and agreements (quotations) with the customer
- Producer visits, waste verification checks and audits
- Completion of Waste Characterisation/ Pre-acceptance Forms
- Independent analysis and reports
- Pre-determined process routes and storage areas for the wastes
- Scheduled dates for receipt
- Visual checks made by the driver prior to and during loading of materials onto the vehicle
- Records of pre-acceptance checks will be kept at the site office
- Assessment and classification of waste types for suitability of processing and end use criteria

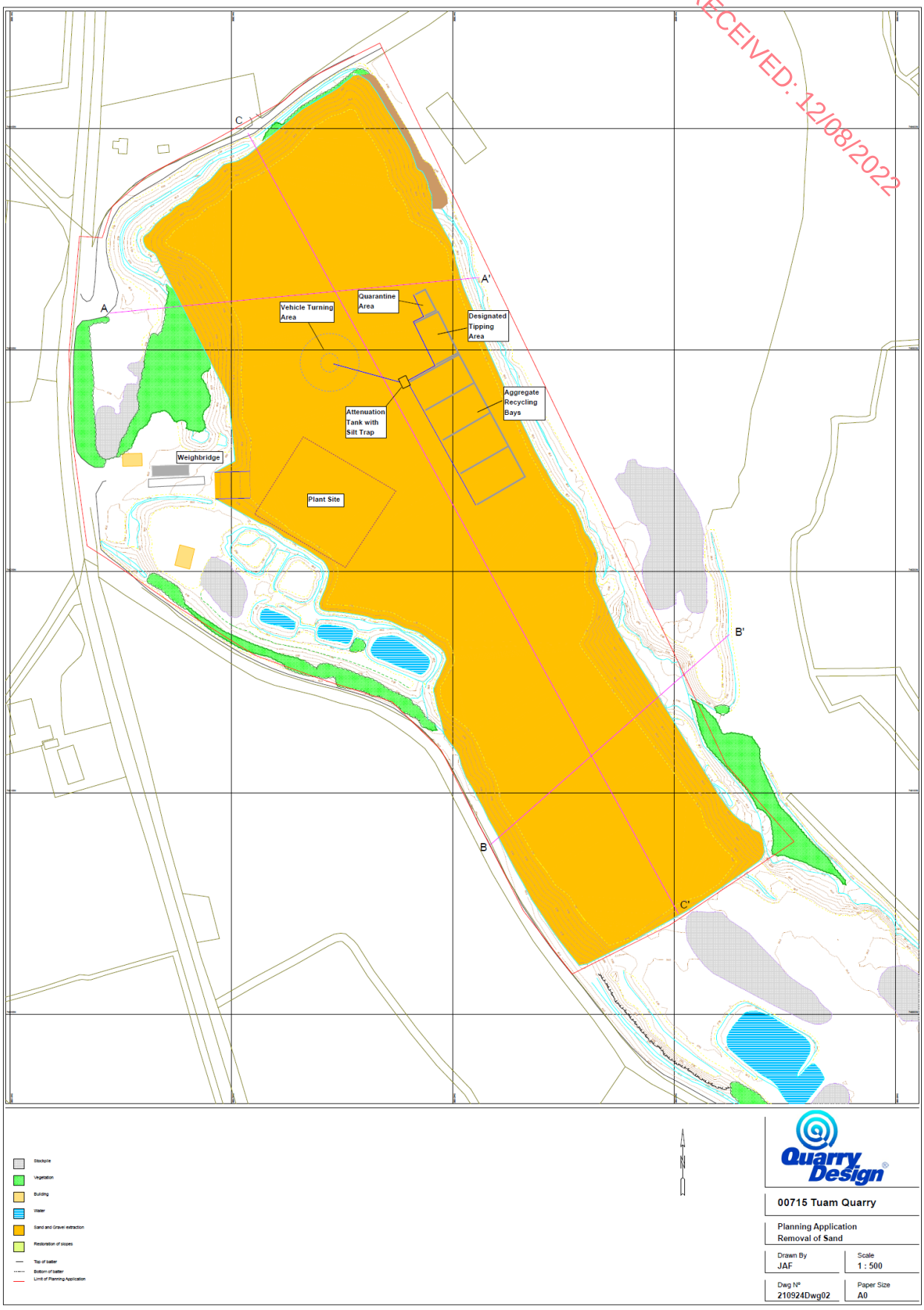
Either the supplier or importer will arrange for a suitably competent third party to undertake necessary sampling of intended materials prior to their importation to the site.

The processing/recycling activities taking place as part of this proposal will take place at the plant site, within the existing pit. The process will utilise the same plant and machinery as for the crushing, screening and washing of the mineral won at the site. The screened products from the plant will be loaded directly into the customer's vehicles for sale, blended with on-site materials in readiness for sale, or placed to stock.

**Site Restoration**

The applicant proposes to progressively restore the site with material resulting from the mineral washing and proposed recycling process, for eventual use as agricultural land. As a result of the previous workings at the pit, there is insufficient readily available indigenous material at the site in order to make it suitable for agricultural use. As such, the delivery of the restoration landform will be supplemented by material recovered from the recycling operation proposed for the site. Pit faces will be progressively restored to 1v:5h slopes with available indigenous stripped topsoils and stored overburden and supplemented with imported inert material, in order to allow agricultural machinery to safely manoeuvre on the slopes. Given that the site will be restored progressively as mineral extraction extends across it, much of the restoration will be undertaken over the course of the proposed development, with restoration commencing in the southern part of the site and progressing northwards.

***Figure 3: The proposed works at Cloonascragh Quarry, Tuam*** *(Source: Quarryplan)*



## 1.4 Purpose of Ecological Impact Assessment



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.

## 1.5 Legislation, Policy and Guidance

A number of pieces of national and international legislation and policy are applicable to developments in Ireland that have the potential to impact on ecological receptors. This section aims to contextualise legislation with respect to the Development.

The below legislation has been included to offer background information on the typical environmental legislation pertaining to such developments.

### *1.5.1* International Legislation

#### *1.5.1.1* 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.

#### *1.5.1.2* 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.

#### *1.5.1.3* 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.

#### *1.5.1.4* 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 establishes 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).

#### *1.5.1.5* 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.

### *1.5.2* National Legislation

#### *1.5.2.1* 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.

#### *1.5.2.2* 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.

#### *1.5.2.3* 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.

#### *1.5.2.4* Flora (Protection) Order (FPO), 2015



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

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. Water Framework Directive

#### *1.5.2.5* 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 for purposes 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.

#### *1.5.2.6* European Union Environmental Objectives (Freshwater Pearl Mussel) (Amendment) Regulations 2009 to 2018

The purpose of these Regulations is to support the achievement of favourable conservation status for freshwater pearl mussels. To that end, they:

(a) Set environmental quality objectives for the habitats of the freshwater pearl mussel populations named in the First Schedule to these Regulations that are within the boundaries of a site notified in a candidate list of European sites, or designated as a Special Area of Conservation, under the European Communities (Natural Habitats) Regulations, 1997 (S.I. No. 94/1997).

(b) Require the production of sub-basin management plans with programmes of measures to achieve these objectives.

(c) Set out the duties of public authorities in respect of the sub-basin management plans and programmes of measures.

### *1.5.3* Guidance & Sources of Information

- EPA (2017). Revised Guidelines on the information to be contained in Environmental Impact Statements. Draft report August 2017. 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

### *1.5.4* Policies and plans

- Galway County Development Plan 2015-2021
- National Biodiversity Action Plan 2017 - 2021
- River Basin Management Plan for Ireland 2018 – 2021

# 2. SURVEY AND ASSESSMENT METHODOLOGIES

The impact assessment methodology applied follows the Chartered Institute of Ecology and Environmental Management 'CIEEM' guidance (CIEEM, 2018). The following list provides a summary of the process for undertaking an EcIA, as detailed in the CIEEM guidance document.

| 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.<br>• 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 Identifying ecological features within the zone of influence

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'. 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. However, in reality, the potential impacts on sites are dependent on the nature of any pressures, the sensitivity of receptors, and the causal links and conduits, rather than distance. In many cases the potential Zone of Influence is considerably less than 15 km (for example when considering noise or dust) while in other cases the potential Zone of Influence could be greater than 15 km, for example if there is a direct hydrological connection.



## 2.2 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 1** shows the categories and criteria which are used for this.

***Table 1: 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).<br>• Proposed Special Area of Conservation (pSAC) or proposed Special Protection Area (pSPA).<br>• Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended).<br>• Features essential to maintaining the coherence of the Natura 2000 Network.<br>• Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive.<br>• Resident or regularly occurring populations (assessed to be important at the national level) of the following:<br>  ○ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or<br>  ○ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive.<br>• Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971).<br>• World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972).<br>• Biosphere Reserve (UNESCO Man & The Biosphere Programme).<br>• Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979).<br>• Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979).<br>• Biogenetic Reserve under the Council of Europe.<br>• European Diploma Site under the Council of Europe.<br>• 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.<br>• Site designated or proposed as a Natural Heritage Area (NHA) in Ireland.<br>• Site designated as an Area of Special Scientific Interest (ASSI) in Northern Ireland.<br>• National or statutory Nature Reserve.<br>• Undesignated site fulfilling the criteria for designation as an Area of Special Scientific Interest (ASSI) or National Nature Reserve.<br>• 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.<br>• Refuge for Fauna and Flora protected under the Wildlife Acts.<br>• Site containing 'viable areas'[4] of habitat types listed in Annex I of the Habitats Directive.<br>• National Park. |

[4] 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 |
|---|---|
| | • Resident or regularly occurring populations (assessed to be important at the national level in Ireland) of the following:<br>  • Species protected under the Wildlife Acts; and/or<br>  • Species listed on the relevant Red Data list.<br>• Site containing 'viable areas' of the habitat types listed in Annex I of the Habitats Directive.<br>• Resident or regularly occurring populations (assessed to be important at the national level in Northern Ireland) of the following:<br>  • Species protected under the Wildlife (Northern Ireland) Order 1985; and/or<br>  • Species listed on the relevant Red Data list. |
| **County / Regional Importance** | • Area of Special Amenity.<br>• Area subject to a Tree Preservation Order.<br>• Area of High Amenity, or equivalent, designated under the County Development Plan.<br>• Resident or regularly occurring populations (assessed to be important at the County level) of the following:<br>  - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;<br>  - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;<br>  - Species protected under the Wildlife Acts Ireland); and/or<br>  - Species protected under the Wildlife (Northern Ireland) Order 1985; and/or<br>  - Species listed on the relevant Red Data list.<br>• 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.<br>• 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.<br>• 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.<br>• Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.<br>• 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;<br>• Resident or regularly occurring populations (assessed to be important at the Local level) of the following:<br>  - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;<br>  - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;<br>  - Species protected under the Wildlife Acts; and/or<br>  - Species listed on the relevant Red Data list.<br>• 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;<br>• 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.<br>• 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;<br>• 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 (BoCCI) 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.



## 2.3 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).

## 2.4 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).

## 2.5 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'.

## 2.6 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).



## 2.7 Desk Survey

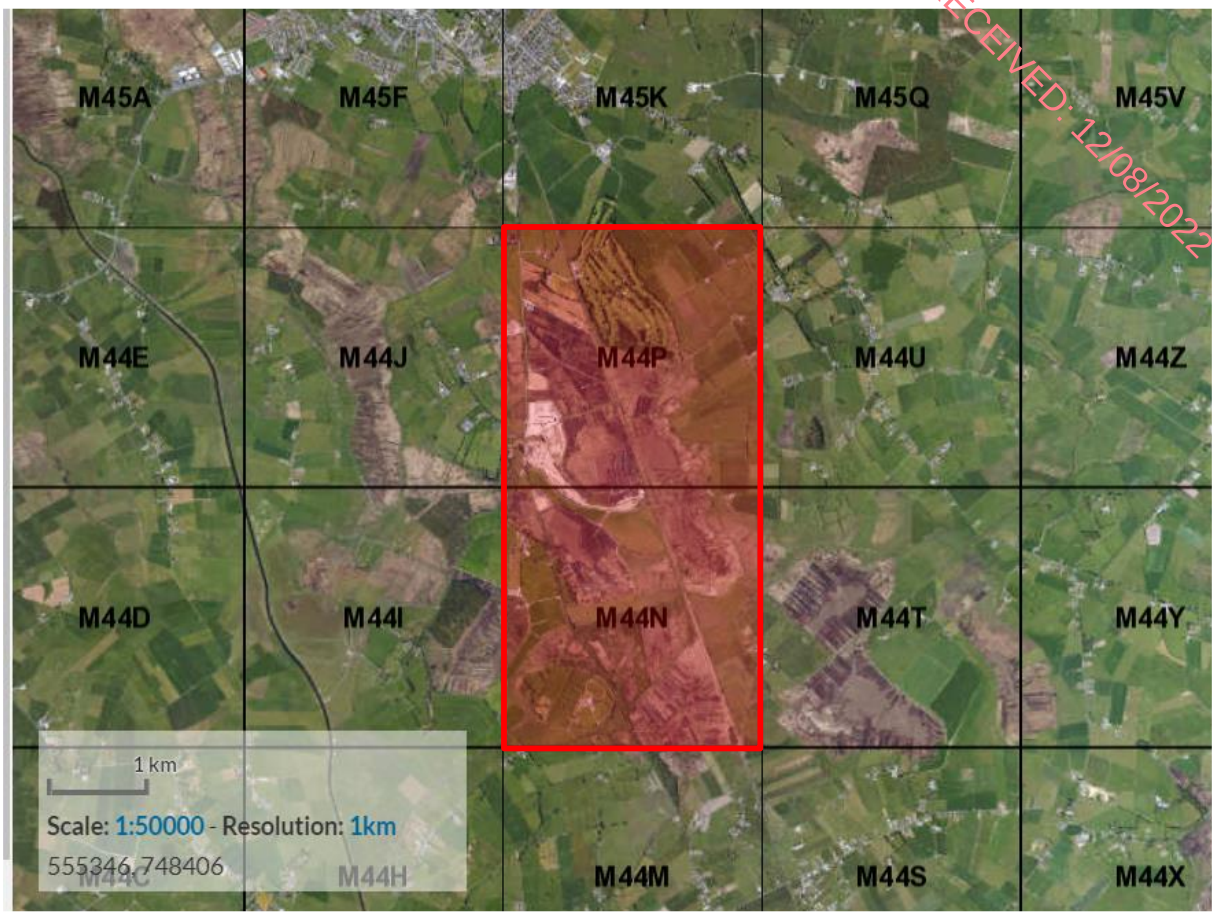
A desk survey was done to gather information on nearby protected areas and the likely distribution of species in the general area prior to the survey visits, so that a targeted approach to surveying could be undertaken. The desktop survey enabled an assessment of the likely issues and concerns relating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

### *2.7.1* Existing Ecological Records

The Application Site is within the 2 km National Grid squares M44P and M44N (**Figure 4**). Online databases were consulted in order to establish previous records of important and protected species in this area, and likelihood of their occurrence on the site. The National Biodiversity Data Centre (NBDC), which incorporates records from a number of different sources, was interrogated for all records within both of these 2 km squares in which the application site is located.

