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6.0 BIODIVERSITY

6.1 Introduction

This retrospective assessment presents a summary of ecological features which had the potential to be residually affected by the legacy of extractive works undertaken at Tinneys Quarry, Trentaghmucklagh, St Johnston, Co. Donegal. This rEIAR is to accompany a substitute consent application for the extraction and processing activities that have been carried out to date.

This section of the rEIAR evaluates the importance of the ecological resources past and present and defines the degree of significance of potential impacts resulting from the historic development through until the present day. The report also identifies appropriate mitigation measures and defines residual impacts should they be identified. Particular attention has been paid to species and habitats of ecological importance. These include species and habitats with national and international protection under the Wildlife Acts 1976 to 2018 (as Amended), EU Habitats Directive 92/43/EEC and EU Birds Directive 2009/147/EC.

The full description of the development is provided in Chapter 3 of this EIAR.

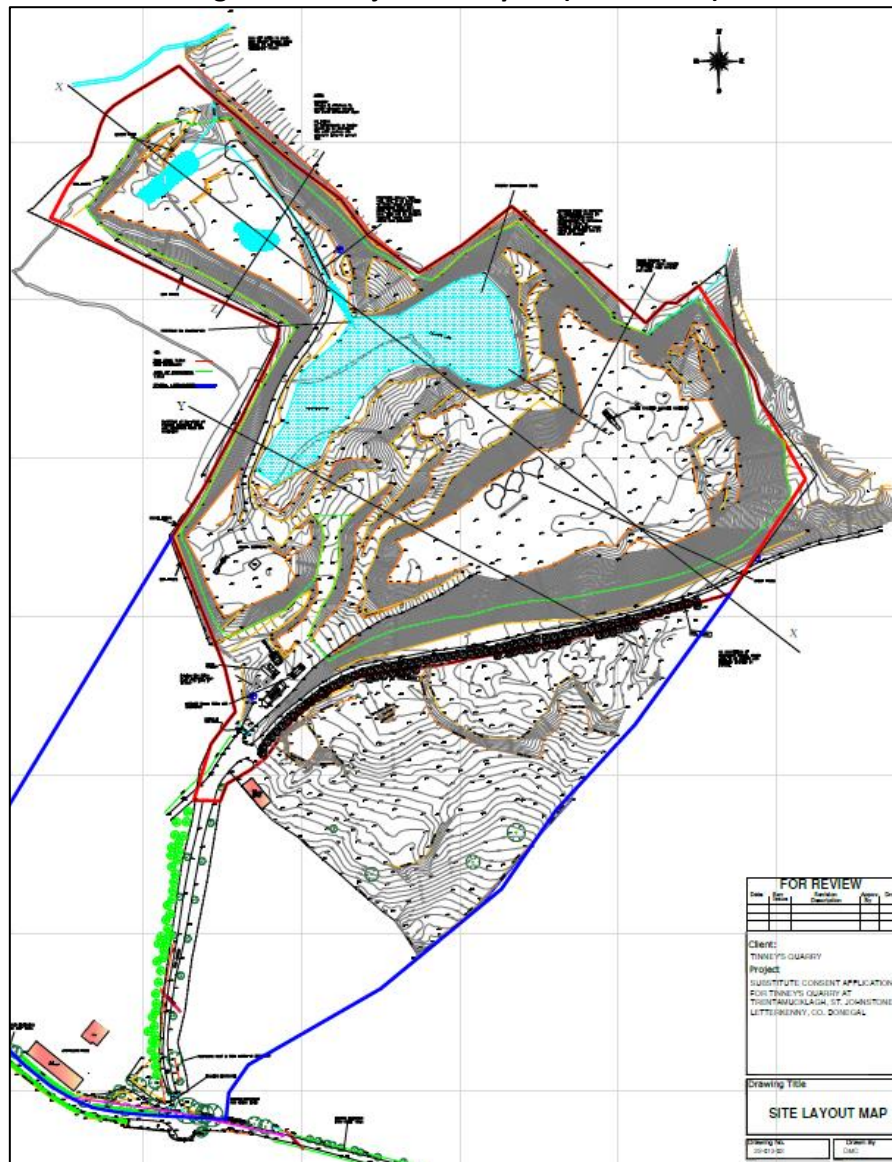
The chapter is structured as follows:

- The Introduction provides a description of the legislation, guidance, and policy context applicable to Biodiversity, Flora and Fauna.
- This is followed by a comprehensive description of the ecological survey and impact assessment methodologies that were followed to inform the robust assessment of likely significant effects on ecological receptors.
- A description of the Baseline Ecological Conditions and Receptor Evaluation is then provided.
- This is followed by an Assessment of Effects which are described regarding each phase of the development. Potential Cumulative effects in combination with other projects are also fully assessed.
- Proposed (remedial) mitigation and best practice measures to avoid, reduce or offset the identified effects are described and discussed. This is followed by an assessment of residual effects taking into consideration the effect of the proposed mitigation and best practice measures.
- The conclusion provides a summary statement on the overall significance of past and predicted effects on Biodiversity, Flora and Fauna.

The following defines terms utilised in this chapter:

- For the purposes of this rEIAR, the red line site as submitted for planning subject to this application for substitute consent is referred to as the subject site (Figure 6.1).
- “Key Ecological Receptor” (KER) is defined as a species or habitat occurring within the zone of influence of the development upon which likely significant effects are anticipated.
- “Zones of Influence” (ZOI) for individual ecological receptors refers to the zone within which potential effects are anticipated. ZOI’s differ depending on the sensitivities of habitats and species and were assigned in accordance with best available guidance and through adoption of the precautionary approach.

Figure 6.1 below shows the current site layout.

Figure 6.1: Subject Site layout (not to scale)

6.2 Requirements for Ecological Impact Assessment

National and European legislation and Policy set out the requirement for the ecological impact assessment of development.

6.2.1 National Legislation

The Wildlife Acts (1976/2000) provides legal protection to various species from anthropogenic interference with licensing providing the only derogation. The 2000 amendment set out the designation of NHAs and pNHAs. This designation is to provide protection to species and habitats found therein. pNHAs were proposed in 1995 but have yet to be statutorily approved. However, the NPWS considers pNHAs of significant value for flora and fauna. NHAs, pNHAs and the species therein are considered Key Ecological Receptors in this assessment.

Rare plant species are afforded protection from cutting, picking and damage and their habitats are protected from alteration, interference, and damage under The Flora Protection Order 1999. Any rare plant species listed are considered Key Ecological Receptors in this assessment.

6.2.2 National Policy

The United Nations Convention on Biological Diversity (CBD) places an obligation on U.N member states to develop national strategies and action plans for the conservation and sustainable use of biodiversity. Out of this requirement the Irish National Biodiversity Action Plan was formed. The

Current National Biodiversity Action Plan 2017-2021 expands on the targets set out in the previous iteration. The principle aim of this plan is to conserve biological diversity in Ireland. The plan highlights the following measures as significant in the context of the principal objective of mainstreaming biodiversity in decision making across all sectors of the economy:

- “Incorporate into legislation the requirement for consideration of impacts on biodiversity to ensure that conservation and sustainable use of biodiversity are taken into account in all relevant plans and programs and relevant new legislation.
- Public and Private Sector relevant policies will use best practice in SEA, AA and other assessment tools to ensure proper consideration of biodiversity in policies and plans; All Public Authorities and private sector bodies move towards no net loss of biodiversity through strategies, planning, mitigation measures, appropriate offsetting and/or investment in Blue-Green infrastructure.
- Strengthen ecological expertise in local authorities and relevant Government Departments and agencies.
- Local Authorities will review and update their Biodiversity and Heritage Action Plans.
- Local Authorities will review and update their Development Plans and policies to include policies and objectives for the protection and restoration of biodiversity.
- Develop a Green Infrastructure at local, regional, and national levels and promote the use of nature-based solutions for the delivery of a coherent and integrated network.
- Continue to produce guidance on the protection of biodiversity in designated areas, marine and the wider countryside for Local Authorities and relevant sectors.
- Integrate Natura 2000 and Biodiversity financial expenditure tracking into Government Programmes internal paying agency management procedures including linkage to the Prioritised Action Framework and this NBAP.
- Develop a Natural Capital Asset Register and national natural capital accounts by 2020 and integrate these accounts into economic policy and decision-making.
- Initiate natural capital accounting through sectoral and small-scale pilot studies, including the integration of environmental and economic statistics using the framework of the UN System of Experimental-Ecosystem Accounting (SEEA).
- Establish a national Business and Biodiversity Platform under the CBD's Global Business Partnership; Ensure Origin Green produces tangible benefits for biodiversity with increased emphasis on conservation and restoration of biodiversity.
- Implement actions from Ireland's Biodiversity Climate Change Sectoral Adaptation Plan.
- Identify and take measures to minimise the impact of incentives and subsidies on biodiversity loss, and develop positive incentive measures, where necessary, to assist the conservation of biodiversity.
- Establish and implement mechanisms for the payments of ecosystem services including carbon stocks, to generate increased revenue for biodiversity conservation and restoration.
- Develop and implement a National Biodiversity Finance Plan to set out in detail how the actions and targets of this NBAP will be delivered from 2017 and beyond; and Monitor the implementation of the Plan.

These measures and the content of the National Biodiversity Action plan 2017-2021 are considered throughout this assessment.

6.2.3 European Legislation

The Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna) formed a basis for the designation of Special Areas of Conservation (SAC's). Similarly, Special Protection Areas are legislated for under the Birds Directive (Council Directive 79/409/EEC on the Conservation of Wild Birds). Collectively, SACs and SPAs are referred to as Natura 2000 sites. In general terms, they are of exceptional importance in terms of rare, endangered or vulnerable habitats and species within the European Community. Under Article 6(3) of the Habitats Directive an Appropriate

Assessment must be undertaken for any plan or project that is likely to have a significant effect on the conservation objectives of a Natura 2000 site. An Appropriate Assessment is an evaluation of the potential impacts of a plan or project on the conservation objectives of a Natura 2000 site, and the development, where necessary, of mitigation or avoidance measures to preclude negative effects. The main aim of the EU Habitats Directive is to "contribute towards ensuring biodiversity through the conservation of natural habitats of wild fauna and flora in the European territory of the Member States to which the treaty applies". The Directive was originally transposed into Irish law by the European Communities (Natural Habitat) Regulations, S1 94/1997. However, two judgments of the Court of Justice of the EU (CJEU) – notably cases C-418/04 and C-183/05 - found that Ireland had not adequately transposed the two Directives. Therefore, Part 6 of the European Communities (Birds and Natural Habitats) Regulations 2011-2015 is now the relevant part dealing with the protection of flora and fauna since the revoke of the European habitats Regulations of 1997. This consolidates the European Communities (Natural Habitats) Regulations 1997 to 2005 and the European Communities (Birds and Natural Habitats) (Control of Recreational Activities) Regulations 2010, as well as addressing transposition failures identified in CJEU judgments.

Article 6 (3) of the Habitats Directive states that:

"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public".

As such any project likely to have a significant effect, either individually or in combination with other plans or projects, upon the conservation objectives of a Natura 2000 site must undergo an assessment of its implications on relevant Natura 2000 sites.

A separate rNIS has been prepared to examine the potential effects of this development on the Natura 2000 network and to inform appropriate assessment by the consent authority. Furthermore, the species and habitat protected under European legislation are considered key ecological receptors in this assessment.

The EIA Directive (85/337/EEC) is in force since 1985 and applies to a wide range of defined public and private projects, which are defined in Annexes I and II:

- Mandatory EIA: all projects listed in Annex I are considered as having significant effects on the environment and require an EIA (e.g. long-distance railway lines, motorways and express roads, airports with a basic runway length \geq 2100 m, installations for the disposal of hazardous waste, installations for the disposal of non-hazardous waste > 100 tonnes/day, waste water treatment plants > 150.000 p.e.).
- Discretion of Member States (screening): for projects listed in Annex II, the national authorities have to decide whether an EIA is needed. This is done by the "screening procedure", which determines the effects of projects on the basis of thresholds/criteria or a case by case examination. However, the national authorities must take into account the criteria laid down in Annex III. The projects listed in Annex II are in general those not included in Annex I (railways, roads waste disposal installations, wastewater treatment plants), but also other types such as urban development projects, flood-relief works, changes of Annex I and II existing projects)

The EIA Directive of 1985 has been amended three times, in 1997, in 2003 and in 2009:

- Directive 97/11/EC brought the Directive in line with the UN ECE Espoo Convention on EIA in a Transboundary Context. The Directive of 1997 widened the scope of the EIA Directive by increasing the types of projects covered, and the number of projects requiring mandatory

environmental impact assessment (Annex I). It also provided for new screening arrangements, including new screening criteria (at Annex III) for Annex II projects, and established minimum information requirements.