For bat species, all records from the 10 km National Grid Square M44, in which the site is located, were included. 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, which provides a picture of the broad scale geographic patterns of occurrence and local roosting habitat requirements for Irish bat species.

***Figure 4: The Application Site is within the 2-km National Grid squares M44P and M44N***



### *2.7.2* 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[5] and the EPA map viewer[6]. 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 in the Republic of Ireland, including Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) were downloaded from the NPWS[7] website and imported onto GIS.

### *2.7.3* Active and Inactive Quarries in the Vicinity of the Application Site

A desk survey was undertaken to interrogate the 2 km area surrounding the Application Site using QGIS, with the purpose of identifying any quarries in this area, either active or inactive.

## 2.8 Field Survey Methodology

Field surveys were conducted within the Application Site as detailed in the following sections. **Table 2** shows the details of the surveys undertaken. Paper maps were used in habitat mapping, as well as Woodrow's in-house 'EcoLog' software operating on a mobile phone. This allowed for geo-referenced photographs and notes to be taken during all surveys. These were then transferred to QGIS for mapping purposes.

***Table 2: Ecological surveys conducted at the Application Site***

| Survey date | Survey type |
|---|---|
| 11/07/2019 | Initial survey to identify potential constraints, including birds survey |
| 20/08/2019 | Deployment of SM2 static bat detectors |
| 20/08/2019 | Mammal survey and deployment of trail cameras |
| 26/08/2019 | Extended Phase 1 Habitat survey |
| 26/08/2019 | Collection of trail cameras and SM2 static bat detectors |
| 12/04/2021 | Breeding birds and sand martin surveys |
| 12/04/2021 | Newt survey |
| 12/04/2021 | Updated habitat survey |
| 12/04/2021 | Deployment of trail cameras and SM4 bat detectors |
| 21/04/2021 | Collection of trail cameras and SM4 bat detectors |

### *2.8.1* Habitat Surveys

An Extended Phase 1 habitat survey was carried out across the entire Application Site on 26/08/2019. This was updated on 12/04/2021. The Application Site was walked, ecological

[5] NPWS designated site data: https://www.npws.ie/maps-and-data/designated-site-data
[6] EPA Map viewer. Available at: https://gis.epa.ie/EPAMaps/
[7] NPWS designated site data: https://www.npws.ie/maps-and-data/designated-site-data

features of interest were noted, and habitats were classified into recognised communities as outlined in Fossitt (2000)[8]. The habitat survey gave cognisance to the potential presence of any habitats which had the potential to correspond to EU Habitats Directive Priority Habitats.



### *2.8.2* Mammal Surveys (excluding bats)

A thorough mammal survey was conducted by an experienced Woodrow ecologist on 11/07/2019, followed by an update survey on 12/04/2021. A particular focus of these surveys was to identify the presence of badger *Meles meles*, and/or their resting places/setts. The surveys also included any *ad hoc* evidence for other mammals which might be using the site (e.g., Irish hare *Lepus timidus hibernicus*). (Bats are dealt with in the following section.) The survey approach entailed a thorough walkover of the site, and the identification of suitable habitat, detection of field signs such as tracks, markings, feeding signs, droppings and scent-points (e.g., fox), as well as direct observation.

A component of these surveys was the deployment of trail cameras, to confirm whether any potential badger setts were in active use. Deployment dates and locations are presented in **Table 3**.

***Table 3: Locations and deployment dates of trail cameras at Cloonascragh Quarry***

| Camera | Deployment and collection dates | ITM Location (X, Y) |
|---|---|---|
| TC04 | 12/04/2021 – 21/04/2021 | -8.837018637, 53.47874131 |
| TC02 | 12/04/2021 – 21/04/2021 | -8.831345681, 53.47777743 |

### *2.8.3* Bat Surveys

Two static bat detectors (Song Meter SM2 and Song Meter SM4) were set up for two periods to record bat calls, as detailed in **Table 4**. The data collected were analysed to identify the bat species present, and to estimate the activity level of each at the site.

***Table 4: Locations and deployment dates of static bat detectors at Cloonascragh Quarry***

| Detector | Deployment and collection dates | ITM Location (X, Y) | Notes on deployment location |
|---|---|---|---|
| SM2-23 | 20/08/2019 – 26/08/2019 | -8.8373176, 53.478789 | In a small willow tree in the south-west margin of the site |
| SM2-20 | 20/08/2019 – 26/08/2019 | -8.8412310, 53.481286 | On the wall of the site office, near the entrance to the site |

[8] Fossit (2000): A Guide to Habitats in Ireland. Available at: https://www.npws.ie/sites/default/files/publications/pdf/A%20Guide%20to%20Habitats%20in%20Ireland%20-%20Fossitt.pdf Accessed November 2021

| Detector | Deployment and collection dates | ITM Location (X, Y) | Notes on deployment location |
|---|---|---|---|
| SM4-0199 | 12/04/2021 – 21/04/2021 | -8.8414091, 53.4813366 | On a pole beside the site office |
| SM4-0189 | 12/04/2021 – 21/04/2021 | -8.8349454, 53.4781092 | In a tree to the south-east of the site |



### *2.8.4* Amphibian Habitat Suitability Survey

During the initial site visit, waterbodies within the Application Site boundary were assessed for their potential to support amphibian species, such as common frogs *Rana temporaria* or smooth newt *Lissotriton vulgaris*. Any amphibian sightings were also recorded. The suitability assessment was carried out by an experienced Woodrow surveyor, who determined whether or not the environmental conditions were suitable for breeding amphibians. When determining suitability, consideration was given to the surrounding terrestrial habitat, the size and permanence of the water features, water quality, shading, potential presence of waterfowl/fish, proximity to other ponds/ditches, and macrophyte cover.

Following on from this initial survey, in which amphibian suitability was confirmed, a torchlight survey and egg searches (NRA, 2009[9]) were carried out on 12/04/2021, and any amphibians or eggs observed were recorded.

### *2.8.5* Bird Surveys

During site visits on 11/07/2019 and 12/04/2021, all birds observed were recorded. In addition, a sand martin survey was carried out on 12/04/2021, during which all sand faces containing potential sand martin nesting holes were observed for 30 minutes, and the numbers of sand martins entering the holes during this interval were recorded.

[9] National Roads Authority (2009) Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes. Available at: https://www.tii.ie/technical-services/environment/planning/Ecological-Surveying-Techniques-for-Protected-Flora-and-Fauna-during-the-Planning-of-National-Road-Schemes.pdf

# 3. BASELINE CONDITIONS

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 Existing Ecological Records

Records of protected species and species of notable conservation concern, as well as any alien invasive species, within 2 km (10 km for bats) of the Application Site are given in **Table 5Error! Reference source not found.**.

## 3.2 Designated Sites

The following sections give collated details about European Sites and nationally-designated sites that are relevant to the Application Site.

### *3.2.1* Designated 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. All internationally designated sites that lie within 15 km of the Application Site are shown in **Figure 5**. Further details on these sites, and any such sites with a hydrological connection, are given in **Table 6**.

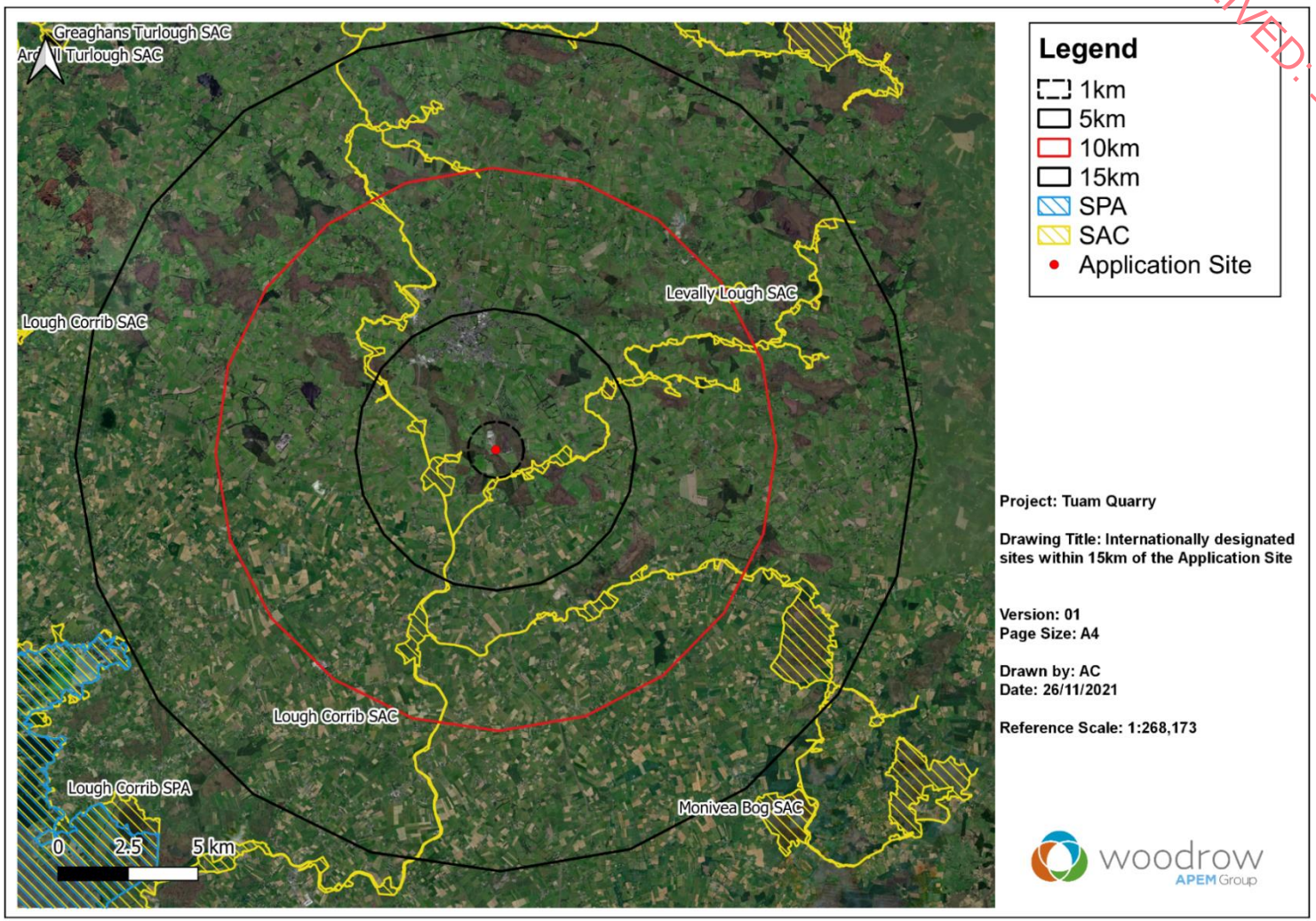
## *Table 5: Species of conservation interest previously recorded in the vicinity of the Application Site*

*Key to likelihood of species presence: 1 = Confirmed; 2 = Likely; 3 = Possible; 4 = Unlikely; 5 = None*
*Key to Red List Status: CR = Critically Endangered; NT = Near Threatened; VU = Vulnerable; LC = Least Concern; DD = Data Deficient*



| Species | Scientific Name | Habitats Dir. Annex II / IV | Birds Dir. Annex I | Wildlife Act | Red List Status | Birds of Conservation Concern (2021 – 2026) | Likelihood on site | Likelihood within 2 km | Most recent record | Record Source |
|---|---|---|---|---|---|---|---|---|---|---|
| **MAMMALS** | | | | | | | | | | |
| Brown long-eared bat | *Plecotus auritus* | Y | - | Y | LC | - | 1 | 1 | 2005 | NBDC |
| Daubenton's bat | *Myotis daubentonii* | Y | - | Y | LC | - | 3 | 3 | 2011 | NBDC |
| Lesser noctule | *Nyctalus leisleri* | Y | - | Y | LC | - | 1 | 1 | 2011 | NBDC |
| Natterer's bat | *Myotis nattereri* | Y | - | Y | LC | - | 2 | 2 | 2011 | NBDC |
| Common pipistrelle | *Pipistrellus pipistrellus sensu lato* | Y | - | Y | LC | - | 1 | 1 | 2018 | NBDC |
| Soprano pipistrelle | *Pipistrellus pygmaeus* | Y | - | Y | LC | - | 1 | 1 | 2009 | NBDC |
| **BIRDS** | | | | | | | | | | |
| Swallow | *Hirundo rustica* | N | N | Y | LC | Amber | 1 | 1 | 1991 | NBDC |
| Black-headed gull | *Larus ridibundus* | N | N | Y | LC | Amber | 2 | 2 | 1991 | NBDC |
| Sand martin | *Riparia riparia* | N | N | Y | LC | Amber | 1 | 1 | 2011 | NBDC |
| Teal | *Anas crecca* | N | N | Y | LC | Amber | 3 | 3 | 1991 | NBDC |
| Cormorant | *Phalacrocorax carbo* | N | N | Y | LC | Amber | 3 | 3 | 2010 | NBDC |
| Hen harrier | *Circus cyaneus* | N | Y | Y | LC | Amber | 3 | 3 | 2011 | NBDC |
| House martin | *Delichon urbicum* | N | N | Y | LC | Amber | 3 | 3 | 1991 | NBDC |
| Mute swan | *Cygnus olor* | N | N | Y | LC | Amber | 3 | 3 | 1991 | NBDC |
| Northern lapwing | *Vanellus vanellus* | N | N | Y | NT | Red | 1 | 1 | 2010 | NBDC |
| Curlew | *Numenius arquata* | N | N | Y | NT | Red | 3 | 3 | 2015 | NPWS within H22 |
| Kestrel | *Falco tinnunculus* | N | N | Y | LC | Red | 1 | 1 | 2010 | NBDC |
| Skylark | *Alauda arvensis* | N | N | Y | LC | Amber | 2 | 2 | 2010 | NBDC |
| Snipe | *Gallinago gallinago* | N | N | Y | LC | Red | 3 | 3 | 1999 | NBDC |
| **CRUSTACEANS** | | | | | | | | | | |
| White-clawed crayfish | *Austropotamobius pallipes* | Y | - | Y | EN | - | 4 | 4 | 2012 | NBDC |

***Figure 5: Internationally designated sites within 15 km of the proposed works***



### *Table 6: Summary of internationally-designated areas within 15 km of the Application Site, and those with a hydrological connection*

*Sections highlighted in grey are those with potential hydrological/ecological connections; features in **bold** are potentially-impacted features*

| Site name and code | Area (ha) | Summary of qualifying features | Closest distance from Application Site | Connectivity with Application Site? |
|---|---|---|---|---|
| **Special Areas of Conservation (SACs)** | | | | |
| Lough Corrib SAC [000297] | 23656 | **Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110]**<br>**Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130]**<br>**Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. [3140]**<br>**Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]**<br>Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]<br>Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]<br>Active raised bogs [7110]<br>Degraded raised bogs still capable of natural regeneration [7120]<br>Depressions on peat substrates of the Rhynchosporion [7150]<br>Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210]<br>Petrifying springs with tufa formation (Cratoneurion) [7220]<br>Alkaline fens [7230]<br>Limestone pavements [8240]<br>Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]<br>Bog woodland [91D0]<br>**Freshwater Pearl Mussel (*Margaritifera margaritifera*) [1029]**<br>**White-clawed Crayfish (*Austropotamobius pallipes*) [1092]** | *c.* 633 m south (direct distance) | Yes.<br>Groundwater from the site is expected to flow towards the Grange River. The groundwater vulnerability rating of the Application Site is classed as “High”. The Grange River is part of this SAC, and flows to lower Lough Corrib via the Clare River. |

| Site name and code | Area (ha) | Summary of qualifying features | Closest distance from Application Site | Connectivity with Application Site? |
|---|---|---|---|---|
| **Special Areas of Conservation (SACs)** | | | | |
| | | **Sea Lamprey (*Petromyzon marinus*) [1095]**<br>**Brook Lamprey (*Lampetra planeri*) [1096]**<br>**Salmon (*Salmo salar*) [1106]**<br>Lesser Horseshoe Bat (*Rhinolophus hipposideros*) [1303]<br>Otter (*Lutra lutra*) [1355]<br>Slender Naiad (*Najas flexilis*) [1833]<br>Slender Green Feather-moss (*Hamatocaulis vernicosus*) [6216] | | |
| Levally Lough SAC [000295] | 58 | Turloughs [3180] | *c.* 9.5 km northeast - direct distance. | No |
| Derrinlough (Cloonkeenleana node) Bog SAC [002197] | 61.1 | Degraded raised bogs still capable of natural regeneration [7120] | *c.* 14.8 km northeast - direct distance | No |
| **Special Protection Areas (SPAs)** | | | | |
| Lough Corrib SPA [004042] | 17598 | **Gadwall *(Anas strepera)* [A051]**<br>**Shoveler *(Anas clypeata)* [A056]**<br>**Pochard *(Aythya ferina)* [A059]**<br>**Tufted Duck *(Aythya fuligula)* [A061]**<br>**Common Scoter *(Melanitta nigra)* [A065]**<br>Hen Harrier *(Circus cyaneus)* [A082]<br>**Coot *(Fulica atra)* [A125]**<br>Golden Plover *(Pluvialis apricaria)* [A140]<br>**Black-headed Gull *(Chroicocephalus ridibundus)* [A179]**<br>**Common Gull *(Larus canus)* [A182]**<br>**Common Tern *(Sterna hirundo)* [A193]**<br>**Arctic Tern *(Sterna paradisaea)* [A194]**<br>**Greenland White-fronted Goose *(Anser albifrons flavirostris)* [A395]**<br>**Wetland and Waterbirds [A999]** | *c.* 14.7 km southwest in direct distance and c. 31 km via the Grange and Clare Rivers | Yes.<br>Groundwater from the site is expected to flow towards the Grange River. The groundwater vulnerability rating of the Application Site is classed as “High”. The Grange River connects to the SPA downstream, via the Clare River. |

### *3.2.2* Sites of National Importance

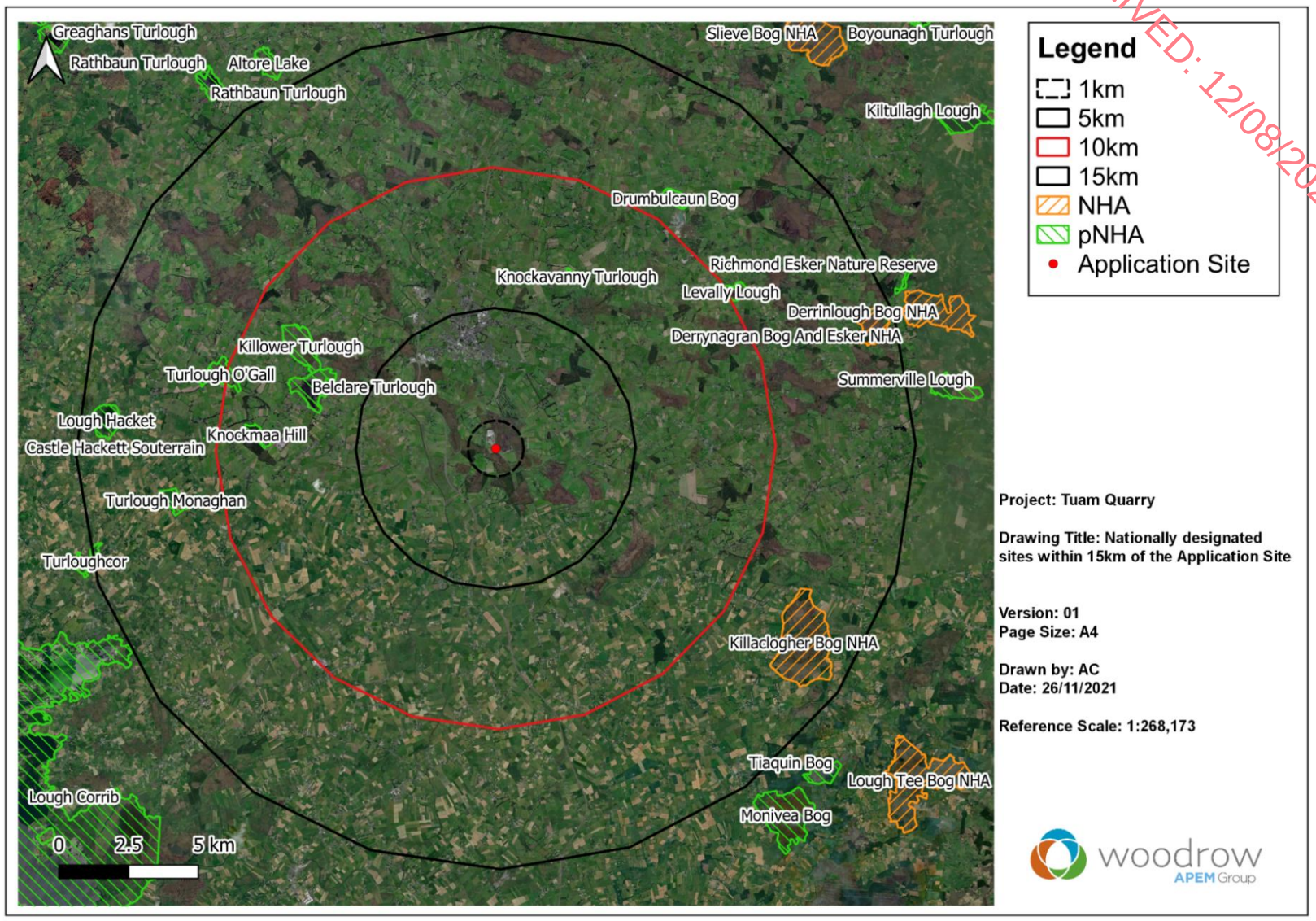
National Heritage Areas (NHAs) are designated under the Wildlife Amendment Act (2000) as areas considered important for the habitats present or areas which support plants and animals whose habitat needs protection. Proposed National Heritage Areas (pNHAs) are recognised on a non-statutory basis, but 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 6**. Further details on these are given in **Table 7**.

***Table 7: Summary of nationally-designated areas within 15 km of the Application Site, and those with a hydrological/ecological connection***

| Site name and code | Area (ha) | Summary of qualifying features | Closest distance from Application Site | Hydrological connectivity with Application Site? |
|---|---|---|---|---|
| National Heritage Areas (NHAs) | | | | |
| Derrynagran Bog and Esker NHA (001255) | 455.8 | Peatlands [4] | c. 13km northeast of the Application Site | No |
| Killaclogher Bog NHA (001280) | 419 | Peatlands [4] | c. 11.3km southeast of the Application Site | No |
| Proposed National Heritage Areas (pNHAs) | | | | |
| Drumbulcaun Bog pNHA (000263) | 41 | Raised bog, fen, open water and flooded grassland | c. 10.7km northeast of the Application Site | No |
| Levally Lough pNHA (000295) | 58.8 | Turlough | c. 9.6km northeast of the Application Site | No |
| Knockavanny Turlough pNHA (000289) | 17.8 | Turlough | c. 6.5km northeast of the Application Site | No |
| Lough Hacket pNHA (001294) | 87 | Habitat of ornithological importance | c. 13.2km west of the Application Site | No |
| Turlough Monaghan pNHA (001322) | 55.5 | Turlough | c. 10.8km southwest of the Application Site | No |
| Turloughcor pNHA (001788) | 43.6 | Turlough | c. 14.3km southwest of the Application Site | No |
| Knockmaa Hill pNHA (001288) | 42 | Woodland & limestone pavement | c. 7.8km west of the Application Site | No |
| Belclare Turlough pNHA (000234) | 121.8 | Turlough | c. 6km west of the Application Site | No |
| Turlough O'Gall pNHA (000331) | 78.2 | Turlough | c. 9km northwest of the Application Site | No |
| Castle Hacket Souterrain pNHA (002038) | 0.004 | Hibernation site for lesser horseshoe bat | c. 10.1km west of the Application Site | No |
| Killower Turlough pNHA (000282) | 131.7 | Turlough | c. 6.5km northeast of the Application SIte | No |

***Figure 6: Nationally designated sites within 15 km of the Application Site***



## 3.3 Existing Ecological Baseline

The following sections describe the existing ecological baseline within the Application Site following the botanical and faunal surveys undertaken according to the methodologies outlined in Section 2.

### *3.3.1* Habitats

The habitats recorded within the Application Site are shown in **Table 8**. A description of each habitat is then given. The distribution of habitats on the site is shown in **Figure 7**.

***Table 8: Habitats within the Application site. Habitat classification is in accordance with Fossitt (2000).***

| Habitat Code | Habitat Classification |
|---|---|
| ED4 | Active Quarry & Mines |
| BL3 | Buildings & Artificial Surfaces |
| GS1 | Dry Calcareous & Neutral Grassland |
| GS2 | Dry Meadows & Grassy Verges |
| ED1 | Exposed Sand, Gravel or Till |
| GS1 & WS1 | Calcareous Grassland & Scrub Mosaic |
| FL8 | Other Artificial Lakes & Ponds |
| ED3 | Recolonising Bare Ground |
| FW4 | Spoil & Bare Ground |

#### *ED4 - Active Quarry & Mines*

The majority of the Application Site is made up of Active Quarry. This is virtually unvegetated due to previous disturbance and works. The substrate is mostly sand, with some gravel and stones also present.