- Directive 2003/35/EC was seeking to align the provisions on public participation with the Aarhus Convention on public participation in decision-making and access to justice in environmental matters.
- Directive 2009/31/EC amended the Annexes I and II of the EIA Directive, by adding projects related to the transport, capture and storage of carbon dioxide (CO₂).

The initial Directive of 1985 and its three amendments have been codified by DIRECTIVE 2011/92/EU of 13 December 2011. Directive 2011/92/EU has been amended in 2014 by DIRECTIVE 2014/52/EU.

6.3 Guidance Documents

Guidance from the National Roads Authority forms the basis of both survey techniques and assessment methodology. The documents 'NRA Guidelines for Assessment of Ecological Impacts of National Road Schemes Rev 2' (NRA, 2009) and 'NRA Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna on National Road Schemes (NRA, 2009)' were initially designed in the context of assessing the development of roads. However, the guidelines follow standardised techniques and are considered good practice in terms of ecological assessment.

Guidance documents that informed this assessment include:

- Chartered Institute of Ecology and Environmental Management (CIEEM) (2019). Guidelines for Ecological Impact Assessment.
- Chartered Institute of Ecological and Environmental Management (CIEEM) (2012). Preliminary Ecological Appraisal.
- Fossitt JA (2000). A Guide to Habitats in Ireland.
- The Heritage Council (2011) Habitat Survey Guidelines: A Standard Methodology for Habitat Survey and Mapping in Ireland.
- Draft Revised guidelines on the information to be contained in Environmental Impact Statements (EPA, 2017).
- Guidelines for Planning Authorities and An Bord Pleanála on Carrying out Environmental Impact Assessment. Department of the Environment, Community and Local Government DoEHLG (2013).
- Guidelines for assessment of Ecological Impacts of National Road Schemes, (NRA, 2009). Environmental Impact Assessment of National Road Schemes – A Practical Guide (NRA, 2009).
- Environmental Assessment and Construction Guidelines (NRA, 2006).
- Advice Notes on Current Practice (in preparation of Environmental Impact Statements) (Environmental Protection Agency (EPA), 2003).
- Guidelines on the information to be contained in Environmental Impact Statements (EPA, 2002).
- European Commission Guidance on the preparation of the Environmental Impact Assessment Report (2017)
- Environmental Protection Agency (EPA) 'Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (August 2017).
- Environmental Protection Agency (EPA) 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (May 2022).

6.4 Statement of Authority

This section of the EIAR has been compiled by Shannen McEwen, Ecologist with Greentrack. Shannen holds a B.Sc. (Hons) Environmental Science with a Diploma in Professional Practice from the University of Ulster. She has been involved in all aspects of Environmental Impact Assessment, Appropriate

Assessment and Ecological Impact Assessment since 2017. Shannen is an Associate Member of the Institution of Environmental Sciences.

6.5 Methodology

Prior to assessing the ecological impact of a development, the environmental baseline must first be described. Baseline ecological conditions were assessed in line with CIEEM (2018) 'Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine'. The baseline was assessed through desk and field survey methodology which are described in the following sections.

6.5.1 Desk Study

The desk study was informed by the following resources

- EPA Map Viewer
- Donegal County Council Map Viewer
- NPWS Map Viewer
- NPWS records
- Inland Fisheries Reports
- National Biodiversity Data Centre records and map viewer
- Geohive.ie

6.5.2 Field Study

Multiple field surveys were carried out as part of this assessment from January – June 2022. The following section describes the surveys carried out, the timing of the surveys and the guidance followed.

6.5.2.1 Site walkover

A multidisciplinary site walkover was carried out on multiple site visits spanning a six-month period from January – June 2022. The purpose of this exercise was to understand the context of the site and act as a 'ground-truthing exercise' to confirm any insights inferred from desk study as to the nature of the site. Annotations were marked on a sample map indicating the approximate location of any significant features noted such as important habitat, plant species or signs of important fauna. Incidental sightings of birds and invasive species were also noted, as relevant. Information collected during site walkovers informed the preceding survey work.

6.5.2.2 Habitat Survey

Following the multidisciplinary site walkovers, a more in-depth Phase 1 habitat survey was conducted on 01/06/2022. All habitats were classified according to Fossitt (2000)¹. The habitat study was conducted to provide an understanding of the ecological baseline of the quarry site. Data gathered from habitat surveys was used to produce a thematic map illustrating the relative position and scale of habitats in the quarry site and surrounding environs. This was compared to the Ordnance Survey Ireland (OSI) maps for the site prior to the existence of the current workings. Following on from this an impact assessment was carried out to establish any impacts of quarrying related activities on habitats, flora and fauna (biodiversity features).

Guidelines from the Heritage Council were followed, and classification were designated according to Fossitt's. However, position and scale of habitats shown are approximate and should be considered only as a broad representation of the study area. Figure 6.3 in Section 6.6.2 shows the habitats within the site boundary.

6.5.2.3 Mammal Surveys

The information gathered from desk study methods in addition to ecological surveys informed the focus of targeted terrestrial fauna surveys. Relevant surveys as detailed below were conducted within the footprint of the development.

¹ J. Fossitt. (2000) A Guide to Habitats in Ireland. The Heritage Council, Dublin

6.5.2.3.1 Badger Survey

A dedicated badger survey was undertaken on 01/06/2022. The survey covered the entire footprint of the development. The survey intended to identify any potential signs of badger such as setts/tracks/latrines. The survey was conducted with respect to NRA guidelines (2009). Results can be found in section 6.6.2.2.1.

6.5.2.3.2 Otter Survey

An otter survey for the site was deemed to be unnecessary after conducting a thorough site walkover due to the lack of supporting habitat onsite. Outflow from the settlement pond/wetland catchment is through a heavily vegetated drainage ditch to the NW of the site. The channel is too narrow and shallow to support the needs of otter. The drainage channel flows into the St Johnston stream which flows to the NW of the quarry. This stream is also too narrow and shallow to support the needs of the otter.

6.5.2.3.3 Other mammals

Any evidence of mammals that were not the subject of dedicated surveys was noted during site walkovers.

6.5.2.3.4 Bat Survey

An old shed is located onsite. This was inspected and was found to contain no potential roosting habitat for bats. Additionally, the site does not contain any mature trees, therefore a bat survey was deemed to be unnecessary due to the absence of any potential roosting habitat.

6.5.2.4 Bird Survey

A series of bird observation reports was conducted over a two month period which covered the entire footprint of the subject site. Lands within, and adjacent to the development boundary were walked in a manner allowing the surveyor to come within 50m of all habitat features. Birds were identified by sight and sound, and general location was recorded. Physical parameters such as weather conditions and the presence of any disturbance factors were also noted. Guidelines from the following were considered:

- CIEEM Bird census and survey techniques, Gregory RD, Gibbons DW and Donald PF (2004)
- CIEEM Guidance for bird surveys in relation to development, Good practice guidance for birds, Keith Ross and James Latham
- Common bird census (CBC) methodology
- British Trust for Ornithology's (BTO's) Survey (WeBS) methodology
- Birdwatch Ireland Countryside Bird Survey manual

Results can be found in Section 6.6.2.2.4

6.5.2.5 Amphibian and Reptile Survey

An amphibian and reptile survey was carried out on 01/06/2022. This involved searching for basking animals on banks, piles of wood or laying out artificial refuges like corrugated iron sheets which were bedded down well into the vegetation. No amphibians or reptiles were noted throughout the survey or throughout the multiple walkovers conducted.

6.5.2.6 Invasive Species Surveys

Throughout the multidisciplinary site walkover, no signs of invasive species were noted. Focus was placed on any third schedule species listed in the European Communities Birds and Natural Habitats Regulations 2011.

6.5.2.7 Field Survey Limitations

There were no limitations/technical difficulties experienced during the survey work undertaken as the whole site was accessible which allowed the site to be thoroughly surveyed during the multiple walkovers conducted.

6.5.3 Impact and Effect Assessment Methodology

This sub section will describe the methodology followed to identify key ecological receptors (KER) and their significance before describing the methodology followed to characterise impacts and effects on identified KERs.

6.5.3.1 Identification of Key Receptors

The culmination of desk/field survey and consultation with relevant bodies informed the identification of Key Ecological Receptors. Target receptors that were found to likely occur with the zone of impact of development were identified. The target receptors included habitats and species that were protected under the following legislation:

- Annexes of the EU Habitats Directive
- Qualifying Interests (QI) of Special Areas of Conservation (SAC)/ Special Protection Areas (SPA) within the likely zone of impact
- Species protected under the Wildlife Acts 1976-2019
- Species protected under the Flora Protection Order 2015

6.5.3.2 Assessing the Importance of Receptors

Ecological evaluation and impact assessment methodologies in the following sections have implemented guidance from the NRA. An outline for this methodology is provided in 'Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009)'. This methodology follows the same modality as the assessment criteria described by CIEEM (2018).

This guidance provides a scale of importance for features in a geographical context. Importance ranges from:

- International/European
- National
- Regional (County)
- Local (High Value)
- Local (Low Value)

Locally Important (lower value) receptors contain habitats and species that are widespread and of low ecological significance and of any importance only in the local area. Internationally Important sites are either designated for conservation as part of the Natura 2000 Network (SAC or SPA) or provide the best examples of habitats or internationally important populations of protected flora and fauna. Specific criteria for assigning each of the other levels of importance are set out in the guidelines and have been followed in this assessment. Where appropriate, the geographic frame of reference set out above was adapted to suit local circumstances. In addition, and where appropriate, the conservation status of habitats and species is considered when determining the significance of ecological receptors.

Ecological receptors considered to be of International, National, Regional or Local (Higher Value) are to be considered KERs provided a pathway for significant effects exist thereon. Ecological receptors of Local importance (Lower Value) are not considered KERs.

6.5.3.3 Characterising impacts and effects on Key Ecological Receptors

Once the Baseline has been established, impact on KERs can be assessed and mitigation/compensation or enhancement measures can be put in place to negate any negative effect. Impacts will be characterised according to CIEEM guidance (2019) in addition to EPA guidance (2022) document 'Guidelines on the information to be contained in environmental impact assessment reports. The following criteria was used to characterise impacts:

- **Magnitude** relates to the quantum of effect, for example the number of individuals affected by an activity. Described in Table 6.1

- **Extent** should also be predicted in a quantified manner and relates to the area over which the effect occurs.
- **Duration** is intended to refer to the time during which the effect is predicted to continue, until recovery or re-instatement.
- **Reversibility** should be addressed by identifying whether an effect is ecologically reversible either spontaneously or through specific action; and,
- **Timing/frequency** of effects in relation to important seasonal and/or life-cycle constraints should be evaluated. Similarly, the frequency with which activities (and associated effects) would take place can be an important determinant of the effect on receptors.

6.5.3.4 Assessing the significance of effect

The ecological significance of effects is described using guidance provided in section 5 of CIEEM guidelines (2019). When assessing ecological impacts, a ‘significant effect’ can be described as an effect that supports or undermines biodiversity conservation objectives for important ecological features. Effects can be considered significant at a variety of geographic scales from international to local.

Any assessment of effect should take account of:

- construction and operational phases.
- direct, indirect, and synergistic effects.
- and those that are temporary, reversible, and irreversible.

The EPA provides the following terminology to describe duration of effects:

- Momentary effects - Effects lasting from seconds to minutes
- Brief effects - Effects lasting less than a day
- Temporary effects - Effects lasting less than a year
- Short-term – 1 to 7 years
- Medium term – 7 to 15 years
- Long term – 15 to 60 years
- Permanent – over 60 years
- Reversible effects - Effects that can be undone, for example through remediation or restoration.

When determining significance, consideration is given to whether:

- Any processes or key characteristics of key ecological receptors will be removed or changed
- There will be an effect on the nature, extent, structure, and function of important ecological features
- There is an effect on the average population size and viability of ecologically important species.
- There is an effect on the conservation status of important ecological habitats and species.

The language suggested by the EPA (2022) to describe the magnitude of effects is outlined in Table 6.1.

Table 6.1 Magnitude of Impacts

Magnitude	Description
No change	No discernible change in the ecology of the affected feature.
Imperceptible effect	An effect capable of measurement but without noticeable consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight effect	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.