***Plate 1: Active Quarry***


### *BL3 - Buildings & Artificial Surfaces*

Two buildings are present, the site office and the workshop. There is also a small area of concrete and tarmac at the site entrance.

### *GS1 - Dry Calcareous & Neutral Grassland*

This is present on a long ridge of raised land along the west of the site, and in a few other areas, as shown in **Figure 7**. This habitat was particularly species-rich along the raised ridge. The following plants were recorded:

Creeping bent grass *Agrostis stolonifera,* meadow foxtail *Alopecurus pratensis,* tall fescue *Festuca arundinacea,* sheep's fescue *Festuca ovina,* red fescue *Festuca rubra,* annual meadowgrass *Poa annua,* quaking grass *Briza media,* sweet vernal grass *Anthoxanthum odoratum,* cocksfoot *Dactylis glomerata,* crested dog's tail *Cynosurus cristatus,* yarrow *Achillea millefolium,* knapweed *Centaurea nigra,* selfheal *Prunella vulgaris,* bird's foot trefoil *Lotus corniculatus,* cat's ear *Hypochaeris radicata,* lady's mantle *Galium verum,* oxeye daisy *Leucanthemum vulgare,* mountain everlasting *Antennaria dioica,* yellow-wort *Blackstonia perfoliate,* carline thistle *Carlina vulgaris,* gorse *Ulex europaeus,* corn speedwell *Veronica arvensis,* mullein *Verbascum thapsis,* broad-leaved willowherb *Epilobium montanum,* tufted vetch *Vicia cracca,* field horsetail *Equisetum arvensis,* ragwort *Senecio jacobaea,* ribwort plantain *Plantago lanceolata,* sea plantain *Plantago maritima,* shamrock *Trifolium dubium,* mouse-ear chickweed *Cerastium fontanum,* hart's tongue fern *Asplenium scolopendrium,* black spleenwort *Asplenium adiantum-nigrum,* wild thyme *Thymus drucei,* common twayblade *Listera ovata,* early purple orchid *Orchis mascula,* couch grass *Elymus repens,* white clover *Trifolium repens,* red clover *Trifolium pratense,* milkwort *Polygala vulgaris,* male

fern *Dryopteris filix-mas,* hedge bindweed *Calystegia sepium,* devil's bit scabious *Succisa pratensis,* sedge *Carex* sp.*,* scarlet pimpernel *Anagallis arvensis,* blue fleabane *Erigeron acer*[10]*,* daisy *Bellis perennis,* dock *Rumex obtusifolium,* wild carrot *Daucus carota,* eyebright *Euphrasia* sp.*,* weld *Reseda luteola,* hogweed *Heracleum sphondylium,* dandelion *Taraxacum officinale,* tormentil *Potentilla erecta,* coltsfoot *Tussilago farfara,* silverweed *Potentilla anserina,* spear thistle *Cirsium vulgare,* dog violet *Viola riviniana,* rosebay willowherb *Epilobium angustifolium,* mouse-ear hawkweed *Hieracea pilosella,* smooth hawkbeard *Crepis capillaris,* broom forkmoss *Dicranum scoparium.*



***Plate 2: Dry Calcareous & Neutral Grassland***

***GS2 - Dry Meadows & Grassy Verges***

A small area of this habitat is present near the site entrance, containing a mixture of common grasses such as cocksfoot *Dactylis glomerata* and creeping bent grass *Agrostis stolonifera,* and herbaceous plants such as oxeye daisy *Leucanthemum vulgare,* yarrow *Achillea millefolium*, lady's mantle *Galium verum,* dandelion *Taraxacum officinale,* and selfheal *Prunella vulgaris.*

[10] Formerly listed as "Vulnerable" in Ireland, currently listed as "Least Concern". See *Ireland Red List No. 10 – Vascular Plants*, available at: https://www.npws.ie/sites/default/files/publications/pdf/RL10%20VascularPlants.pdf

***Plate 3: Dry meadow & grassy verge***



***ED1 - Exposed Sand, Gravel or Till***

This habitat is present where sand has been dug away to leave an exposed face. It is mostly unvegetated but is the site of sand martin nesting colonies. These are discussed further in Section 3.3.5.

***Plate 4: Exposed Sand***

### *GS1 & WS1 - Calcareous Grassland & Scrub Mosaic*



Patches of scrub are present on the site, mixed in with areas of grassland. Gorse *Ulex europaeus* is particularly common in the scrub areas, with brambles and occasional hawthorn *Crataegus monogyna* also present. Some young trees are also to be found, such as ash *Fraxinus excelsior* and sycamore *Acer pseudoplatanus* saplings, and in the north-west of the site the scrub (if left undisturbed) is likely to become transitional woodland.

***Plate 5: Calcareous grassland & scrub***

### *FL8 - Other Artificial Lakes & Ponds*

This habitat is present in a long, narrow trench along part of the eastern side of the site, as well as in the settlement ponds to the west. These are no longer in use and are becoming revegetated with marginal or terrestrial plants. The following plants were noted in this habitat: marsh arrowgrass *Triglochin palustris,* water horsetail *Equisetum fluviatile,* bullrush (reedmace) *Typha latifolia,* broad-leaved pondweed *Potamogeton natans,* marsh pennywort *Hydrocotyle vulgaris* and club-rush *Schoenoplectus lacustris.*

***Plate 6: Other Artificial Lakes & Ponds***



### *ED3 - Recolonising Bare Ground*

This is ground which was previously worked or disturbed, but which is now being recolonised by grasses and herbaceous plants which are seeding from the surrounding areas.

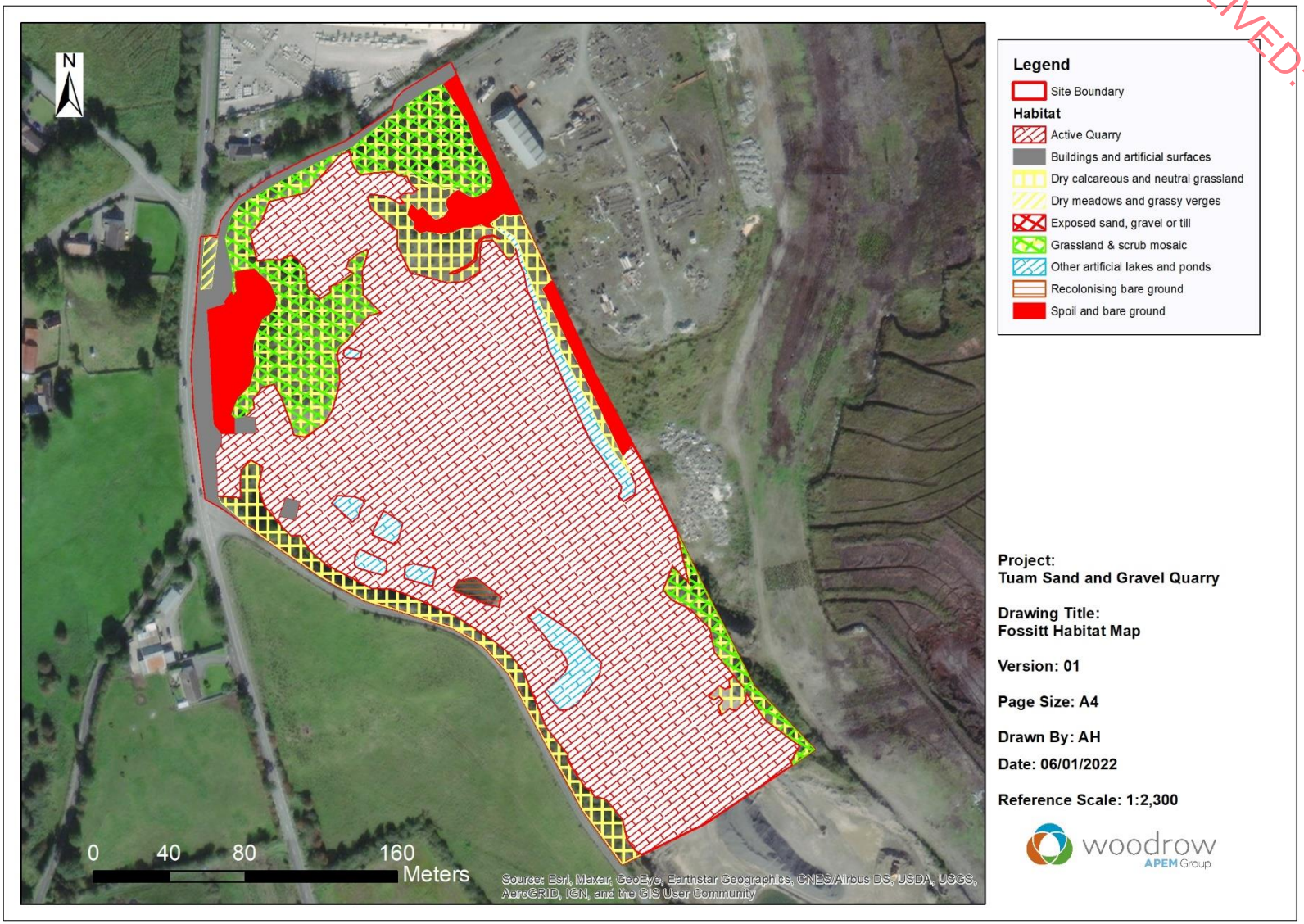
***Plate 7: Recolonising bare ground***

### *FW4 - Spoil & Bare Ground*

These are areas where sand or gravel has been piled, having been previously excavated. As these are generally temporary heaps of unconsolidated excavated material, they have not been colonised by vegetation.

***Plate 8: Piles of unvegetated excavated material***

***Figure 7: Habitats identified at the Application Site***



### *3.3.2* Mammals (excluding bats)

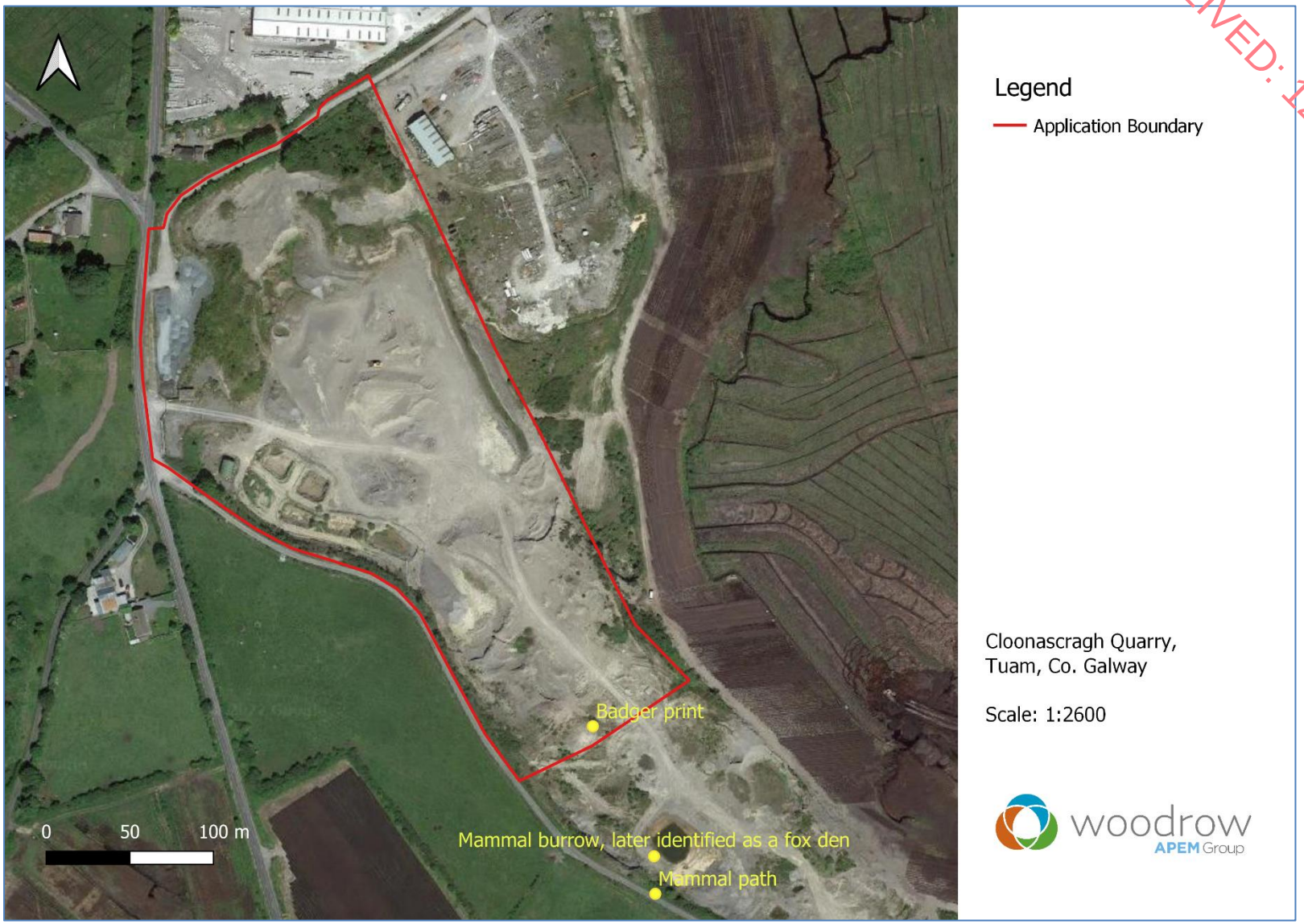
#### *Badgers (Meles meles)*

Existing data from the National Biodiversity Data Centre contained no records of badgers in the 2 km National Grid Squares in which the Application Site is located. Few signs of badgers were noted at the Application Site. One footprint, which appears to be that of a badger (**Plate 9**) was seen at the south-eastern boundary of the site. A mammal excavation with a single entrance of approximately 35 x 40 cm was found approximately 89 m to the south of the site (**Plate 10**). While this did not appear to be typical in character of a badger sett, it was monitored using a trail camera for nine days and nights, as described in Section 2.8. During this time, no badgers were recorded. Foxes were recorded three times outside the entrance to the hole. (A domestic cat was also seen passing by.) It was concluded that this is an entrance to a fox earth, and is not in use by badgers. The mammal path noted behind the hole (**Figure 8**) is also very likely to be in use by foxes. While badgers may use the site as a foraging area, there is no evidence of resident badgers on the site.

***Plate 9: Likely badger footprint at Cloonascragh***

***Plate 10: Mammal excavation at Cloonascragh***

***Figure 8: Potential badger signs at Cloonascragh***



### *Other Mammals*

Two other mammal holes were noted, each with a single entrance (**Plate 11**). The locations of these are shown in **Figure 9**. One of these was outside the Application Site to the east, while the other was a short distance inside the site boundary. From the shape and size of these holes (approximately 40 x 25 cm), and the droppings and footprints found (**Plate 12**), it was concluded that they were fox *Vulpes vulpes* holes.

***Plate 11: Fox excavations 1 and 2 at Cloonascragh - locations shown in Figure 9***

***Plate 12: Likely fox footprints***

***Figure 9: Fox excavations at Cloonascragh***

### *3.3.3* Bats

The existing ecological records from the area (**Table 5**) show that six species of bat have been recorded within 10 km of the Application Site. These are brown long-eared bat *Plecotus auritus*, Daubenton's bat *Myotis daubentonii,* lesser noctule *Nyctalus leisleri,* Natterer's bat *Myotis nattereri,* common pipistrelle *Pipistrellus pipistrellus sensu lato,* and soprano pipistrelle *Pipistrellus pygmaeus.* All species of bat are protected in Ireland.

To augment 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 10**) was obtained from the NBDC database. This uses a 'habitat suitability' index (Lundy *et al.*, 2011). On this basis, the area which contains the Application Site was considered to be of medium suitability for bats.

No bat roosts were recorded on the site. The following four tables show the details of all bats recorded by static detectors deployed on the site. Common pipistrelle bat and soprano pipistrelle bat were the most common species detected. The other species detected were Leisler's bat *(Nyctalus leisleri), Myotis* sp.*,* brown long-eared bat *Plecotus auritus,* and Nathusius's pipistrelle bat *Pipistrellus nathusii.*

***Table 9: Results for SM2 Static Bat Detector – Unit 020***

| Deployed for 6 consecutive nights from 20/08/2019 to 26/08/2019 | | |
|---|---|---|
| **Species** | **No. of passes** | **Timings** |
| Leisler's bat *(Nyctalus leisleri)* | 18 | Earliest pass: 21.21<br>Latest pass: 04.01 |
| Soprano pipistrelle bat *(Pipistrellus pygmaeus)* | 51 | Earliest pass: 22.06<br>Latest pass: 05.12 |
| Common pipistrelle bat *(Pipistrellus pipistrellus)* | 93 | Earliest pass: 22.07<br>Latest pass: 05.32 |
| Myotis species (*Myotis* sp.) | 11 | Earliest pass: 00.18<br>Latest pass: 03.26 |
| Brown long-eared bat (*Plecotus auritus*) | 2 | Earliest pass: 23.43<br>Latest pass: 04.47 |

### *Table 10: Results for SM2 Static Bat Detector – Unit 023*



| Deployed for 6 consecutive nights from 20/08/2019 to 26/08/2019 | | |
|---|---|---|
| **Species** | **No. of passes** | **Timings** |
| Leisler's bat *(Nyctalus leisleri)* | 10 | Earliest pass: 09.36<br>Latest pass: 05.21 |
| Soprano pipistrelle bat *(Pipistrellus pygmaeus)* | 262 | Earliest pass: 21.36<br>Latest pass: 05.57 |
| Common pipistrelle bat *(Pipistrellus pipistrellus)* | 63 | Earliest pass: 21.59<br>Latest pass: 05.46 |
| Myotis species (*Myotis* sp.) | 1 | Earliest pass: 23.07<br>Latest pass: 23.07 |

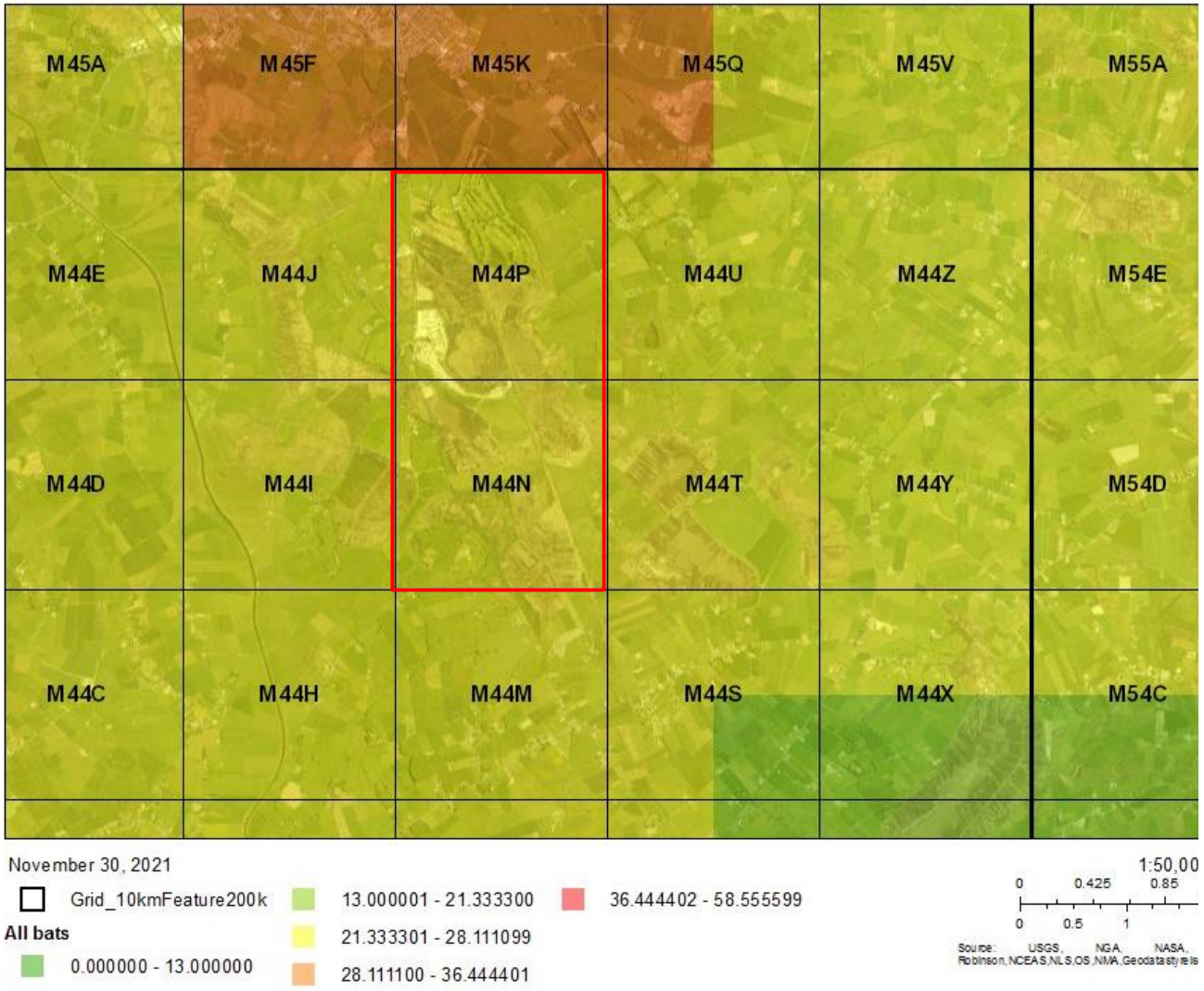
### *Table 11: Results for SM4 Static Bat Detector – Unit 189*

| Deployed for 9 consecutive nights from 12/04/2021 to 21/04/2021 | | |
|---|---|---|
| **Species** | **No. of passes** | **Timings** |
| Leisler's bat *(Nyctalus leisleri)* | 61 | Earliest pass: 20.59<br>Latest pass: 03.30 |
| Soprano pipistrelle bat *(Pipistrellus pygmaeus)* | 68 | Earliest pass: 21.15<br>Latest pass: 04.33 |
| Common pipistrelle bat *(Pipistrellus pipistrellus)* | 402 | Earliest pass: 21.23<br>Latest pass: 04.55 |
| Myotis species (*Myotis* sp.) | 2 | Earliest pass: 00.30<br>Latest pass: 3.35 |

### *Table 12: Results for SM4 Static Bat Detector - Unit 199*

| Deployed for 9 consecutive nights from 12/04/2021 to 21/04/2021 | | |
|---|---|---|
| **Species** | **No. of passes** | **Timings** |
| Leisler's bat *(Nyctalus leisleri)* | 35 | Earliest pass: 21.02<br>Latest pass: 02.56 |
| Soprano pipistrelle bat *(Pipistrellus pygmaeus)* | 25 | Earliest pass: 21.20<br>Latest pass: 04.14 |
| Common pipistrelle bat *(Pipistrellus pipistrellus)* | 56 | Earliest pass: 20.55<br>Latest pass: 04.56 |
| Nathusius's pipistrelle bat (*Pipistrellus nathusii*) | 1 | Earliest pass: 23.09<br>Latest pass: 23.09 |
| Myotis bat (*Myotis* sp.) | 2 | Earliest pass: 23.21<br>Latest pass: 01.34 |
| Brown long-eared bat *(Plecotus auritus*) | 4 | Earliest pass: 22.20<br>Latest pass: 00.42 |

***Figure 10: Habitat suitability ('bat landscape') map at Cloonascragh Quarry (Squares M44N & M44P)*** *(Source: NBDC / Lundy et al. 2011)*



### *3.3.4* Amphibians

According to the NBDC searches, there are no records for reptiles or amphibians within the two 2 km Grid Squares M44N and M44P, in which the Application Site is located. However, 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, described in Section 2, showed that newts were present in some of these. The locations of all newts recorded during the torchlight survey are shown in **Figure 11**. Some of these locations had more than one newt present. In total, 102 adult newts and 87 juveniles were recorded. Egg searches did not result in any records, although it was noted that the ponds were steep-sided and aquatic vegetation was difficult to access.

It is clear from **Figure 11** that the large majority of newts were recorded in the long shallow trench to the east of the site. Two individuals were recorded in the ponds to the west.

### *3.3.5* Birds

Bird species recorded at the Application Site during surveys are listed in **Table 13**, along with their status according to the Birds of Conservation Concern in Ireland (BoCCI) 2020-2026 list (Gilbert *et al.* 2021).

During sand martin surveys, some areas of the site were found to have active nesting sites for this species, while other areas contained old sand martin nests that were no longer in use. These sites are shown in **Figure 12.** A total of approximately 46 sand martins were observed entering nesting holes in two almost vertical sandy faces at the Application Site. Over 100 were observed in flight overhead.

***Figure 11: Locations of Smooth Newt recorded during amphibian surveys at the Application Site***

***Table 13: Bird species recorded at the Application Site during surveys***



| Common Name | Latin Name | BoCCI[11] Conservation status | Behaviour & Notes | Date of record |
|---|---|---|---|---|
| **Red List** | | | | |
| Lapwing | *Vanellus vanellus* | Red List | 29 birds flying overhead | 20/08/2019 |
| Kestrel | *Falco tinnunculus* | Red List | 1 bird flying overhead | 20/08/2019 |
| **Amber List** | | | | |
| Starling | *Sturnus vulgaris* | Amber List | Multiple small groups of birds | 12/04/2021 |
| Linnet | *Linaria cannabina* | Amber List | 2 birds perched | 11/07/2019 |
| Swallow | *Hirundo rustica* | Amber List | Group of birds flying overhead | 12/04/2021 |
| Willow warbler | *Phylloscopus trochilus* | Amber List | Heard calling | 11/07/2019 |
| Mallard | *Anas platyrhynchos* | Amber List | 1 bird by pond | 12/04/2021 |
| Sand martin | *Riparia riparia* | Amber List | Hundreds of birds observed; including entrances into nest holes (evidence of breeding colony) | 12/04/2021 |
| | | | 45 birds in the air | 11/07/2019 |
| **Green List** | | | | |
| Great tit | *Parus major* | Green List | 2 birds perched together | 12/04/2021 |
| Song thrush | *Turdus philomelos* | Green List | 3 occurrences total | 12/04/2021 |
| Rook | *Corvus frugilegus* | Green List | 1 bird | 12/04/2021 |
| | | | 1 bird | 11/07/2019 |
| Magpie | *Pica pica* | Green List | 1 bird | 12/04/2021 |
| | | | 1 observed | 11/07/2019 |
| Sparrowhawk | *Accipiter nisus* | Green List | 1 bird flying overhead | 12/04/2021 |
| Blackbird | *Turdus merula* | Green List | 1 male observed | 12/04/2021 |
| | | | 1 observed | 11/07/2019 |
| Grey Heron | *Ardea cinerea* | Green List | 1 bird flying overhead | 12/04/2021 |

[11] Gilbert G, Stanbury A and Lewis L (2021) Birds of Conservation Concern in Ireland 2020 –2026. Irish Birds 43: 1—22.