Moderate effect	An effect that alters the character of the environment that is consistent with existing and emerging trends.
Significant effect	An effect which, by its character, its magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant effect	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
Profound effect	An effect which obliterates sensitive characteristics

Effects on Key ecological receptors can be of varying quality as described by the EPA (2022) they can be one of the following:

- **Negative** - A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).
- **Neutral** - No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error
- **Positive** - A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).

The following are key considerations when determining significance:

- Integrity
- Conservation Status

Integrity refers to the essential unity of a site in terms of its ecological structure and function. NRA (2009) describes integrity as “the coherence of ecological structure and function, across the entirety of a site, that enables it to sustain all of the ecological resources for which it has been valued. Impacts resulting in adverse changes to those ecological structures and functions would be significant.”

Conservation Status

An impact on the conservation status of a habitat or species is considered significant if it will result in a change in conservation status. According to CIEEM (2019) Guidelines, the definition for conservation status in relation to habitats and species are as follows:

- Habitats – conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure, and functions as well as its distribution and its typical species within a given geographical area
- Species – conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area.

As defined in the EU Habitats Directive 92/43/EEC, the conservation of a habitat is favourable when:

- Its natural range, and areas it covers within that range, are stable or increasing
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future
- The conservation status of its typical species is favourable.
- The conservation of a species is favourable when:
 - Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats
 - The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future
 - There is and will probably continue to be, a sufficiently large habitat to maintain its population on a long-term basis.

According to the NRA/CIEEM methodologies, if it is determined that the integrity and/or conservation status of an ecological feature will be impacted on, then the level of significance of that impact is

related to the geographical scale at which the impact will occur (i.e., local, county, national, international).

6.5.3.5 Incorporating Mitigation

Section 6.6 of this rEIAR assesses the potential effects of the existing development to ensure that all effects on sensitive ecological receptors are adequately addressed. Where significant effects on sensitive ecological receptors are predicted, mitigation is incorporated into the project design or layout to address such impacts. The implemented mitigation measures avoid or reduce or offset potential significant residual effects, post mitigation. The primary mitigation employed should be mitigation by avoidance.

6.6 Establishing the Baseline

The following sections provide the results from desk and field studies and describe the baseline ecological conditions at the quarry site.

6.6.1 Desk Study

This section describes the results of review of available public information including:

- EPA Map Viewer
- Donegal County Council Map Viewer
- NPWS Map Viewer
- NPWS records
- Inland Fisheries Reports
- National Biodiversity Data Centre records and map viewer
- Geohive.ie
- A collection of relevant reports and records

6.6.1.1 Designated Sites

The impacts of the existing development on European sites are examined in the accompanying remedial Natura Impact Statement (rNIS). As per EPA guidance (draft 2017 and May 2022) this biodiversity chapter will not repeat the information provided in the rNIS but instead will incorporate the key findings provided in same.

The rNIS identified the following Natura 2000 sites that could have been susceptible to threat from the development in the absence of mitigation:

- **River Finn SAC Site Code 002301**
- **River Foyle and Tributaries SAC Site Code UK0030320**

Several nationally designated sites occur within 15km of the subject site. These include Proposed Natural Heritage Areas (pNHAs). No designated Natural Heritage Areas (NHAs) were noted within the 15km radius. Table 6.2 provides proximal Nationally Designated Sites and a preliminary impact determination for each.

Table 6.2 Impact Determination for Nationally Designated Sites.

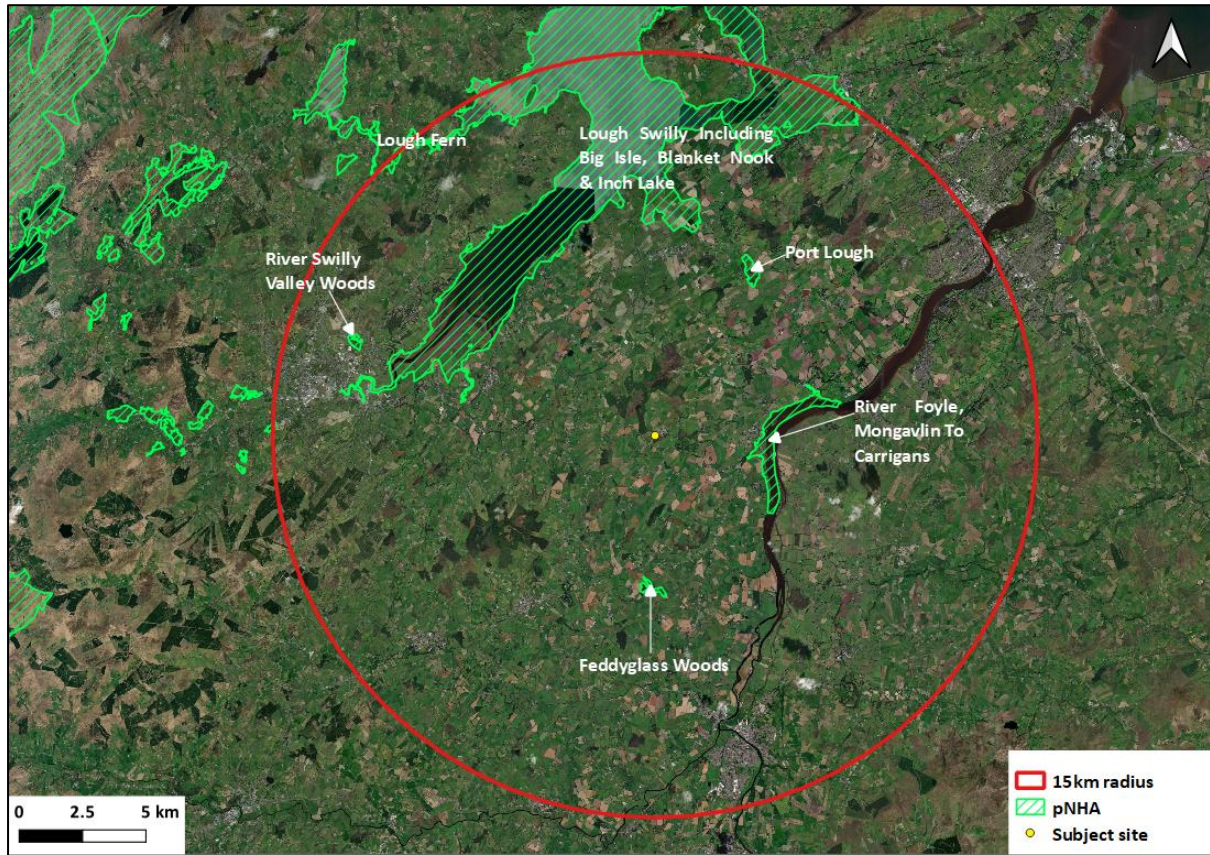
Designated Site	Minimum Distance from Existing Development	Impact Determination
pNHAs		
<i>Feddyglass Woods</i>	5.61km S	No direct avenue of connectivity exists to these nationally designated sites. Therefore, no avenue for impacts on these receptors exists and no further assessment is required
<i>River Foyle, Mongavlin to Carrigans</i>	3.81km E	A source-pathway-receptor link to this pNHA exists through runoff from the quarry site entering the St. Johnston stream and flowing on to the River Foyle. In the absence of mitigation, the development has had the potential to cause deterioration in surface water quality during the construction, operational and decommissioning phases, potentially affecting downstream aquatic receptors. This pNHA is therefore within the likely zone of impact, and further assessment was deemed to be required and has been carried out as part of the accompanying rNIS.
<i>River Swilly Valley Woods</i>	14.97km NW	No direct avenue of connectivity exists to these nationally designated sites. Therefore, no avenue for impacts on these receptors exists and no further assessment is required.
<i>Lough Fern</i>	14.13km NW	
<i>Port Lough</i>	7.02km NE	
<i>Lough Swilly Including Big Isle, Blanket Nook & Inch Lake</i>	7.55km NW	

The following nationally designated sites have been identified as potentially susceptible to impact from the existing development:

- River Foyle, Mongavlin to Carrigans pNHA

As this site forms part of a designated Natura 2000 site (River Finn SAC), impacts from the development were jointly assessed in the accompanying rNIS. Figure 6.2 below shows the subject site in relation to pNHA sites within a 15km radius.

Figure 6.2: Nationally designated sites proximal to the subject site



CYAL50244901 © Ordnance Survey Ireland/Government of Ireland

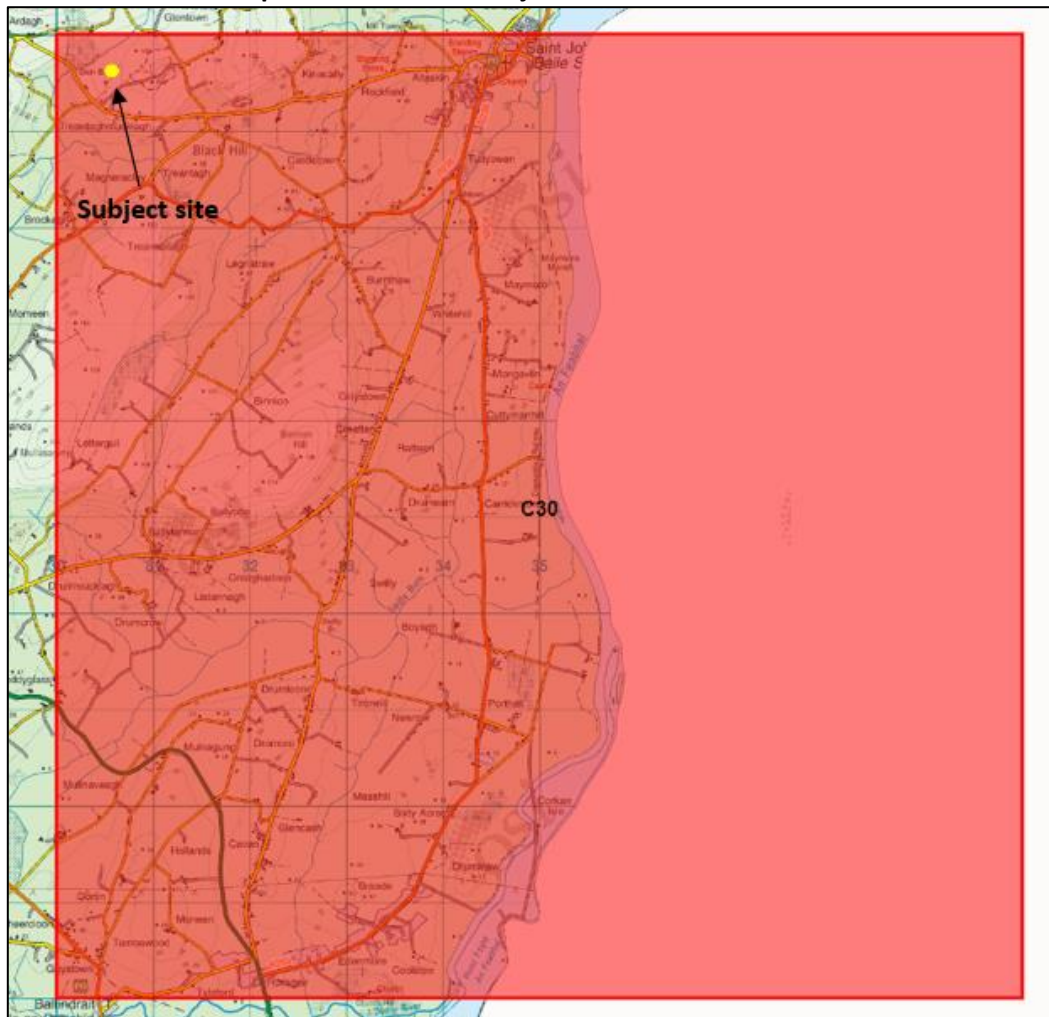
6.6.1.2 Flora and Fauna records and Implications for Field Study

6.6.1.2.1 Mammals

Data from the National Biodiversity Data Centre was used for this desk study. Mammal observation records from Hectad. A Hectad is a unit of land area, 10km x 10km. Hectade C30², containing the subject site, and adjacent Hectads of C20, C21 and C31 were searched to establish a more comprehensive picture of the landscape and supporting habitat for mammal species (excluding bats). Map 6.1 shows the location of subject site within Hectad C30.

² National Biodiversity Data Centre - <https://maps.biodiversityireland.ie/Map>

Map 6.1: Location of subject site within Hectad C30



CYAL50244901 © Ordnance Survey Ireland/Government of Ireland

Mammals are important members of food chains and food webs, as grazers and as predators. Mammals are typically important for maintaining services and functions associated with sustaining a balanced ecosystem including engineering aspects of their environment, seed dispersal, and maintaining balance in their communities.