***Figure 12: Results of sand martin surveys conducted at the Application Site (12-04-2021)***

## 3.4 Invasive Species

No prior records of invasive species were contained in the NBDC data for the 2 km National Grid squares in which the site is located.

Evidence of three species that are considered invasive was found during surveys:

- Rabbit *Oryctolagus cuniculus* is considered a medium-impact invasive species in Ireland[12]. Small mammal holes, likely to be those of rabbits, were noted at the Application Site.
- Butterfly bush *Buddleja davidii* is considered a medium-impact invasive species in Ireland[13]. This plant was noted in three places along the long, narrow trench to the east of the site.
- Winter heliotrope *Petasites fragrans* is considered a low-risk invasive species in Ireland[14]. However, this plant is now widespread across the country and can easily be spread vegetatively if soil containing pieces of the plant are moved from one location to another. This plant was also recorded at the site.

[12] https://species.biodiversityireland.ie/profile.php?taxonId=119490&taxonGroupName=terrestrial%20mammal&taxonDesignationGroupId=26

[13] https://species.biodiversityireland.ie/profile.php?taxonId=40247&taxonName=buddleja

[14] https://species.biodiversityireland.ie/profile.php?taxonId=43895

# 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 14.** Also considered are designated sites that have biological or other connectivity with the Application Site.

Only the flora, fauna and habitats which are considered to be of Local Importance (Higher Value), or higher, and which have the potential to be (or have been identified as being) within the Zone of Influence will be considered further within this assessment.

### *Table 14: 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 Corrib SAC [000297]** | **International** | **Y – Hydrological connectivity** | **Y** |
| **Lough Corrib SPA [004042]** | **International** | **Y – Hydrological connectivity** | **Y** |
| **Habitats** | | | |
| BL3 Buildings & Artificial Surfaces | Local (Lower) | N – not impacted by this proposal as current use will continue | N |
| **GS1 Dry Calcareous & Neutral Grassland** | **Local (Higher)** | **Y – potentially affected habitat. Direct effects e.g., habitat loss** | **Y** |
| ED2 Spoil and bare ground | Local (Lower) | Y – potentially affected habitat | N |
| ED3 Recolonising Bare Ground | Local (Lower) | Y – potentially affected habitat | N |
| ED4 - Active quarries and mines | Local (Lower) | Y – potentially affected habitat | N |
| **FL8 - Other artificial lakes and ponds** | **Local (Higher)** | **Y – potentially affected habitat. Direct effects e.g., habitat loss, and indirect effects e.g., hydrocarbon leakage** | **Y** |
| GS2 Dry Meadows & Grassy Verges | Local (Higher) | N – not impacted by this proposal | N |
| **ED1 Exposed Sand, Gravel or Till** | **Local (Higher)** | **Y – potentially affected habitat. Direct effects e.g., habitat loss** | **Y** |

| Feature | Highest Evaluation / Importance | Potential Direct Impact or Source Pathway Receptor Link? Y/N | Important Ecological Feature (IEF)? Y/N |
|---|---|---|---|
| **WS1 - Scrub** | **Local (Higher)** | **Y – potentially affected habitat. Direct effects e.g., habitat loss** | **Y** |
| **Species** | | | |
| Breeding birds – Red listed | Regional | N – not impacted by proposal | N |
| **Breeding birds – Amber listed** | **Local (Higher)** | **Y – Potential for direct impacts e.g., destruction of breeding sites and indirect impacts e.g., disturbance** | **Y** |
| Badger | Local (Higher) | N – not impacted by proposal | N |
| Fox | Local (Lower) | Y – potentially affected by disturbance | N |
| **Bat commuting**[15] | **Local (Higher)** | **Y - Potential for indirect impacts e.g., loss of habitat** | **Y** |
| **Bat foraging** | **Local (Higher)** | **Y - Potential for indirect impacts e.g., loss of habitat** | **Y** |
| **Smooth newt** | **Local (Higher)** | **Y – potential for direct impacts such as loss of breeding habitat, or indirect impact such as damage from hydrocarbon leakage** | **Y** |
| Invasive Species | Local (Lower) | Y – potential for these species to be spread on the site | Y |



[15] 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 14**. 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, updated 2019): Positive or negative; Extent; Magnitude; Duration; Timing; Frequency; and, Reversibility.

## 5.1 Overview of potential ecological impacts

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

1. Hydrological impacts, e.g., deterioration of water quality through siltation or pollutants like hydrocarbons from fuels, oils and lubricants, or through leaching of any hazardous elements contained in imported C&DW which is being stored/handled/processed on the site
2. Dust deposition
3. Disturbance e.g., through movement, noise, lighting
4. Permanent habitat removal or alteration of habitats
5. Direct and indirect impacts on species through loss of nesting or resting places or supporting foraging habitats

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

## 5.2 Potential Hydrological and Hydrogeological Impacts

Details of the site which are relevant to the current EcIA were contained in a remedial Environmental Impact Statement (rEIS)[16] in 2013, which included consultation with Geological Survey of Ireland (GSI) and other relevant organisations. This document concluded the following:

- There was no discharge from the existing sand and gravel pit to any surface water body;
- The continued extraction of sand and gravel at the site would not have an impact on surface water quality;
- There has been an increase in groundwater flow arising from the extraction of sand and gravel from the existing pit, as the vegetation layer and soils have been removed with an associated reduction evapotranspiration;
- The removal of the protective layer of unsaturated soil and subsoil material has increased the vulnerability of ground waters beneath the site; consequently, a potential exists to cause a reduction in the groundwater quality arising from the continued extraction of sand and gravel; and,
- As the site straddles a sub-catchment boundary, groundwater in the western part of the site will flow towards the Clare River, while groundwater in the eastern part of the site will flow towards the Grange River.

[16] SLR Consulting (2013) Sand & Gravel Pit at Cloonascragh, Tuam, Co. Galway. Remedial Environmental Impact Statement (rEIS).

(Notwithstanding this final point, the current EPA sub-catchment maps[17] show the site to be fully within the Grange sub-catchment. In any case, both rivers join together a short distance downstream.)



A more recent Hydrogeological and Hydrological Impact Assessment of the proposed works has also been carried out (BCL, 2022[18]). This document noted the following:

- The proposal does not involve working below the water table; therefore, there will be no lowering of groundwater level and no cone of depression in the water table.
- There is no dewatering discharge requirement and there will be no surface water run-off from the working area.
- There is no risk of runoff from the quarry void to neighbouring land. The lowest point on the Site boundary is at circa 37 maOD, which is 3 m higher than the quarry floor. There will be no risk of overflow/transfer of suspended solids from the working area into the surface drainage network.
- The groundwater flow direction at the Site is from NNW to SSE, which is towards the closest stretch of the Grange River (tributary of the Clare River), thus falling within the Lough Corrib SAC and SPA.
- Any silt-laden runoff will collect at the lowest point in the working area. The suspended solids will settle out on the quarry floor or will be filtered out in the underlying sand and gravel.
- The Grange River (tributary of the Clare River) is linked with the Lough Corrib SAC and SPA; and is of 'high' importance. The magnitude of impact on the hydrology of the river is 'negligible', therefore the significance of impact of activities within the Application Area on the hydrology of the Lough Corrib SAC and SPA is rated as 'imperceptible'.
- The predicted magnitude of impact of the proposed operation at the Application Site on the regional water balance is 'negligible'; therefore, the significance of impact on the regional water balance is rated as 'imperceptible'.

Consequently, it is considered that potential hydrological impacts are limited to very unlikely events such as major contamination of the groundwater through large-scale spillages of hydrocarbons or other chemicals; or in the event that the imported C&DW which is being stored/ handled/ processed on site contains elements which are hazardous, thereby generating contaminated run-off/ leachate from the same; or in the event that toxic or hazardous waste is permanently deposited at the site (for example, as part of the restoration). While such events are unlikely, mitigation will be prescribed in Section 6 to rule out any potential impacts.

## 5.3 Potential Impacts from dust deposition on flora and fauna

A Dust Impact Assessment[19] for the proposed development has been carried out by AONA Environmental Consulting Ltd., and is included as Chapter 8 of the EIAR. This assessed the

[17] https://gis.epa.ie/GetData/Download. Version: October 2021.

[18] BCL Consultant Hydrogeologists (2022) Cloonascragh Sand and Gravel Pit Tuam, Co. Galway - Environmental Impact Assessment Report for Mineral Extraction; Hydrogeological and Hydrological Impact Assessment

[19] AONA Environmental Consulting Ltd. (2022) Cloonascragh Quarry dust impact assessment

impact for adverse effects from dust arising from proposed activities at the site. The overall effect from dust is considered to be 'not significant'. The report also contains best practice dust mitigation measures to be employed at the Cloonascragh Quarry to minimise operational impacts.



## 5.4 Potential Impacts resulting 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, whereas inappropriate lighting can disturb or deter bat species.

No additional lighting is included in the proposal. Operating hours of the quarry will be 0700-1900 on Monday to Friday, and 0700-1500 on Saturdays. No operations are proposed at night-time or on Sundays. No blasting will be carried out on the site.

A Noise Impact Assessment[20] has been prepared by AONA Environmental Consulting Ltd., using noise prediction modelling. This is included in Chapter 7 of the EIAR. Mitigation measures for noise are also proposed in the report.

The report states:

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

The assessment found that the proposed development is not considered to have the potential to result in any significant effects upon the environment in terms of noise or vibration.

## 5.5 Potential Impacts on Designated Areas

### International Sites

As shown in Section 3.2, there are several designated sites which are in the general vicinity of the Application Site or which have the potential to be within the Zone of Influence.

Of the European designated sites considered, the Lough Corrib SAC [000297] and Lough Corrib SPA [004042] are considered to be within the Zone of Influence. While there is no surface water connection from the Application Site to either of these, groundwater from the site is expected to move towards the Grange River, thereby constituting a link.

The Hydrogeological and Hydrological Impact Assessment (BCL, 2022[21]) has determined that any suspended solids from quarry activities would settle out on the quarry floor or be filtered out in the underlying sand and gravel, and that the impact of the proposal on the hydrology of the river would

[20] AONA Environmental Consulting Ltd (2022) Cloonascragh Quarry noise and vibration report.

[21] BCL Consultant Hydrogeologists (2022) Cloonascragh Sand and Gravel Pit Tuam, Co. Galway - Environmental Impact Assessment Report for Mineral Extraction; Hydrogeological and Hydrological Impact Assessment

be 'negligible', so that the significance of impact on the hydrology of the Lough Corrib SAC and SPA would be 'imperceptible'.

There is potential for leakage/spillage of hydrocarbons or other chemicals into the groundwater on the site, either due to a containment failure in the fuel storage area, or while vehicles or machinery are being re-fuelled, maintained or repaired. There is also potential for leaching of any hazardous substances that may be contained in imported C&DW which is being stored/handled/processed on the site. While the possibility of such an event having an impact on the Lough Corrib SAC or Lough Corrib SPA appears unlikely, it needs to be considered due to the sensitivity of some of the Qualifying Interests of these sites to even low levels of contamination.



The Lough Corrib SAC is designated for freshwater pearl mussels *Margaritifera margaritifera*, white-clawed crayfish *Austropotamobius pallipes*, sea lamprey *Petromyzon marinus*, brook lamprey *Lampetra planeri,* and Atlantic salmon *Salmo salar*, all of which could potentially be adversely affected by hydrocarbons or other contaminants in the groundwater that reaches the SAC from the Application Site.

Similarly, the Lough Corrib SPA is designated for thirteen species of water birds (listed in **Table 6**), all of which could be adversely affected by contaminants such as hydrocarbons in the groundwater that reaches the SPA from the Application Site, or leaching of contaminants from imported C&DW being stored/handled/processed on the site.

Therefore, without mitigation for possible chemical spillages, leakages or leaching of hazardous substances, the proposal has the potential to have long-term, significant, negative effects on these designated areas and their Qualifying Interests.

Due to the distances involved, there is no potential for disturbances at European Sites due to factors such as noise or dust. Please refer also to the NIS produced for this Site (Woodrow, 2022).

**National Sites**

Several nationally-designated sites were considered as being potentially within the Zone of Influence, including two Natural Heritage Areas (NHAs) and eleven proposed Natural Heritage Areas (pNHAs). The closest of these is 6 km from the Application Site, and none of the nationally-designated sites considered have a hydrological connection to the Application Site, or any ecological receptors that would be impacted by the proposed development. Therefore, they are all considered to be outside the Zone of Influence.

## 5.6 Potential Impacts on Habitats

Most of the habitat that will be affected by the proposal is already active quarry, as shown in **Figure 3** and **Figure 7**. This is mostly unvegetated at present.

There are two areas of exposed sand face habitat which were used as breeding sites by sand martins in 2021. These are discussed further in Section 5.7.3.

A small area of dry calcareous & neutral grassland (habitat GS1) and grassland–scrub mosaic (GS1/WS1) will be lost at the north-east corner of the site. However, the long species-rich area of dry calcareous & neutral grassland (habitat GS1) along the south-west of the site will not be disturbed, and much of the existing areas of scrub north of the site entrance will be retained. The existing pools on the site will be retained.

Consequently, a low level of adverse, direct impact is expected in the short term. Long-term effects on habitats are discussed further in the restoration plan (**Appendix 1**).

## 5.7 Potential Impacts on Protected Species and Species of Conservation Importance

### *5.7.1* Badgers

There is no evidence of badgers on the site except for a possible badger footprint seen close to the southern boundary. It is possible that badgers may use the site for foraging, but no setts were recorded inside or outside the application boundary. It is unlikely that the proposed quarrying activities at the site would deter badgers from foraging at night, and therefore they are not expected to be impacted, either directly or indirectly, by the proposal.