Table 6.3 provides details of mammal records proximal to the quarry site. Data was accessed through the National Biodiversity Data Centre³. The dataset accessed was the Atlas of Mammals in Ireland 2010-2015 and Mammals of Ireland 2016-2025.

Table 6.3: Mammal Records

Species Name	Legislative Status	Record Count	Date of Last Record
Hectad C30			
<i>American mink (Mustela vison)</i>		3	16/06/2012
<i>Grey squirrel (Sciurus carolinensis)</i>		4	13/01/2015
<i>Eurasian badger (Meles meles)</i>	Wildlife Acts	38	31/12/2015
<i>Red Squirrel (Sciurus vulgaris)</i>	Wildlife Acts	3	31/12/2012
<i>Otter (Lutra lutra)</i>	Annex II Habitats Directive, Wildlife acts	4	02/02/2012

³National Biodiversity Data Centre - <https://maps.biodiversityireland.ie/Dataset>

European Rabbit (<i>Oryctolagus cuniculus</i>)		19	09/03/2007
Irish hare (<i>Lepus timidus hibernicus</i>)		7	20/05/2009
Irish stoat (<i>Mustela erminea Hibernica</i>)		2	03/03/2000
Red fox (<i>Vulpes vulpes</i>)		6	31/12/2008
Sika Deer (<i>Cervus nippon</i>)		1	31/12/2008
West European hedgehog (<i>Erinaceus europaeus</i>)	Wildlife acts	1	11/10/2014
Hectad C20			
Eurasian badger (<i>Meles meles</i>)	Wildlife Acts	35	31/12/2013
Otter (<i>Lutra lutra</i>)	Annex II Habitats Directive, Wildlife acts	2	12/01/2010
Irish hare (<i>Lepus timidus hibernicus</i>)		1	24/03/2001
Irish stoat (<i>Mustela erminea Hibernica</i>)		2	08/07/2003
Red deer (<i>Cervus elaphus</i>)	Wildlife Acts	1	22/06/2016
Sika Deer (<i>Cervus nippon</i>)		1	31/12/2008
Red fox (<i>Vulpes vulpes</i>)		1	28/05/1990
West European hedgehog (<i>Erinaceus europaeus</i>)	Wildlife acts	2	30/03/2017
Eurasian pygmy shrew (<i>Sorex minutis</i>)	Wildlife Acts	2	07/07/2013
American mink (<i>Mustela vison</i>)		2	01/04/2006
Grey squirrel (<i>Sciurus carolinensis</i>)		5	27/03/2019
European Rabbit (<i>Oryctolagus cuniculus</i>)		6	11/10/2014
Red Squirrel (<i>Sciurus vulgaris</i>)	Wildlife Acts	3	18/08/2017
Common Seal (<i>Phoca vitulina</i>)	Annex II and V Habitats Directive, Wildlife acts	1	22/03/1994
Hectad C21			
American mink (<i>Mustela vison</i>)		2	31/08/2007
Brown Hare (<i>Lepus europaeus</i>)		1	28/12/1976
Brown Rat (<i>Rattus norvegicus</i>)		1	30/06/2009
Grey squirrel (<i>Sciurus carolinensis</i>)		1	31/12/2012
Eurasian badger (<i>Meles meles</i>)	Wildlife Acts	50	29/04/2018
Eurasian pygmy shrew (<i>Sorex minutis</i>)	Wildlife Acts	2	02/12/2016
Otter (<i>Lutra lutra</i>)	Annex II Habitats Directive, Wildlife Acts	9	31/05/2010
European Rabbit (<i>Oryctolagus cuniculus</i>)		2	30/08/2014
Irish hare (<i>Lepus timidus hibernicus</i>)		3	08/02/2015
Irish stoat (<i>Mustela erminea Hibernica</i>)		2	30/08/2014
Pine Marten (<i>Martes martes</i>)	Annex V Habitats Directive, Wildlife Acts		

Red fox (<i>Vulpes vulpes</i>)		5	28/02/2014
West European hedgehog (<i>Erinaceus europaeus</i>)	Wildlife Acts	7	24/04/2021
Wood Mouse (<i>Apodemus sylvaticus</i>)		1	30/09/2009
Hectad C31			
American mink (<i>Mustela vison</i>)		1	20/06/2021
Brown Hare (<i>Lepus europaeus</i>)		1	26/12/1977
Grey squirrel (<i>Sciurus carolinensis</i>)		3	06/07/2021
Eurasian badger (<i>Meles meles</i>)	Wildlife Acts	58	31/12/2016
Red Squirrel (<i>Sciurus vulgaris</i>)	Wildlife Acts	7	03/04/2014
Otter (<i>Lutra lutra</i>)	Annex II Habitats Directive, Wildlife Acts	17	24/02/2015
European Rabbit (<i>Oryctolagus cuniculus</i>)		6	20/08/2013
Irish hare (<i>Lepus timidus hibernicus</i>)		8	28/09/2015
Irish stoat (<i>Mustela erminea Hibernica</i>)		2	25/07/2021
Red deer (<i>Cervus elaphus</i>)	Wildlife Acts	1	03/12/2012
Red fox (<i>Vulpes vulpes</i>)		5	06/07/2021
Sika Deer (<i>Cervus nippon</i>)		2	21/09/2015
West European hedgehog (<i>Erinaceus europaeus</i>)	Wildlife Acts	13	26/05/2021
Wood Mouse (<i>Apodemus sylvaticus</i>)		1	23/08/2020

Desk research indicated historical mammal activity in the Hectad containing the subject site. Moreover, desk research informed that further investigation of mammal activity within the subject site was required.

6.6.1.2.2 Bats

Records from Hectad C30 (site of the existing development) and the adjacent Hectads of C20, C21 and C31 were searched to establish a more comprehensive picture of the landscape and supporting habitat for bat species. Table 6.4 presents data of bat records in proximal Hectads.

Table 6.4: Bat Records

Species Name	Count	Date of Last Record
Hectad C30		
Common Pipistrelle (<i>Pipistrellus pipistrellus sensu stricto</i>)	1	03/10/1996
Daubertons bat (<i>Myotis daubentonii</i>)	1	17/09/2009
Lesser noctule (<i>Nyctalus leislerlei</i>)	2	17/09/2009
Soprano pipistrelle (<i>Pipistrellus pygmaeus</i>)	5	27/09/2009
Hectad C20		
Daubertons bat (<i>Myotis daubentonii</i>)	23	19/08/2008
Lesser noctule (<i>Nyctalus leislerlei</i>)	2	26/06/2009
Soprano pipistrelle (<i>Pipistrellus pygmaeus</i>)	5	10/08/2014
Brown long eared bat (<i>Plecotus auratus</i>)	1	26/06/2009
Pipistrelle bat (<i>Pipistrellus pipistrellus</i>)	1	26/06/2009
Hectad C21		
Daubertons bat (<i>Myotis daubentonii</i>)	1	17/09/2009

Lesser noctule (<i>Nyctalus leisleri</i>)	1	17/09/2009
Soprano pipistrelle (<i>Pipistrellus pygmaeus</i>)	1	17/09/2009
Hectad C31		
Common Pipistrelle (<i>Pipistrellus pipistrellus sensu stricto</i>)	2	27/09/2009
Daubertons bat (<i>Myotis daubentonii</i>)	5	04/09/2010
Soprano pipistrelle (<i>Pipistrellus pygmaeus</i>)	3	27/09/2009

The data presented in table 6.5 is not definitive. A dedicated survey has not been carried out in recent years. Hectad C30 (Quarry Site) has an all-Bat Suitability index of 17.89. This index was accessed through the National Biodiversity Data Centre and is calculated based on research by Lundy et al. (2011)⁴. The index ranges on a scale from 0 to 59 depending on the suitability of the habitats and resources available. A more detailed breakdown per species is presented in Table 6.5.

Table 6.5: Breakdown of All Bats Suitability Index by Species

	C30	C20	C21	C31
All Bats	17.89	20.78	16.67	16.67
Soprano pipistrelle	29	37	28	28
Brown long-eared bat	12	18	11	11
Common pipistrelle	28	33	25	25
Lesser horseshoe	0	0	0	0
Leislars bat	23	31	23	23
Whiskered bat	13	13	13	13
Daubertons bat	13	20	11	11
Nathusius pipistrelle	8	2	6	6
Natters bat	33	33	33	33

This table has been created using data sourced from the National bat database of Ireland and Irelands BioBlitz by the National Biodiversity data centre.

As there are no buildings with potential roosting habitat (old shed does not contain any potential habitat) within the site nor any mature trees, a bat survey was deemed to be unnecessary due to the absence of any potential roosting habitat.

6.6.1.2.4 Birds

There are no SPA's within the vicinity of the quarry (the nearest is Lough Swilly SPA which is located c. 7.47km NW from the subject site). A search for avian records in Hectad C30 was conducted using a combination of data from the National Biodiversity Data Centre and the Bird Atlas of Ireland 2007-2011. The Bird Atlas of Ireland 2007-2011 collates data from the survey of bird distribution, in summer and winter, over the four-year period between 2007 and 2011. The survey work was carried out by Bird Watch Ireland. A total of 100 avian species have been recorded in this area. A series of bird observation reports were conducted over a two month period which covered the entire footprint of the subject site. Results are attached as Appendix I. Records of bird species in Hectad C30 are provided in Table 6.6 below.

Table 6.6: National Biodiversity Data Centre and Bird Atlas of Ireland records in Hectad C30

Species Name	Scientific Name
Barn Owl	<i>Tyto alba</i>
Barn Swallow	<i>Hirundo rustica</i>

⁴ Lundy, M.G., Aughney, T., Montgomery, W.I., & Roche, N., (2011) Landscape conservation for Irish bats & species-specific roosting characteristics. Bat Conservation Ireland.

Species Name	Scientific Name
Black-billed Magpie	<i>Pica pica</i>
Blackcap	<i>Sylvia atricapilla</i>
Black-headed Gull	<i>Larus ridibundus</i>
Blue Tit	<i>Cyanistes caeruleus</i>
Brambling	<i>Fringilla montifringilla</i>
Cattle Egret	<i>Bubulcus ibis</i>
Chaffinch	<i>Fringilla coelebs</i>
Coal Tit	<i>Periparus ater</i>
Common Blackbird	<i>Turdus merula</i>
Common Bullfinch	<i>Pyrrhula pyrrhula</i>
Common Buzzard	<i>Buteo buteo</i>
Common Chiffchaff	<i>Phylloscopus collybita</i>
Common Coot	<i>Fulica atra</i>
Common Cuckoo	<i>Cuculus canorus</i>
Common Goldeneye	<i>Bucephala clangula</i>
Common Grasshopper Warbler	<i>Locustella naevia</i>
Common Kestrel	<i>Falco tinnunculus</i>
Common Kingfisher	<i>Alcedo atthis</i>
Common Linnet	<i>Carduelis cannabina</i>
Common Moorhen	<i>Gallinula chloropus</i>
Common Pheasant	<i>Phasianus colchicus</i>
Common Raven	<i>Corvus corax</i>
Common Redshank	<i>Tringa totanus</i>
Common Shelduck	<i>Tadorna tadorna</i>
Common Snipe	<i>Gallinago gallinago</i>
Common Starling	<i>Sturnus vulgaris</i>
Common Swift	<i>Apus apus</i>
Common Whitethroat	<i>Sylvia communis</i>
Common Wood Pigeon	<i>Columba palumbus</i>
Corncrake	<i>Crex crex</i>
Eurasian Collared Dove	<i>Streptopelia decaocto</i>
Eurasian Curlew	<i>Numenius arquata</i>
Eurasian Jackdaw	<i>Corvus monedula</i>
Eurasian Siskin	<i>Carduelis spinus</i>
Eurasian Sparrowhawk	<i>Accipiter nisus</i>
Eurasian Tree Sparrow	<i>Passer montanus</i>
Eurasian Treecreeper	<i>Certhia familiaris</i>
Eurasian Wigeon	<i>Anas penelope</i>
Eurasian Woodcock	<i>Scolopax rusticola</i>
European Goldfinch	<i>Carduelis carduelis</i>
European Greenfinch	<i>Carduelis chloris</i>
European Robin	<i>Erithacus rubecula</i>
Fieldfare	<i>Turdus pilaris</i>
Goldcrest	<i>Regulus regulus</i>
Great Black-backed Gull	<i>Larus marinus</i>
Great Cormorant	<i>Phalacrocorax carbo</i>
Great Crested Grebe	<i>Podiceps cristatus</i>
Great Tit	<i>Parus major</i>