### *5.7.2* Bats

Several bat species have been recorded on the site, as described in Section 3.3. These species are likely to use the areas of scrub for foraging and may also feed over and around the ponds on the site. While the area of grassland/scrub mosaic to the north of the site will be removed, the main areas of scrub to the west and south-east of the site will be retained, and the restoration plan (**Appendix 1**) includes the retention of natural scrub as well as new areas of native hedgerows and regenerative woodland, which will be of benefit to foraging bats.

The ponds will continue to be present and in use during the working phase of the proposed development, and additional pond habitats will be constructed as compensation measures, as described in Section 6.

There are no proposals to increase lighting at the site. Bat species are likely to make use of the substantial foraging and commuting habitats in the surrounding area, as well as continuing to use the area within the active quarry.

The only potential impacts, therefore, are the indirect impacts from the loss of patches of scrub at the northern end of the site. These losses will be temporary, as additional foraging areas are included in the compensation plan.

Consequently, a low level of temporary, adverse, indirect impact is expected in the short term, followed by a long-term positive impact.

### *5.7.3* Breeding Birds

Two red-listed bird species were recorded during surveys, but only flying over the site. No evidence of their breeding on the site was found. Six amber-listed species were recorded on the site (**Table 13**), some of which may use the site for breeding. Sand martin holes were present on the site. Some of these were confirmed as being in use by sand martins during surveys, while others were disused. Two active sand martin nesting sites were present just within the southern boundary, and one was present in the north-east of the site. Disused nesting sites were present both within and outside of the application boundary.

If sand martin breeding areas were to be disturbed during the breeding season (March-September), there would be direct impacts on the species. However, sand martins quite readily move to other nesting sites in the same area. There are several suitable sites both within the

application area (along the west side) and in the remainder of the disused quarry pit, including some which were previously used by this species. Therefore, if breeding areas were to be disturbed outside of the breeding season, when the birds have migrated to Africa (e.g. October to February), no impacts would be expected, as other suitable sites would still be available. Sand martin breeding areas will also be retained as part of the restoration plan for the site (**Appendix 1**).



Other species, such as starlings and swallows, could potentially nest in and around the buildings on the site, although no nesting sites were found. These buildings will remain in place. The areas of scrub and grassland mosaic may be used by foraging birds. While some scrub in the north-eastern corner of the site will be lost, the majority will be retained, and the restoration plan includes the retention of the natural scrub as well as new areas of native hedgerows and regenerative woodland, which will be of benefit to nesting and foraging birds. For these species, therefore, there will be a short-term adverse indirect impact on a low level, followed by a long-term positive impact.

### *5.7.4* Amphibians

#### *5.7.4.1* Newts

Smooth newts *Lissotriton vulgaris* were recorded in some of the pools on the site as described in Section 3.3. Both adults and juveniles were recorded, showing that the newts were breeding on the site. This species breeds in shallow, vegetated water bodies during spring and early summer. The long trench to the east of the site, where the majority of the newts were recorded, is well above the water table, and so is likely to dry up as the proposed deepening of the quarry proceeds. While this trench was 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.

Unmitigated, therefore, the proposal would have direct impacts on newts. There are other ponds on the site; however, while a small number of newts was recorded in these ponds, they are very steep-sided and not particularly suitable. Other pools are also present in the existing quarry pit to the south and east of the application area, but these are outside the applicant's control.

Without compensation, therefore, there would be a direct, perhaps permanent, impact on this species. Compensation measures will therefore be required.

### *5.7.5* Invasive Species

Three invasive species were recorded at the site – butterfly bush *Buddleja davidii,* winter heliotrope *Petasites fragrans,* and rabbits *Oryctolagus cuniculus* (which are considered likely to be present due to the presence of burrows).

Butterfly bush and winter heliotrope are easily spread, and could be transported to other sites on vehicles such as HGVs that leave the site. Butterfly bush is easily spread by seeds, which can stick to the wheels of vehicles. Winter heliotrope can be spread if pieces of the plant are present in sand, gravel or soil that is removed from the site and taken elsewhere.

Without mitigation, therefore, there is a potential for butterfly bush and winter heliotrope to be spread to other sites, where they could have negative impacts, for example by outcompeting native species.

## 5.8 Potential Cumulative Impacts



CIEEM 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".*

**Table 15** gives details of proposed developments in the vicinity of the Application Site.

***Table 15: Proposed developments in the vicinity of the Application Site. (Information accessed via the National Planning Application Database planning maps[22] and the Galway Online Planning Systems maps[23])***

| Application Reference and Status | Location | Description | Potential Impacts |
|---|---|---|---|
| 191315<br>Conditional (2020) | Cloonascragh, Tuam, Galway | For a 10-year permission for development at Cloonascragh, Tuam. The development will consist of the construction and operation of solar PV panels mounted on metal frames on a site extending to approximately 43 ha and associated ancillary development including an electrical substation compound, control building (70 m2), up to 9 no. inverter units, underground cable ducts, hardstanding area, boundary security fence, site entrance, access track, landscaping, CCTV and all associated enabling works. The planning application is accompanied by a Natura Impact Statement. Gross floor space of proposed works: 92 sqm | Potential for leakage/ spillage of hydrocarbons into the groundwater on site during construction. Removal of topsoil could result in mobilisation of silt and sediments into local waterways if there is a hydrological connection on site. The removal of the soil surface may increase the vulnerability of the groundwater in the vicinity to pollutant and nutrient infiltration. |
| 15915<br>Withdrawn (2016) | Cloonascragh, Tuam, Galway | A peat storage facility at Cloonascragh, Tuam, Galway. The application includes the retention of all structures and activities on site associated with the storage facility including 1) Open sided peat storage building 2) Workshop/office/canteen and storage buildings (All demountable structures) 3) Palisade Perimeter fencing 4) Floodlighting 5) Concrete apron/yard 6) Open bund 7) | None – the application is withdrawn. |

[22] National Planning Application Database planning map https://housinggovie.maps.arcgis.com/apps/webappviewer/index.html?id=9cf2a09799d74d8e9316a3d3a4d3a8de (Accessed November 2021)
[23] Galway Online Planning Systems maps https://www.galway.ie/en/services/planning/online/ (Accessed March 2022)

| | | | |
|---|---|---|---|
| | | Portaloo 8) Storage of associated plant, machinery and vehicles and 9) All associated works. | |
| 17777<br>Conditional (2018) | Cloonascragh, Tuam, Galway | Proposed minor alterations to the layout of the junction with the access road and R347 and the retention of a peat storage facility. The application includes the retention of all structures and activities on site associated with the storage facility including; (1) open sided peat storage building, (2) workshop/office/canteen and storage buildings (all demountable structures), (3) palisade perimeter fencing, (4) floodlighting, (5) concrete apron/yard, (6) open bund, (7) portaloo, (8) storage of associated plant, machinery and vehicles and (9) all associated works (gross floor space proposed 382.65sqm). retention 982.65sqm | Potential for leakage/ spillage of hydrocarbons into the groundwater during construction |
| 161269<br>Conditional (2017) | Ballykeaghra, Tuam, Galway | To construct a serviced dwelling house and domestic garage. (Gross floor space of proposed works 153 sqm. (house) 30 sqm. (garage). | Potential for leakage/ spillage of hydrocarbons into the groundwater during construction |



As shown in **Table 15**, the proposed quarry development, unmitigated, may have the potential to act in conjunction with other proposals to result in cumulative impacts from hydrocarbon/chemical spillage. Such combined impacts are considered very unlikely. However, to negate any potential cumulative impacts, the proposed development will implement suitable mitigation to eliminate at this site any potential for contributing to possible cumulative impacts.

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

Following a desktop interrogation of the 2 km radius surrounding the Application Site, it was determined that there are no active or inactive quarries within the vicinity of the Application Site, apart from the remainder of the existing quarry pit at Cloonascragh (**Figure 2**), which is outside of the applicant's ownership and which does not benefit from planning permission for sand or gravel extraction.

### 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 Application Site 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

The proposed layout for the works at Cloonascragh (**Figure 3**) focuses mainly on areas which have already been used as active quarry, much of which is currently unvegetated (**Figure 7**). The area of species-rich calcareous grassland and grassland/scrub mosaic along the south-western edge of the site will be retained, as will the existing scrub along the north and north-east sides of the site.

## 6.2 Mitigation to prevent pollution by hydrocarbons or other chemicals

The fuel-storage area will be bunded to a volume not less than the following (whichever is greater):

- 120% of the capacity of the largest tank or drum within the bunded area
- 25% of the total volume of the substance which could be stored within the bunded area

All fuels, lubricants and other chemicals will be stored in labelled containers or tanks within this bunded area. The bunded area will be regularly inspected to ensure proper containment. Any damage or flaws identified during inspections will be repaired without delay.

Spill kits will be available at all times to deal promptly with any spillage that may occur on the site. Employees will be familiarised with the correct use of spill kits. All on-site vehicles and machines will be checked regularly for oil leaks or drips. Any such problems will be repaired without delay. No routine servicing of mobile plant and machinery will be undertaken in the sand and gravel pit. HGVs which are used to haul excavated material from the site will be refuelled off-site, in order to minimise storage of fuels on the Application Site. Any necessary on-site repairs or re-fuelling will be done either in the workshop or within an appropriate area, or using drip trays and absorbent mats as required. Any waste oil will be stored under cover in the bunded area before being removed off-site by a licenced contractor. HGVs will not be routinely parked on the site for extended periods when not in use.

The proposal specifies the particular categories of waste that will be accepted at the site, as summarised in Section 2.2, and as set out in full in the Description of Development in Section 4 of the EIAR. This part of the proposal includes embedded mitigation. It is stated that only non-hazardous (inert) waste will be accepted, and that strict management controls and a waste acceptance procedure will be implemented to ensure that only appropriate waste materials are accepted at the site. Checks prior to importation will include:

- Pre-determined specifications and agreements with the customer;
- Waste verification checks and audits;
- Completion of Waste Characterisation/ Pre-acceptance Forms;
- Independent analysis and reports;
- Pre-determined process routes and storage areas for the wastes;

- Scheduled dates for receipt;
- Visual checks made by the driver prior to and during loading of materials onto the vehicle;
- Records of pre-acceptance checks will be kept at the site office;
- Assessment and classification of waste types for suitability of processing and end use criteria;
- Loads of waste arriving at the site will be tipped on a dedicated hardstanding area where a site operative will inspect it, with a loading shovel, to ensure that there are no erroneous materials below the surface of the load; if the material is unacceptable, it will be reloaded immediately and the vehicle requested to leave the site;
- A detailed waste acceptance protocol will be put in place and only internal contractors will be used; and,
- All operatives will be given training on the acceptability or otherwise of materials.

Operations at the Application Site will be in accordance with the best practice measures set out in Section 3 of the DoEHLG (2004) Quarries and Ancillary Activities: Guidelines for Planning Authorities. The site manager will be responsible for ensuring the full implementation of specified mitigation measures.

## 6.3 Mitigation to prevent impacts on Designated Areas

As discussed in Section 5, the only potential impacts of the proposal on designated areas are from possible chemical spillages, leakages or leaching. While impacts from such a source are considered unlikely, the mitigation measures described in the preceding section are intended to negate any such impacts.

## 6.4 Mitigation & Compensation Measures for Loss of Habitats

As noted in Section 6.1, the long species-rich area of dry calcareous & neutral grassland (habitat GS1) along the south-west of the site will not be disturbed. This area has a high diversity of plant species, including the relatively rare blue fleabane *Erigeron acer*, and it is important that these be left undisturbed. Much of the existing areas of scrub north of the site entrance will also be retained.

The site restoration plan (MDA 2022, **Appendix 1**) includes the retention of existing scrub along the north and north-east sides of the site, and some areas of natural regenerative woodland. Also included is a native hedgerow along the eastern boundary of the site, and an existing area of exposed sand face will be retained in order to provide a nesting area for sand martins into the future. The quarried area, which currently makes up the majority of the site, will become a species-rich grazing pasture, and the ponds will be left in place as potential habitats for aquatic species such as newts.

Further mitigation concerning breeding habitats for sand martins and newts are discussed in the following sections.

## 6.5 Mitigation to Prevent Impacts on Bats

The only potential impact on bats is the loss of a potential foraging area resulting from the removal of patches of scrub at the northern end of the site. These losses will be temporary, as additional foraging areas, including native woodland and hedgerows, are included in the compensation plan. The plan also includes retention of existing scrub elsewhere on the site. The restoration plan, discussed in **Appendix 1** is expected to have a positive impact on bat species in the long-term.



## 6.6 Mitigation to Prevent Impacts on Birds

Potential impacts on birds could result from disturbance of sand martin nesting sites, or more generally from loss of areas of scrub on the site where other bird species could be nesting.

Sand faces containing sand martin nest holes will not be disturbed during the nesting season (1 March to 31 August). Existing sand faces along the north-western boundary of the site will be left intact during the operational life of the quarry so that nesting sites continue to be available for sand martins in the future. Furthermore, the restoration plan for the site includes the retention of sand faces into the future, after the operational life of the quarry, to ensure the long-term suitability of the site for sand martins.

While some scrub in the north-eastern corner of the site will be lost, the majority will be retained, and the restoration plan includes the long-term retention of scrub as well as new areas of native hedgerows and regenerative woodland, which will be of benefit to nesting and foraging birds at the site.