Species Name	Scientific Name
Greater White-fronted Goose	<i>Anser albifrons</i>
Grey Heron	<i>Ardea cinerea</i>
Grey Wagtail	<i>Motacilla cinerea</i>
Greylag Goose	<i>Anser anser</i>
Hedge Accentor	<i>Prunella modularis</i>
Hen Harrier	<i>Circus cyaneus</i>
Herring Gull	<i>Larus argentatus</i>
Hooded Crow	<i>Corvus cornix</i>
House Martin	<i>Delichon urbicum</i>
House Sparrow	<i>Passer domesticus</i>
Jack Snipe	<i>Lymnocyptes minimus</i>
Lesser Black-backed Gull	<i>Larus fuscus</i>
Lesser Redpoll	<i>Carduelis cabaret</i>
Little Grebe	<i>Tachybaptus ruficollis</i>
Long-eared Owl	<i>Asio otus</i>
Long-tailed Tit	<i>Aegithalos caudatus</i>
Mallard	<i>Anas platyrhynchos</i>
Meadow Pipit	<i>Anthus pratensis</i>
Merlin	<i>Falco columbarius</i>
Mew Gull	<i>Larus canus</i>
Mistle Thrush	<i>Turdus viscivorus</i>
Mute Swan	<i>Cygnus olor</i>
Northern Lapwing	<i>Vanellus vanellus</i>
Northern Wheatear	<i>Oenanthe oenanthe</i>
Peregrine Falcon	<i>Falco peregrinus</i>
Pink-footed Goose	<i>Anser brachyrhynchus</i>
Red Grouse	<i>Lagopus lagopus</i>
Red-breasted Merganser	<i>Mergus serrator</i>
Redwing	<i>Turdus iliacus</i>
Reed Bunting	<i>Emberiza schoeniclus</i>
Rock Pigeon	<i>Columba livia</i>
Rook	<i>Corvus frugilegus</i>
Ruddy Turnstone	<i>Arenaria interpres</i>
Sand Martin	<i>Riparia riparia</i>
Sedge Warbler	<i>Acrocephalus schoenobaenus</i>
Sky Lark	<i>Alauda arvensis</i>
Song Thrush	<i>Turdus philomelos</i>
Spotted Flycatcher	<i>Muscicapa striata</i>
Stock Pigeon	<i>Columba oenas</i>
Stonechat	<i>Saxicola torquata</i>
Tufted Duck	<i>Aythya fuligula</i>
Twite	<i>Carduelis flavirostris</i>
Water Rail	<i>Rallus aquaticus</i>
White Wagtail	<i>Motacilla alba</i>
White-throated Dipper	<i>Cinclus cinclus</i>
Whooper Swan	<i>Cygnus cygnus</i>
Willow Warbler	<i>Phylloscopus trochilus</i>
Winter Wren	<i>Troglodytes troglodytes</i>

Species Name	Scientific Name
Yellowhammer	<i>Emberiza citrinella</i>

6.6.1.2.4 Amphibians and Reptiles

Table 6.7 provides records for amphibians and reptiles that have been recorded within Hectad C30. Data was accessed through the National Biodiversity Data Centre.

Table 6.7: Amphibians and Reptiles

Species Name	Scientific Name
Common Frog	<i>Rana temporaria</i>
Smooth Newt	<i>Lissotriton vulgaris</i>

6.6.1.2.5 Rare and Protected Plant Species

NPWS data was consulted to identify rare plant species that have been recorded in Hectad C30. Table 6.8 details the rare and protected plant species recorded in Hectad C30. Any incidental sightings during field survey were to be recorded.

Table 6.8: Rare Plant Species

Species Name	Scientific Name
Large Bitter-cress	<i>Cardamine amara</i>
Small Cudweed	<i>Filago minima</i>
Greater Frillwort	<i>Fossombronina angulosa</i>
Red-neck Forklet-moss	<i>Dicranella cerviculata</i>

6.6.1.2.6 Invasive Species

Invasive species recorded in Hectad C30 are presented in Table 6.9. Data was accessed through the National Biodiversity Data Centre. Only species recorded in the last 20 years are shown.

Table 6.9 Invasive Species in Hectad C30

Species Name	Scientific Name
Vertebrates	
American Mink	<i>Mustela vison</i>
European Rabbit	<i>Oryctolagus cuniculus</i>
Grey Squirrel	<i>Sciurus carolinensis</i>
Sika Deer	<i>Cervus nippon</i>
Invertebrates	
Flatworm (Turbellaria)	<i>Arthurdendyus triangulatus</i>
Molluscs	
Asian Clam	<i>Corbicula fluminea</i>
Jenkins' Spire Snail	<i>Potamopyrgus antipodarum</i>
Keeled Slug	<i>Tandonia sowerbyi</i>
Flora	
Black currant	<i>Ribes nigrum</i>
Butterfly-bush	<i>Buddleja davidii</i>
Canadian Waterweed	<i>Elodea canadensis</i>
Giant Hogweed	<i>Heracleum mantegazzianum</i>
Giant Knotweed	<i>Fallopia sachalinensis</i>
Giant-rhubarb	<i>Gunnera tinctoria</i>
Indian Balsam	<i>Impatiens glandulifera</i>
Japanese Knotweed	<i>Fallopia japonica</i>
Japanese Rose	<i>Rosa rugosa</i>
Red Oak	<i>Quercus rubra</i>
Rhododendron	<i>Rhododendron ponticum</i>
Salmonberry	<i>Rubus spectabilis</i>

Spanish Bluebell	<i>Hyacinthoides hispanica</i>
Sycamore	<i>Acre pseudoplatanus</i>

6.6.1.3 Baseline Hydrology

A hydrological walkover survey, including detailed mapping and baseline monitoring/sampling, was undertaken by Colin Farrell of Greentrack on various dates between February and June 2022. The field assessments included a detailed site walkover survey, water features survey, and an inspection of all relevant hydrological features, such as existing drainage ditches, groundwater contributions and inflows/outflows from the site.

The subject site is located within the North-western River Basin District, hydrometric area 01 – Foyle (BGNIENW) and Johnston Stream sub catchment area (JohnstonStream_SC_010). Site drainage, surface water runoff and water management within the current site are schematically represented in Figure 8.4 within chapter 8 of this rEIA. Dominant flow direction in the region is east towards the River Foyle. There are no EPA monitoring points on the tributary of the St Johnston Stream directly linked to the application site. There are 4 historical EPA monitoring points along the main reach of the St. Johnston Stream. The latest Q values for all of these monitoring stations indicate a range of Q values from 1 (bad) to 4 (good) ecological status. Only one of the monitoring results was relatively recent and taken in 2019. Other Q values are historical taken in 1990 and 1981 and may have limited relevance for current studies.

Greentrack conducted an ecological assessment of the receiving waters of the tributary of the St. Johnston Stream upstream and downstream of the discharge point. The ecological assessments were made using a standard kick sample. The results of the assessment are summarised in Table 8.6 in Chapter 8 of this rEIA. The assessed Q score for the stream upstream of the discharge point was 3-4 (good). The assessed Q score for the stream downstream of the discharge point was 4 (good).

6.6.1.4 Conclusions from Desk Study

This desk study exercise provided information about the existing environment in Hectad C30 of the existing development in addition to adjoining Hectads C20, C21 and C31. The desk study identified the following designated sites as susceptible to impact from the existing development:

- **River Finn SAC site code 002301**
- **River Foyle and Tributaries SAC site code UK0030320**
- **River Foyle, Mongavlin to Carrigans pNHA site code 002067**

Moreover, the desk study found that a variety of flora, fauna and ecological receptors required further investigation. Protected faunal species including Badger and Bird Species occur in the vicinity of the subject site and were deemed to require further investigation. Invasive species were also recorded within Hectad C30. No invasive species were observed during site investigations in and around the subject site. Desk research also identified a variety of avian species recorded in the vicinity of the existing development. Further investigation of avian species was deemed necessary.

6.6.2 Field Study

Greentrack carried out multiple field surveys over a six-month period from January – June 2022. The results of the habitat survey carried out in June 2022 is presented below.

6.6.2.1 Habitat Survey

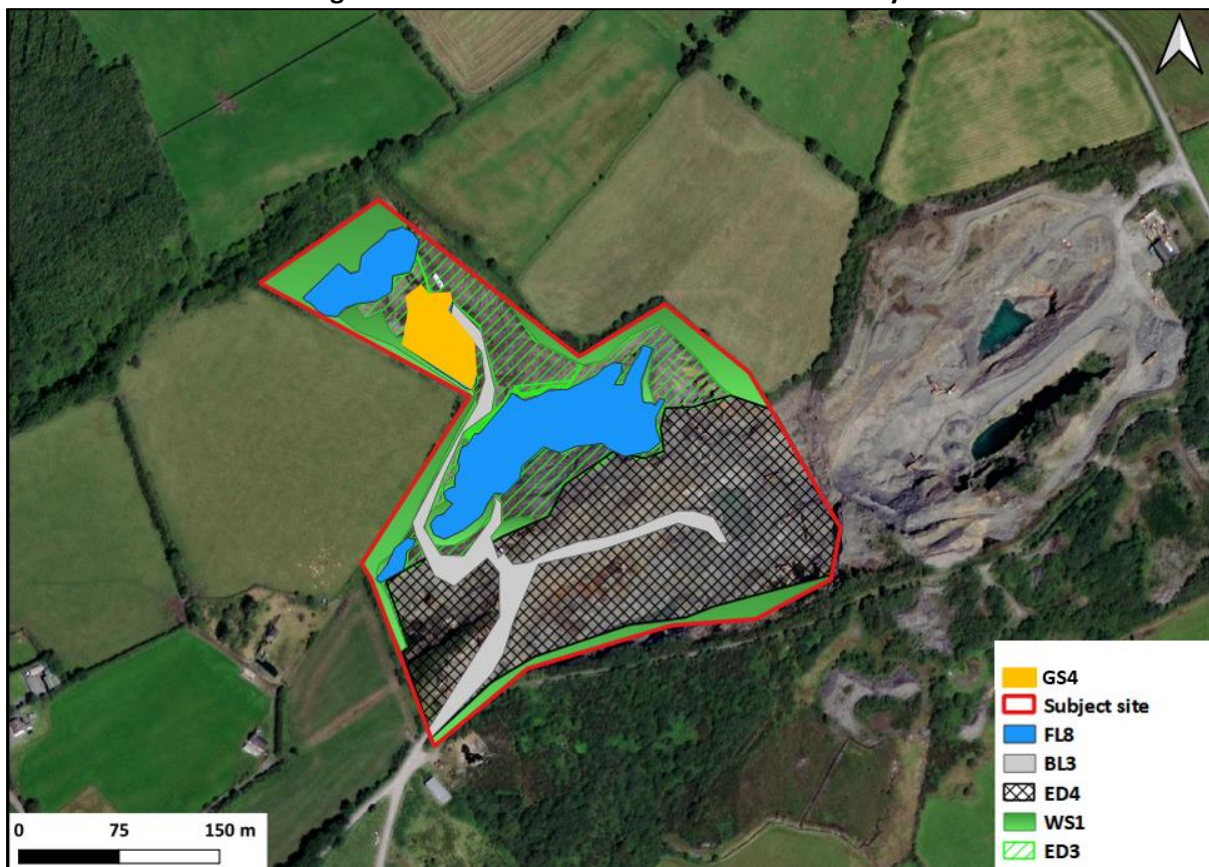
The following habitats listed in Table 6.10 were recorded within the red line boundary. This includes the extraction site and the surrounding environments. All habitats were recorded during a Phase 1 habitat survey and classified according to Fossitt (2000).

Table 6.10: Habitats on Site and surrounding environs

Habitat Type within the extraction site	
ED4	Active quarries and mines
WS1	Scrub
Other habitats within the subject site	
GS4	Wet grassland
WS1	Scrub
FL8	Other artificial lakes and ponds
ED3	Recolonising bare ground
FW4	Drainage ditches

The habitats recorded are illustrated in Figure 6.3 with a legend of habitat details. A brief outline of the characteristics of habitats on site is provided in the remainder of this section. However, position and scale of habitats shown are approximate only and should be considered only as a broad representation of the study area.

Figure 6.3: Habitats within the red line boundary



This map was created on QGIS software using data collected during site visits according to Fossitts guide to habitats in Ireland

Current land use for the application site is as a working quarry. Extraction and processing take part in the central part of the site on the quarry deck within the main quarry void. Large parts of previous quarry workings within the site are partially recolonised with pioneer vegetation, especially along the western boundary and northwest portion of the site. The large settlement pond represents a large part of the site occupying a footprint of approximately 0.87 hectares. Other ponds and wetland areas throughout the site account for approximately 0.38 hectares of land use.

6.6.2.1.1 Historical habitats within the subject site

Figures 6.4 - 6.7 have been taken from Geohive map viewer⁵ and show the subject site from the year 1995 to present day which detail the changing habitats as the quarry undergoes stripping and extraction processes. C. 1995-2000 (Figure 6.4 & 6.5), the northern portion of the site appears to be mainly improved agricultural grassland (GA1) with areas of scrub (WS1) dotted throughout. Significant areas of gorse (*Ulex* spp.) are evident near the active quarry area as well as around the areas of standing water near the NE boundary.

The central portion of the site appears to have been initially stripped and extraction commenced between 2000-2005 as per Figure 6.6, with the northern portion of the site stripped and extracted between 2005 – 2010 according to information supplied by the applicant. There has been no definite direction of extraction over the years as stone was removed from site in the order it was easiest to access and break out. Extraction continued until the current footprint of the application site was reached (Figure 6.7). C. 3.25 Ha of GA1 and WS1 habitat has been removed from the quarry since 1995.

Figure 6.4: Subject site c. 1995



Geohive.ie

⁵ (<https://webapps.geohive.ie/mapviewer/index.html>)

Figure 6.5: Subject site c.2000



Geohive.ie

Figure 6.6: Subject site c. 2005



Geohive.ie

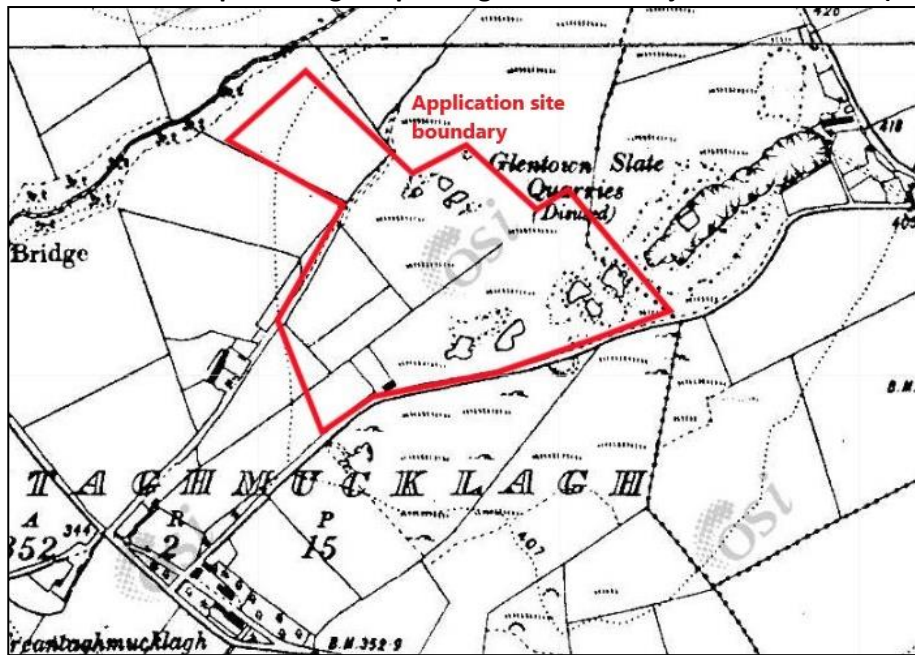
Figure 6.7: Present day quarry

Geohive.ie

6.6.2.1.2 Present day habitats within the extraction site**ED4 Active quarry**

Active Quarry is the dominant habitat type within the site. It can be broadly described as exposed rock faces and stockpiles of excavated material. The quarry void also contains standing water. As the quarry is active, no vegetation was noted within the void with areas of scrub noted around the ledges. Quarrying has been undertaken at the site in various regards since the late 1700's. The Ordnance Survey of Ireland historical map series was examined for land use on the application site. In the series mapped between 1829-1841 the site is seen as partially excavated ground (Figure 6.8). Quarrying activity on the site has been sporadic since the mid 1840's and the current applicant started excavation and processing on the site in 1978 and has been quarrying the application site since then. Due to the active nature of the quarry, no flora is present within the quarry void.

Figure 6.8:
Historical 6-inch map showing old pits dug on site and adjacent to the site (1829-1841)



GSI map viewer

Photograph 6.1: Current quarry void



WS1 Scrub

This habitat was observed dispersed over the site, with areas dominant around the current quarry ledges. Scrub onsite predominantly consists of Gorse (*Ulex* spp.), Willows (*Salix* spp.), Bramble (*Rubus fruticosus* agg.) and Bracken (*Pteridium aquilinum*).

Photograph 6.2: Scrub habitat on the quarry ledge

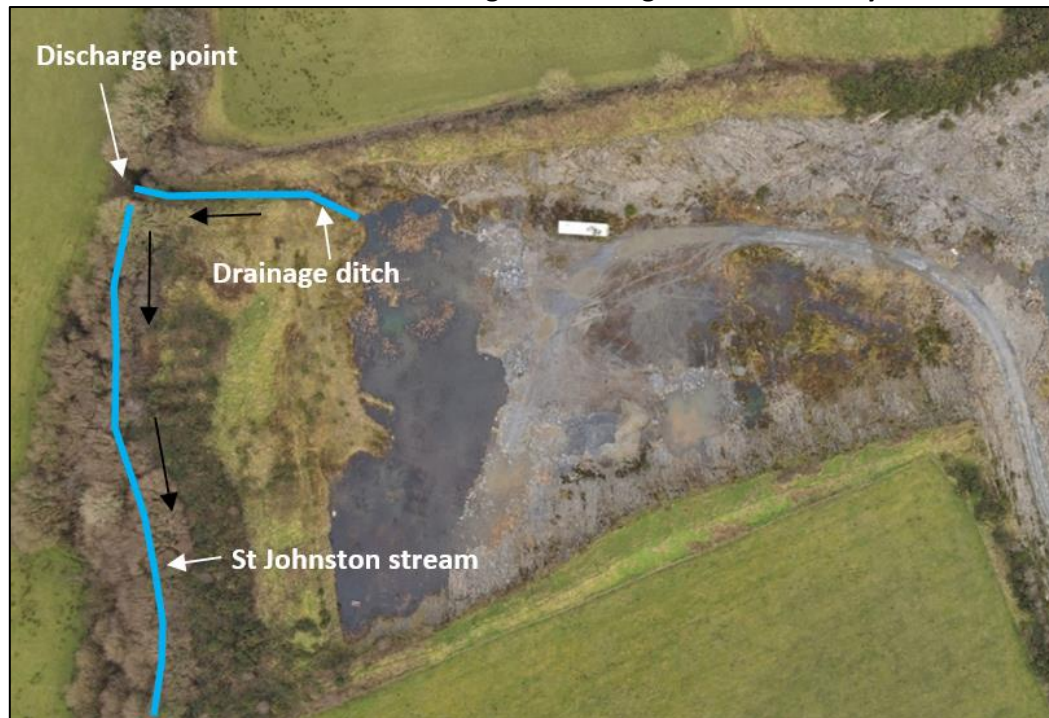


6.6.2.1.2 Present day habitats within the subject site

FW4 Drainage Ditch

Outflow from the quarry is through a heavily vegetated drainage ditch to the NW of the site (outlined in blue below). This flows into the St Johnston stream which flows to the West of the quarry (black arrows indicate flow direction).

Photograph 6.3:
Aerial view of the drainage ditch along the NW boundary



FL8 Artificial lakes and ponds

The site water management system involves two settlement ponds in the northern portion of the site. Settlement Pond 1 has been formed from a previously worked out area. Settlement Pond 2 is a previously worked out portion of ground close to the northern boundary of the site adjacent to the site discharge point. The area around Settlement Ponds 1 & 2 was last worked c. 2010. The northern outshot of the site where Settlement Pond 2 is located is now a redundant area of the quarry and has been allowed to recolonise for biodiversity benefits (ED3). Both ponds are surrounded by scrub (WS1) dominated by Gorse (*Ulex* spp.), Willows (*Salix* spp.) and Bramble (*Rubus fruticosus* agg.). Settlement pond 2 is heavily vegetated and dominated by Bulrush (*Typha latifolia*), sedges and common water plantain (*Alisma plantago*).

Photograph 6.4: Settlement Pond 1 to the north of the quarry**ED3 Recolonising Bare Ground**

There are multiple areas of recolonising bare ground around the subject site, mainly to the north of the site within the previously worked areas. These areas are of no significant ecological value and will eventually be encroached by scrub, if left undisturbed. Species noted within these areas include Greater Plantain (*Plantago major*) Nettle (*Urtica dioica*), Dandelion (*Taraxacum* spp.), Willow-herbs (*Epilobium* spp.) and Ragworts (*Senecio* spp.)

Photograph 6.5: Area of recolonised bare ground near settlement Pond 2**GS4 Wet Grassland**

An area of wet grassland is located to the north of the site near settlement pond 2. Species noted within the area include Marsh Foxtail (*Alopecurus geniculatus*), Meadow-grass (*Poa* spp.), Creeping Buttercup (*Ranunculus repens*), Marsh Thistle (*Cirsium palustre*), Silverweed (*Potentilla anserina*), Meadowsweet (*Filipendula ulmaria*), Water Mint (*Mentha aquatica*), Common Marsh-bedstraw (*Galium palustre*) and Devil's-bit Scabious (*Succisa pratensis*). This habitat will be left in its current state to vegetate naturally as all extraction activities have ceased within this area of the quarry. The entire northern portion of the quarry will be left to recolonise naturally moving forward.

Photograph 6.6: Area of wet grassland near the NW boundary

WS1 Scrub

This habitat was observed dispersed over the site, with areas dominant around the site boundaries and around the settlement ponds. Scrub onsite predominantly consists of Gorse (*Ulex* spp.), Willows (*Salix* spp.), Bramble (*Rubus fruticosus* agg.) and Bracken (*Pteridium aquilinum*).

Photograph 6.7: Scrub habitat on the near settlement Pond 1



Habitats within the surrounding environs

The habitats located within the quarry site are also common within the surrounding environs. The site is surrounded by agricultural grassland (GA1) on all sides apart from to the east where a quarry face (ED4) separates the site and a separate quarry operated by a different owner. An extensive area of commercial forestry (WD5) lies to the north and northwest of the site, flanking the slopes of Doish Mountain.

6.6.2.2 Mammal Survey

Dedicated and incidental mammal surveys were carried out with particular focus on hotspots of mammal activity identified during the initial multidisciplinary site walkover.

6.6.2.2.1 Badger

There were no badger setts observed in the quarry site. There was no evidence of badger feeding, tracks or other signs onsite.

6.6.2.2.2 Other Mammal Evidence/Activity

There was no other tracks, signs or evidence of other mammals onsite.

6.6.2.3 Bird Survey

Multiple bird observation reports were conducted over a two month period, encompassing the entire footprint of the quarry site. The site boundaries and settlement ponds recorded the most bird activity. The site boundaries of scrub vegetation provide good cover, foraging and habitat connectivity. Several species of bird were recorded during the survey including:

- Jackdaw
- Rook
- Robin
- Song thrush
- Wren
- Blue tit
- Great tit
- Dunnock
- Meadow pipit
- Collared dove
- Pied wagtail
- Siskin
- Stonechat
- Wren

No protected bird species were noted during any of the site visits undertaken.

6.6.3 Identification of Key Ecological Receptors

Table 6.11 lists all identified receptors and assigns them an ecological importance in accordance with the Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009). This table also provides the rationale for this determination and identifies the habitats that are Key Ecological Receptors. These ecological receptors are considered in Section 6.7 of this report and remedial mitigation measures in place and proposed future measures will be incorporated where required, to avoid potential significant impacts on the features.