The existing buildings on the site will be retained, as potential nesting sites for bird species such as swallows.

## 6.7 Mitigation & Compensation Measures for Newts

As the long, shallow trench to the east of the site, where newts were recorded, is well above the water table and susceptible to drying out, mitigation and compensation measures will be applied to ensure the continued suitability of the site for this species.

A suitable new pond will be created in a designated area of the site, shown in **Figure 13**. This will be designed to be of optimal value for breeding newts. Guidance on creating ponds for smooth newts[24] will be followed, resulting in a pond approximately 10 metres x 10 metres (area approximately 75 m²), with gently sloping sides to allow easy access for newts and development of natural marginal vegetation. The pond should be allowed six months 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. 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 holds sufficient water during springtime for breeding newts. There should 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-three newt hibernacula[25] 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.

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) in the year of any proposed works that may affect such ponds, in order 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 newt 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 act[26].

## 6.8 General mitigation to avoid the Spread of Invasive Species

If active rabbit burrows are found during operations at the site, and if these are to be dug out, a licensed pest controller should be appointed to humanely remove any rabbits that are present. An invasive species management plan will be put in place to avoid butterfly bush or winter heliotrope being spread to other sites. This could include, for example, cutting back butterfly bushes before they produce seeds.

[24] 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
[25] Guidance available from RSPB: http://ww2.rspb.org.uk/hfw/factsheets/HFW22.pdf
[26] Further information at: https://www.npws.ie/licencesandconsents/education-and-science/capture-kill-for-scientific-purposes

## 6.9 Site Restoration



The restoration plan for the site (**Appendix 1**) is focused on retaining habitats and biodiversity that are already present on the site, and creating a new species-rich meadow over the proposed working area of the quarry. This will provide some compensation for habitats lost at the site, as discussed in Section 5.

The working area of the quarry will be replaced by a traditional grazing pasture with a species-rich sward. This will include a combination of grasses, along with red clover and white clover. Native hedgerows will be planted and established along the north-east side and west sides of the site. The hedgerows will include a variety of native woody species – hawthorn, hazel, blackthorn, holly, goat willow and Guelder rose. Sand faces will be retained for use by sand martin colonies, to ensure that the site continues to provide a summer breeding area for this species. Existing scrub to the west, south and east of the site will be retained, providing foraging areas for mammals such as bats, foxes and badgers, and nesting sites for a range of native birds. The restoration plan also includes wet meadows with ponds, to benefit amphibians such as smooth newts and frogs. The plan stipulates that no herbicides or pesticides will be used.

***Figure 13: Location of additional newt pond proposed as a compensation and enhancement measure***

## 6.10 Residual Impacts on Important Ecological Features

The embedded mitigation, in combination with the additional mitigation and compensation measures described in Sections 6.2 to 6.7, will ensure that there are no adverse residual effects on ecological receptors. Additional compensation measures, as described in the site restoration plan **(Appendix 1**) with provide long-term positive impacts at a local level. A summary of potential impacts, proposed mitigation and compensation, and residual effects is given in **Table 16**.

***Table 16: Summary of potential impacts, potential effects, mitigation undertaken and residual effects***

| Important Ecological Features | Evaluation | Potential Impact | Potential Effect | Potential Significance | Mitigation / Compensation | Significance of Residual Effect |
|---|---|---|---|---|---|---|
| Lough Corrib SAC [000297] | International | Pollution due to hydrocarbons or other chemicals entering groundwater or watercourses connecting to the designated site<br>Pollution due to leaching of any hazardous materials in imported C&DW | Adverse impact on species either sensitive to pollution (or relying on prey that are sensitive to pollution) including freshwater pearl mussel, white-clawed crayfish, sea lamprey, brook lamprey and salmon, with possible declines in these species | Significant at an international level | A suite of mitigation measures, described in Section 6.2, will be implemented, including a bunded area for storage of chemicals, regular inspections, spill kits, drip trays, absorbent mats, off-site fuelling for HGVs, and a strict protocol for the handling and storage of C&DW. | Not significant |
| Lough Corrib SPA [004042] | International | Pollution due to hydrocarbons or other chemicals entering groundwater or watercourses connecting to the designated site<br>Pollution due to leaching of any hazardous materials in imported C&DW | Adverse impact on thirteen species of water birds that are sensitive to pollution and that rely on prey that are sensitive to pollution, with possible declines in these bird species | Significant at an international level | A suite of mitigation measures, described in Section 6.2, will be implemented, including a bunded area for storage of chemicals, regular inspections, spill kits, drip trays, absorbent mats, off-site fuelling for HGVs, and a strict protocol for the handling and storage of C&DW. | Not significant |
| Habitat GS1 - Dry Calcareous & Neutral Grassland | Local (Higher) | Loss of habitat - a small area of dry calcareous & neutral grassland will be lost at the north-east corner of the site. | Loss of plant biodiversity | Significant at a local level | The long species-rich area of this habitat along the south-west of the site will not be disturbed. | Not significant |
| Habitat FL8 - Other artificial lakes and ponds | Local (Higher) | Loss of habitat and possible indirect effects from hydrocarbon leakage | Reduction in pond habitat, and possible damage to pond biodiversity, with possible local declines in aquatic species | Significant at a local level | An additional pond will be constructed as compensation. The restoration plan includes the long-term retention of pools on the site. Mitigation to prevent damage from chemical leaks and spillages will be applied, including a bunded | Not significant |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | area for storage of chemicals, regular inspections, spill kits, drip trays, absorbent mats, and off-site fuelling for HGVs. | |
| Habitat ED1 - Exposed Sand, Gravel or Till | Local (Higher) | Loss of habitat | Loss of breeding area for sand martins, with reduced breeding success and possible declines in these species | Significant at a local level | The restoration plan includes the long-term retention of areas of this habitat | Not significant |
| Habitat WS1 - Scrub | Local (Higher) | Loss of habitat | Loss of foraging and nesting areas, with reduced breeding and foraging opportunities for birds and bats and possible local declines in these species | Significant at a local level | The restoration plan includes compensation areas and long-term retention of this habitat | Not significant |
| Breeding birds – Amber listed | Local (Higher) | Loss of scrub habitat for breeding sites and indirect impacts e.g. disturbance | Loss of nesting areas, with reduced breeding opportunities for birds. Disturbance through noise, reducing foraging and breeding success. | Significant at a local level | The restoration plan includes compensation areas and long-term retention of scrub, ensuring suitability for breeding birds in future.<br>The Noise & Vibration report contains mitigation to reduce disturbance from these factors. | Not significant |
| Bat commuting | Local (Higher) | Loss of small area of grassland/scrub mosaic to the north of the site | Disconnection of possible commuting lines and possible local declines of bats | Significant at a local level | The restoration plan includes new native hedges, regenerative woodland areas and retention of scrub, which will enhance potential bat commuting opportunities | Not significant |
| Bat foraging | Local (Higher) | Loss of small area of grassland/scrub mosaic to the north of the site | Loss of potential foraging area, with possibility of reduced foraging success and possible local declines in bats | Significant at a local level | The restoration plan includes new native hedges, regenerative woodland areas, retention of scrub and ponds, which will increase and enhance bat foraging opportunities | Not significant |
| Smooth newt | Local (Higher) | Loss of breeding habitat, possible indirect impact from hydrocarbon leakage | Reduced breeding success, possible death due to toxic effects of hydrocarbons | Significant at a local level | An additional pond will be constructed as compensation. The restoration plan includes the long-term retention of pools on the site. Mitigation to prevent damage | Not significant |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | from chemical leaks and spillages will be applied, including a bunded area for storage of chemicals, regular inspections, spill kits, drip trays, absorbent mats, and off-site fuelling for HGVs. | |
| Invasive Species | Local (Higher) | Spreading of invasive species to other sites | Increased range and distribution of invasive species, with potential for outcompeting native species | Significant at a local level | An invasive species management plan will be put in place to avoid butterfly bush or winter heliotrope being spread to other sites. If active rabbit burrows are found during operations at the site, and if these are to be dug out, a licensed pest controller should be appointed to humanely remove any rabbits that are present. | Not significant |

# 7. CONCLUSIONS



This Ecological Impact Assessment has established the ecological baseline at the Application Site at Cloonascragh, County Galway, 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 species

Without mitigation, the proposal has the potential for significant adverse impacts on ecological features ranging from those of local to international 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, and in other sections of the EIAR, will mean that, in view of best scientific knowledge, the proposed development at Cloonascragh, Co. Galway, will not result in significant effects on ecological receptors.

# 8. REFERENCES & GUIDANCE



BCL Consultant Hydrogeologists (2022) Cloonascragh Sand and Gravel Pit Tuam, Co. Galway - Environmental Impact Assessment Report for Mineral Extraction; Hydrogeological and Hydrological Impact Assessment.

Bibby, C.J., Burgess, N.D. et Hill, D.A. (2000) *Bird Census Techniques*. Academic Press, London, 2nd edition.

CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine.* September 2018. Available at: https://www.cieem.net/data/files/Guidelines_for_Ecological_Impact_Assessment_in_the_UK_and_Ireland_2018.pdf

Collins, J. (ed,) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). The Bat Conservation Trust, London.

Department of Culture, Heritage & the Gaeltacht (2017) National Biodiversity Action Plan 2017 – 2021.

Department of Environment, Heritage and Local Government (2010). Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities.

Department of Housing, Local Government and Heritage (2018) River Basin Management Plan for Ireland 2018 – 2021.

Environmental Protection Agency (EPA) Mapping Tool, available at: https://gis.epa.ie/EPAMaps/

Environmental Protection Agency (EPA) (2017). Revised Guidelines on the information to be contained in Environmental Impact Statements. Draft report August 2017. Environmental Protection Agency, Dublin.

EPA Envision Mapping Tool. Available online at: https://gis.epa.ie/EPAMaps/.

European Commission (2021a) 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. Available at: EN.pdf (europa.eu)

European Commission (2021b) 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. Available at: EN annex.pdf (europa.eu)

European Commission (2021c) Commission Notice Guidance document on the strict protection of animal species of Community interest under the Habitats Directive. Available at: Publications Office (europa.eu)

European Community Habitats Directive (92/43/EEC) – The Habitats Directive.

European Communities (Natural Habitats) Regulations 1997.

Fossitt, J. (2000) A guide to habitats in Ireland. The Heritage Council.

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.

Galway County Council - Galway County Development Plan 2015-2021.

Geological Survey Ireland (GSI) (2021) Groundwater Data View Website. Available at: https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef

Gilbert, G., Gibbons, D.W., Evans, J. (1998) Bird Monitoring Methods – a manual of techniques for key UK species. RSPB.

Gilbert G, Stanbury A and Lewis L (2021) Birds of Conservation Concern in Ireland 2020–2026. Irish Birds 43: 1—22.

Lundy, M.G., Aughney, T., Montgomery, W.I., Roche, N., (2011) *Landscape conservation for Irish bats & species specific roosting characteristics*. Bat Conservation Ireland.

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. Available at: https://www.npws.ie/sites/default/files/publications/pdf/IWM134.pdf

National Planning Application Database, available at: https://housinggovie.maps.arcgis.com/apps/webappviewer/index.html?id=9cf2a09799d74d8e9316a3d3a4d3a8de

National Groundwater Vulnerability Ireland, Available at: https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef

National Roads Authority (2009) Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes. Available at: https://www.tii.ie/technical-services/environment/planning/Ecological-Surveying-Techniques-for-Protected-Flora-and-Fauna-during-the-Planning-of-National-Road-Schemes.pdf

NPWS (2021) Conservation objectives for Lough Corrib SPA [004042]. Generic Version 8.0. Department of Housing, Local Government and Heritage.Available at: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004042.pdf

NPWS (2020a) Natura 2000 form for Lough Corrib SAC [000297]. Department of Housing, Local Government and Heritage. Available at: https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF000297.pdf

NPWS (2020b) Natura 2000 form for Lough Corrib SPA [0004042]. Department of Housing, Local Government and Heritage. Available at: https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF004042.pdf

NPWS (2017) Conservation Objectives: Lough Corrib SAC [000297]. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs. Available at: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000297.pdf

NPWS (2015) Site Synopsis for Lough Corrib SAC [000297]. Department of Housing, Local Government and Heritage. Available at: https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY000297.pdf

NPWS (2014) Site Synopsis for Lough Corrib SPA [0004042]. Department of Housing, Local Government and Heritage. Available at: https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004042.pdf

NPWS Disturbance/Derogation - Licences to Disturb or Interfere with Protected Plant and Animal Species. Available at: https://www.npws.ie/licencesandconsents/disturbance

Office of the Planning Regulator (OPR) (2021) Appropriate Assessment Screening for Development Management. OPR Practice Note PN01. Available at: https://www.opr.ie/wp-content/uploads/2021/03/9729-Office-of-the-Planning-Regulator-Appropriate-Assessment-Screening-booklet-15.pdf

Quarryplan (2021) Cloonascragh Sand and Gravel Pit Description of Development.

SLR Consulting (2013) Surface water and Groundwater Report for Tuam Quarry.

SLR Consulting (2013) Sand & Gravel Pit at Cloonascragh, Tuam, Co. Galway Remedial Environmental Impact Statement

Woodrow (2021) Screening for Appropriate Assessment for Cloonascragh Quarry, Tuam, County Galway.

Wray, S., Wells, D., Long, E. and Mitchell-Jones, T. (2010) *Framework for valuing bats in Ecological Impact Assessment*, CIEEM journal. Edition 70. Pg. 23 – 25. December 2010.

# APPENDICES

## Appendix 1 – Site Restoration Plan (MDA, 2022)