Table 6.11 Identification of KERs

Ecological Feature / Species	Reason for Consideration as KER	KER Yes/No
Designated Sites	<p>Nationally Designated Sites The following nationally designated sites have been identified as requiring further assessment.</p> <ul style="list-style-type: none"> River Foyle, Mongavlin to Carrigans pNHA <p>This site is of National Importance.</p>	Yes
	<p>International/European Sites The following nationally designated sites have been identified as requiring further assessment:</p> <ul style="list-style-type: none"> River Finn SAC site code 002301 River Foyle and Tributaries SAC site code UK0030320 <p>These sites are of International Importance.</p>	Yes
Aquatic Habitats and Species	<p>Streams The St Johnston stream which drains the site and the aquatic species therein are assigned local importance (Higher value). This stream flows into the Foyle system which is designated under the River Finn SAC and the River Foyle and Tributaries SAC which are both of International Importance.</p>	Yes
	<p>Drainage ditches/Artificial ponds This habitat has been assigned local importance (lower value)</p>	No
Built/Man Made Habitats	<p>Active quarries and mines This habitat has been assigned local importance (lower value)</p>	No
	<p>Recolonising bare ground. This habitat has been assigned local importance (lower value)</p>	No
	<p>Buildings and artificial surfaces This habitat has been assigned local importance (lower value)</p>	No
Scrub	This habitat has been assigned local importance (lower value)	No
Badger	<p>Badger presence was not identified during survey and site investigation.</p> <p>This species is not a KER as its presence was not observed during site investigation and there is no evidence of badgers within the site</p>	No
Bat	Bat presence was not identified during any walkover surveys and there is no suitable habitat to support roosting bats. This species is not a KER	No

Ecological Feature / Species	Reason for Consideration as KER	KER Yes/No
	as its presence was not observed during site investigation	
Otter	Otter presence was not identified on site. Both the drainage ditch and adjacent stream are too narrow and shallow to support the needs of otters	No
Deer/Squirrel/Other Mammals	No evidence of these mammal species was observed on site. These species are not a KER as its presence was not observed during site investigation	No
Birds and bird habitat	Bird species occurring on site and the habitats including the ponds are assigned Local Importance (Higher Value) , these are considered a KER.	Yes
Amphibians/Reptiles	Amphibian and reptile presence was not identified on site and therefore not considered a KER.	No

6.7 Ecological Impact Assessment

6.7.1 Do Nothing Scenario

If the development to extract rock and process aggregate is not granted substitute consent, then local construction end users will be forced to source quarry product and aggregate from further afield. This will result in a higher carbon footprint for these products. The provision of four local jobs and the secondary benefits that this brings to the local community will cease if the project does not achieve substitute consent

6.7.2 Effects on Designated Sites

None of the elements of the existing development are located within the boundaries of any National or European designated sites. There are no direct effects on any designated site as a result of the operation of the project, including rock extraction and ancillary activities.

One nationally designated site was identified as being within the zone of influence and as KERs, River Foyle, Mongavlin to Carrigans Pnha. This pNHA is designated as a European Site under the River Finn SAC. In relation to European sites, a Remedial Natura Impact Statement (rNIS) has been prepared to provide the competent authority with the information necessary to undertake the remedial AA process.

As per the EPA Guidance (2022) "a biodiversity section of an EIAR, should not repeat the detailed assessment of potential effects on European sites contained in a Natura Impact Statement" but should "incorporate their key findings as available and appropriate". This section provides a summary of the key assessment findings regarding Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

The rNIS concluded:

"The existing project as detailed, either individually or in combination with other plans or projects, has not had any significant adverse effects on the integrity of any European sites with the implemented remedial mitigation measures as outlined in section 6. Further mitigation measures must be implemented moving forward to ensure that the existing development will continue to not have any significant negative effects on the Natura 2000 network".

Based on the findings of the accompanying rNIS, it concluded that the development has not had any significant negative effects on the integrity of the following sites:

- River Finn SAC site code 002301
- River Foyle and Tributaries site code UK0030320
- River Foyle, Mongavlin to Carrigans pNHA site code 002067

6.7.3 Potential Invasive Species Threat

No invasive species were observed during site investigations. Best practice⁶ should continue to be followed in all aspects of operation of the development as the introduction of invasive species on site could negatively affect local biodiversity. Therefore, it is recommended as a means of Invasive species mitigation that the following measures are implemented:

- Good construction site hygiene will be employed to prevent the spread of these species with vehicles thoroughly cleaned down prior to leaving any site with the potential to have supported invasive species.
- All plant and equipment brought onto and left on site for extraction processes must be thoroughly cleaned down before entering the site to prevent the spread of invasive species.

The control of invasive alien species will follow guidelines issued by the National Roads Authority - The Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads (NRA 2010)

6.7.4 Likely Significant Effects

This section examines the likely significant effects on KERs from the development during the site clearance works and entire construction stage and operational stage to date. Where likely significant effects are predicted to have occurred, remedial mitigation in place and appropriate mitigation measures going forward will be suggested to avoid/reduce the significance of the effect on KERs.

Assessment of Potential Effects on Rivers/Streams and Sensitive Aquatic Faunal Species

Description of effect	This assessment considers the St Johnston stream which drains the site. Soil/overburden removal, rock extraction, rock crushing and screening, and stockpiling of aggregate product all have the potential to generate suspended sediment within the surface water runoff leaving the site. Any change in water quality could deleteriously affect sensitive aquatic faunal species. Chapter 8: Water, outlines a series of measures to mitigate the probability of runoff of hydrocarbons which should be read in conjunction with this chapter
Characterisation of unmitigated effect	Short-term negative
Assessment of significance prior to mitigation	Due to the proximity of the site to this receptor and the indirect discharge which occurs this effect prior to mitigation is deemed moderately adverse.
Mitigation Measures (Implemented and Proposed)	<ul style="list-style-type: none"> • Areas previously stripped for extraction were stripped in a controlled manner, thus reducing the risk of runoff containing silt according to the applicant. • Drains and silt traps were in place throughout all stripping and excavation works according to information supplied by the applicant. • Runoff from extraction and processing areas was always directed towards the nearest available pond/sump for settlement treatment before any potential discharge from site. • The robust settlement system treats all effluent before discharge offsite • Discharge from the quarry is through a single discharge point and has been under licence since 2009. • The quarry must continue to adhere to the terms and condition of the current water discharge licence. • All oils and lubricants are stored in a bunded area off site.

⁶ <http://invasivespeciesireland.com/invasive-plant-management/setting-your-priorities/>

	<ul style="list-style-type: none"> • Refuelling of plant on site is carried out using a fully bunded bowser or by licenced fuel contractor with mobile tanker. • Drip trays are used for all refuelling operations. Best practice for refuelling is incorporated into the Environmental Management System for the site. • Flow directly between Settlement Pond 1 & 2 must be piped to regulate the flow going forward. • A hydrocarbon interceptor must be installed within the drainage system downstream of Settlement Pond 1. • Maintain the hydrocarbon interceptor (in line with the manufacturer's instructions) which will be installed into the drainage system immediately before discharge of surface waters off site. • Regular inspections and maintenance scheduling must continue to take place for all plant and vehicles to minimise the potential for malfunction or leak • An emergency spill kit with oil boom, absorbers etc. must continue kept on site for use in the event of an accidental spillage/leak. • Regular visual monitoring of all surface waters onsite (including settlement ponds) for any surface sheen or sign of potential hydrocarbon pollution must continue to be undertaken. • Regular maintenance of settlement tanks must be undertaken to ensure efficiency and appropriate disposal of material removed. • All extraction and material handling activities must be suspended for the duration of a red level rainfall warning issued by Met Eireann • The site must maintain and continually update the environmental monitoring programme and monitor water, noise, dust, and blasting on a regular basis to demonstrate that the development is not having an adverse impact on the surrounding environment.
Residual effect	No residual effect on this KER exists after mitigation during the operational stage.

Assessment of potential effects on habitat lost through stripping works

Description of effects	c. 3.25Ha of improved agricultural grassland and scrub has been lost within the subject site since 1995 with the gradual stripping of vegetation and extraction of rock. Removal of the grassland and scrub habitat could have had a wider impact on the hydrology of the surrounding area
Characterisation of unmitigated effect	The removal of the improved agricultural grassland and scrub represents the removal of an ecological receptor of local importance (lower level). The characterisation of effects on this KER is assessed as long-term permanent negative in the absence of mitigation and compensation.
Assessment of significance prior to mitigation	Prior to implementing mitigation, this effect is assessed as significant.
Mitigation	<ul style="list-style-type: none"> • This habitat is dominant in the surrounding environs. The removal of c.3.25Ha of grassland and scrub represented a small area of grassland and scrub in the wider receiving environment. • Overburden won from site clearance was used to create berms around the site boundaries • The majority of the screening berms have naturally recolonised with native species which have improved the overall biodiversity within the subject site and have created wildlife corridors, connecting the subject site with the surrounding environs.

	<ul style="list-style-type: none"> • A full restoration plan as outlined in chapter 15 of this rEIAR will be implemented once quarrying activities have ceased which will allow the quarry void to be reclaimed by nature over time. • The settlement ponds for this site are adequately sized to deal with the runoff generated from site stripping and extraction works so there is, and was, no risk of flooding occurring within the site nor in the surrounding environs due to the removal of the grassland habitat (see chapter 8 of this rEIAR for more detail).
Residual effect	<p>c. 3.25 Ha of grassland and scrub has been lost within the extraction site since 1995. The loss of this habitat represents a slight adverse effect at a site level after mitigation. The creation of the screening berms from the stripped overburden have aided in offsetting the impact of the extraction activity. The berms provide a sheltered habitat for small mammals and insects and provide wildlife corridors to the surrounding environs. After the operational period has ceased the potential exists for restoration of the quarry void as detailed in section 15.</p>

Assessment of Potential Effects on Birds and other fauna

The table below mainly focuses on the potential impacts from noise from the construction and operational works which could cause a disturbance to any birds/mammals which may be nesting/foraging within site.

Assessment of Potential Effects on Birds and other fauna

Description of effects	Noise from the operational works could have caused a disturbance to any birds/mammals which may be nesting/foraging within site.
Characterisation of unmitigated effect	The effect is characterised as short-term negative.
Assessment of significance prior to mitigation	Prior to mitigation this effect is considered not significant
Mitigation	<ul style="list-style-type: none"> • Recorded noise levels from quarrying activity have been measured at a level well below typical guideline limit values. • Plant used at the site must continue to have noise emission levels that comply with the limiting levels defined in EC Directive 86/662/EEC and any subsequent amendments. Any plant that is used intermittently must be shut down when not in use to minimise noise levels. • All extraction and processing activities must continue to follow the guidelines as set within BS 5228 -1:2009+A1 2014. This includes guidance on several aspects of construction site practices, which include, but are not limited to: (a) Selection of quiet plant, (b) Control of noise sources, (c) Screening, (d) Hours of work. • The best means practical, including proper maintenance of plant, must continue to be employed to minimise the noise produced by on-site operations. • All vehicles and mechanical plant must be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract. • Compressors must be of the “sound reduced” models fitted with properly lined and sealed acoustic covers which must be kept closed whenever the machines are in use and all ancillary pneumatic tools must be fitted with suitable silencers.

	<ul style="list-style-type: none"> • All motors and pulleys must be maintained to a high standard with regular maintenance so as to avoid any tonal or impulsive components in the emission. • The screening berms around the site boundaries have naturally recolonised with a mixture of native shrubs which act an acoustic barrier for the site • The processing plant (crushing and screening) generally has been located in the quarry floor area thereby giving maximum barrier attenuation effect. • Proper management procedures (pre-blasting management procedures, loading management procedures and blasting management procedures) must be implemented and in place at all times moving forward.
Residual effect	No residual effects are envisaged after the implementation of mitigation on this KER

6.7.5 Likely Significant Effects During Decommissioning Stage

No likely significant effects are envisaged during the decommissioning of the existing development. There will be no additional habitat loss during decommissioning. The quarry void will be allowed to rewild, and enhancement measures will be implemented as appropriate. Section 15 details a restoration plan to be implemented in the case of decommissioning of the entire quarry and/or the current extraction area.

6.8 Cumulative Impact Assessment

The existing development was considered in combination with other plans and projects in the area that could result in cumulative impacts on the Key Ecological Receptors (KERs) identified in Section 6.6.5 of this report. Records from Donegal County Council planning registry were considered to identify projects that had potential to generate cumulative impacts on KERS. There were no plans recorded within the vicinity of the quarry site that can be considered under cumulative impacts.

The main areas that give rise to cumulative impacts in relation to this quarry area as follows:

6.8.1 Continuation of quarrying activities within the Quarry

The following were considered in this assessment of cumulative impacts on KERs:

- Hydrological impact from the adjacent quarry in combination with the existing quarry – The adjacent quarry does not have a discharge licence in place with all runoff from the quarry collected in a sump which appears to percolates into groundwater. No runoff/effluent from the quarry is discharged to the St Johnston stream.
- Loss of habitat – Approx. 3.25Ha of grassland has been lost within the northern portion of the site to facilitate extraction activities. There will be no additional loss of habitat associated with the development as the site footprint will not increase and all overburden has been stripped.
- Section 15 of the EIAR outlines landscaping and restoration plans which add to the habitat cover and biodiversity of the subject site which act as a positive in combination impact of KER’s.
- The water management system outlined in Section 8 acts as a positive in combination impact on KER’s.

Existing Habitats and surrounding land uses

The development has not had, and will not have, any significant in combination effect with current land use and habitats within the wider area in which the subject site is located. The site is surrounded by agricultural land on all sides apart from to the east where a quarry face separates the site and a separate quarry operated by a different owner. An extensive area of commercial forestry lies to the

north and northwest of the site, flanking the slopes of Dooish Mountain. The quarry is an established use of land in the area and has resulted in the associated activities, services and employment becoming an integral part of this rural environment and rural economy. The existing development and the associated effects on the wider area has not and will not adversely affect the agricultural land use or availability.

There is a quarry development immediately adjacent to the site to the east. The development is of similar size and also has a significant history of quarrying. There will be a cumulative effect regarding the loss of habitat for both quarries. There are no other developments in the vicinity of the application site which would result in a significant cumulative impact. Recent planning applications within the vicinity of the subject site and The Donegal County Development Plan 2018 -2024 were reviewed to cumulatively assess any impact on the wider environment in combination with the existing development. There are no recent planning applications which need to be taken into consideration under the "cumulative effects".

Direct and indirect socio-economic impacts will arise from the economic activity and employment from the existing development. Chapters 7-12 of this rEIA assesses the cumulative effects of the subject site in relation to land soils & geology, water, air, noise, climate and traffic. Mitigation Measures are detailed in the relevant sections of this rEIA to ameliorate cumulative impacts from the existing development on the above listed respectively.

6.8.4 Assessment of Cumulative Effects

A landscaping and restoration plan will be implemented for the quarry to offset the impact that quarrying activity will have on habitat within the extraction area. The losses of existing vegetation, as a result of removal of overburden to allow extraction of rock, continues to be offset by the creation and maintenance of berms. These berms have been naturally colonised by native species and additional planting is recommended in Section 15 of this rEIA. The screening berms provide both visual and acoustic screening of the site from the surrounding environs. The addition of the berms has improved the quality of cover for wildlife and has increased biodiversity within the site as well as increasing connectivity within the site, providing a link between the site and the block of commercial forestry to the north and northwest of the site.

The greatest potential for increased biodiversity in relation to the subject site is after the operation has ceased. The aim of any natural restoration plan is to restore ecological balance and to produce self-sustaining plant and wildlife communities and habitats. The proposed restoration of the extraction site will allow for the creation of new habitats and the rewilding of this area for reclamation by nature which will have an overall positive effect on the biodiversity within the site and environs.

6.9 Determination of Environmental Impact Significance pre and post mitigation.

This section examines the significance of impacts on the wider environment from loss of habitat, dust/noise and surface water quality, both pre and post mitigation. Remedial mitigation measures and proposed future measures have been listed in section 6.7.4 above which have been used to aid in determining impact significance post mitigation. Tables 6.12 and 6.14 highlight the determined significance of each listed factor, both pre and post mitigation, with table 6.13 summarising the remedial and proposed mitigation measures.

Table 6.12: Determination of Environmental Impact Significance Pre-mitigation

Impact	Receptor	Description of Impact (Character/Magnitude/Duration/Probability/Consequences) Negligible to High	Existing Environment (Significance/Sensitivity) Negligible to High	Significance Imperceptible to Profound
Loss of habitat from stripping from quarrying activities	Wildlife within the surrounding environs	Medium	Medium	Moderate
Dust from the construction works causing disturbance to any birds/mammals which may be nesting/foraging within site	Wildlife within the surrounding environs	Medium	Medium	Moderate
Noise from the construction works causing disturbance to any birds/mammals which may be nesting/foraging within site	Wildlife within the surrounding environs	Medium	Medium	Moderate
Surface Water Quality Impacts from Suspended Sediment Load	St Johnston stream, River Finn SAC, River Foyle and Tributaries SAC	Medium	Medium	Moderate

Table 6.13: Summary of Mitigation Measures Implemented and Proposed Measures to be implemented

Summary of Mitigation Measures proposed to protect aquatic environment – should be read in conjunction with Section 8.
<ul style="list-style-type: none"> • Areas previously stripped for extraction were stripped in a controlled manner over the lifetime of the quarry, thus reducing the risk of runoff containing silt according to the applicant. • Drains and silt traps were in place throughout all stripping and excavation works according to information supplied by the applicant. • Runoff from extraction and processing areas was always directed towards the nearest available pond/sump for settlement treatment before any potential discharge from site. • The robust settlement system treats all effluent before discharge offsite • Discharge from the quarry is through a single discharge point and has been under licence since 2009. • The quarry must continue to adhere to the terms and condition of the current water discharge licence. • All oils and lubricants are stored in a bunded area off site. • Refuelling of plant on site is carried out using a fully bunded bowser or by licenced fuel contractor with mobile tanker. • Drip trays are used for all refuelling operations. Best practice for refuelling is incorporated into the Environmental Management System for the site.

- Flow directly between Settlement Pond 1 & 2 must be piped to regulate the flow going forward.
- A hydrocarbon interceptor must be installed within the drainage system downstream of Settlement Pond 1.
- Maintain the hydrocarbon interceptor (in line with the manufacturer's instructions) which will be installed into the drainage system immediately before discharge of surface waters off site.
- Regular inspections and maintenance scheduling must continue to take place for all plant and vehicles to minimise the potential for malfunction or leak
- An emergency spill kit with oil boom, absorbers etc. must continue kept on site for use in the event of an accidental spillage/leak.
- Regular visual monitoring of all surface waters onsite (including settlement ponds) for any surface sheen or sign of potential hydrocarbon pollution must continue to be undertaken.
- Regular maintenance of settlement tanks must be undertaken to ensure efficiency and appropriate disposal of material removed.
- All extraction and material handling activities must be suspended for the duration of a red level rainfall warning issued by Met Eireann
- The site must maintain and continually update the environmental monitoring programme and monitor water, noise, dust, and blasting on a regular basis to demonstrate that the development is not having an adverse impact on the surrounding environment.

Summary of Mitigation Measures for protection of birds and other wildlife

- Recorded noise levels from quarrying activity have been measured at a level well below typical guideline limit values.
- Plant used at the site must continue to have noise emission levels that comply with the limiting levels defined in EC Directive 86/662/EEC and any subsequent amendments. Any plant that is used intermittently must be shut down when not in use to minimise noise levels.
- All extraction and processing activities must continue to follow the guidelines as set within BS 5228 -1:2009+A1 2014. This includes guidance on several aspects of construction site practices, which include, but are not limited to: (a) Selection of quiet plant, (b) Control of noise sources, (c) Screening, (d) Hours of work.
- The best means practical, including proper maintenance of plant, must continue to be employed to minimise the noise produced by on-site operations.
- All vehicles and mechanical plant must be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract.
- Compressors must be of the "sound reduced" models fitted with properly lined and sealed acoustic covers which must be kept closed whenever the machines are in use and all ancillary pneumatic tools must be fitted with suitable silencers.
- All motors and pulleys must be maintained to a high standard with regular maintenance so as to avoid any tonal or impulsive components in the emission.
- The screening berms around the site boundaries have naturally recolonised with a mixture of native shrubs which act an acoustic barrier for the site
- The processing plant (crushing and screening) generally has been located in the quarry floor area thereby giving maximum barrier attenuation effect.
- Proper management procedures (pre-blasting management procedures, loading management procedures and blasting management procedures) must be implemented and in place at all times moving forward.

Summary of Mitigation Measures for removal of grassland/scrub habitat

- This habitat is dominant in the surrounding environs. The removal of c.3.25Ha of grassland and scrub represented a small area of grassland and scrub in the wider receiving environment.
- Overburden won from site clearance was used to create berms around the site boundaries
- The screening berms have naturally recolonised with native species which have improved the overall biodiversity within the subject site and have created wildlife corridors, connecting the subject site with the surrounding environs. These support a wide range of insects and animals and has contributed to the ecological value of the area.

- A full restoration plan outlined in chapter 15 of this rEIAR will be implemented once quarrying activities have ceased which will allow the quarry void to be reclaimed by nature over time.
- The settlement ponds for this site are adequately sized to deal with the runoff generated from site stripping and extraction works so there is, and was, no risk of flooding occurring within the site nor in the surrounding environs due to the removal of the grassland habitat (see chapter 8 of this rEIAR for more detail).

Table 6.14: Determination of Environmental Impact Significance Post mitigation

Impact	Receptor	Description of Impact (Character/Magnitude/ Duration/Probability/ Consequences) Negligible to High	Existing Environment (Significance/ Sensitivity) Negligible to High	Significance Imperceptible to Profound
Loss of habitat from stripping and construction works	Wildlife within the surrounding environs	Negligible	Low	Imperceptible
Dust from the construction works causing disturbance to any birds/mammals which may be nesting/foraging within site	Wildlife within the surrounding environs	Negligible	Low	Imperceptible
Noise from the construction works causing disturbance to any birds/mammals which may be nesting/foraging within site	Wildlife within the surrounding environs	Negligible	Low	Imperceptible
Surface Water Quality Impacts from Suspended Sediment Load	St Johnston stream, River Finn SAC, River Foyle and Tributaries SAC	Medium	Medium	Imperceptible

6.9.1 Transboundary Effects

The study area associated with the development is within the Foyle Catchment. The Foyle catchment is a cross border catchment and therefore the hydrological link extends to areas beyond the international border in the River Foyle. The project is hydrologically linked to both the River Finn SAC in the Republic of Ireland and the River Foyle and Tributaries SAC in Northern Ireland. However, the residual impact after the already in place mitigation measures is assessed as imperceptible. This means that there is, and was, no potential for significant transboundary effects on water quality as a result of the existing development, particularly given the distance from the development site to these features.

6.10 Conclusion

This ecological impact assessment concludes that historic expansion of quarry activities within the subject site have had no significant residual effects, assuming the mitigation measures outlined in the section on Biodiversity were ,and continue to be, adhered to.

Ongoing monitoring of water quality will continue to be undertaken during the operation of the quarry to ensure that all mitigation measures as set within the rEIAR and rNIS are being implemented.

APPENDIX I: Bird Survey

A series of bird observation report over a period of 8 weeks within the quarry site. The results of this are attached below.

Site Name:	Tinney's Quarry
Date:	20/05/2022
Start time:	09.30
End time:	13.30
Counter:	Shannen McEwen (B.Sc. Hons Environmental Science with a Diploma in Professional Practice, University of Ulster)
Weather:	Cloud cover: 33-66%, Rain: 2, Wind: 2, Visibility: 1.
Activity:	No other activity onsite.

Species	By sight			By sound
	In flight	Foraging	Roosting	
Blackbird				2
Blue tit			1	
Coal tit	1			
Wood pigeon	4			
Goldfinch			1	1
Great tit	1			
Hooded crow	1	2		
Jackdaw			1	2
Long tailed tit			1	
Meadow pipit			1	3
Collared dove	2			
Pied wagtail	1		2	2
Robin			1	3
Song thrush	1			2
Stonechat			2	
Wren				8

Site Name:	Tinney's Quarry
Date: Start time: End time:	02/06/2022 10.00 14.00
Counter: Weather: Activity:	Shannen McEwen (B.Sc. Hons Environmental Science with a Diploma in Professional Practice, University of Ulster) Cloud cover: 66-100%, Rain: 3, Wind: 2, Visibility: 2. Cold and wet. No other activity onsite.

Species	By sight			By sound
	In flight	Foraging	Roosting	
Blackbird	1			2
Blue tit				1
Crow	3			4
Goldcrest				2
Gold finch				1
Great tit				1
Hooded crow	4			
Jackdaw	32		20	
Long tailed tit				1
Mistle thrush				3
Robin	1			2
Rook	4			2
Song thrush	1			1
Wren				3

Site Name:	Tinney's Quarry
Date: Start time: End time:	09/06/2022 12.00 16.00
Counter: Weather: Activity:	Shannen McEwen (B.Sc. Hons Environmental Science with a Diploma in Professional Practice, University of Ulster) Cloud cover: 33-66%, Rain: 1, Wind: 1, Visibility: 1. No other activity onsite.

Species	By sight			By sound
	In flight	Foraging	Roosting	
Blackbird	10			2
Blue tit	1			2
Crow	5		2	2
Goldcrest				1
Great tit	5			1
Jackdaw	20		15	
Long tailed tit				4
Mistle thrush	1			2
Pied wagtail	1			1
Robin			1	2
Rook	2		1	2
Song thrush				2
Wren				6

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