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Introduction

- 5.1 SLR Consulting (Ireland) Ltd. was commissioned by Roadstone Ltd., to prepare a Biodiversity chapter which forms part of the Environmental Impact Assessment Report (EIAR) prepared in support of a planning application for the continuance of use of Cam Quarry, Brideswell, Co. Roscommon, hereafter referred to as “the Site”.

Site Description and Existing Quarry Site

- 5.2 The Site is located within the townlands of Curry and Cloonacaltry, about 4 km to the west of Brideswell, and c. 12 km west of Athlone, Co. Roscommon. The R363 regional road runs along the northern Site boundary. The Site is currently being used as an active limestone quarry, with areas of semi-natural grassland and scrub surrounding the quarry.
- 5.3 The existing quarry extraction area occupies the central part of the site and currently consists of a 2 no. working faces typically 10-15m in height. Current ground levels over the quarry floor range from c. 70-85m AOD. The extraction area is currently c. 8.4 hectares within an overall permitted extraction area of c. 23.7 hectares. Previously stripped soils and overburden have been used to construct perimeter screening berms.
- 5.4 The quarry is currently worked without the need to discharge water off-site. Any rainfall or water ingress within the current quarry void is managed within the void where water accumulates in the lowest level of the quarry floor allowing the remainder of the quarry to remain dry for extraction operations.
- 5.5 Over the southern portion of the site, an area of c. 2.9 hectares is currently covered with stripped overburden from the site with the remainder of the area still in its natural state of a mosaic of semi-natural grasslands, scrub and gorse. This area is currently permitted under P. Ref. 04/1479 for both rock extraction and overburden storage.
- 5.6 The surrounding landscape consists primarily of agricultural land with some areas of unmanaged scrub and bog. Several residential and agricultural buildings are located along the R363 regional road to the north of the Site.

Development Overview

- 5.7 This new planning application will be based on the previous application description and as such will be an application for continuance of use of all previously permitted development.
- 5.8 There will be no requirement for any changes to other facilities, supporting infrastructure, or operational arrangements such as hours of working, extraction volumes or processing methods.
- 5.9 The current permitted extraction area is c. 23.7 hectares. The proposed extraction area (as part of this planning application) will reduce to 17.1 hectares. The area shaded red (c. 4.8 hectares) in **Figure 2-3** of the EIAR (Chapter 2), will now be omitted from the extraction area as part of this planning application due to the observation of Marsh Fritillary *Euphydryas aurinia* butterfly and suitable habitat containing, Devil's Bit Scabious *Succisa pratensis*, within this area found during ecological surveys carried out in 2024: the full Marsh Fritillary Study is shown in **Appendix 5-C**.

Brief Project Description

- 5.10 The proposed development will consist of:
- Permission for continued use of the existing quarry development currently permitted by P. Ref. 04/1479 and ABP PL20.215417 for a further period of 25 years, within an application

area of c. 66.3 hectares and with an extraction area of c. 17.1 hectares and permanent overburden storage area of c. 3.9 hectares;

- Permission for continued use of the permitted facilities consisting of: ESB substation (26m²), portacabin office facilities including canteen and washroom facilities (91m²), bunded fuel storage, vehicle circulation/access including wheelwash and weighbridge, settlement tanks/hydrocarbon interceptors for treatment of water, construction of overburden and screening mounds, all other associated site works and ancillary activities;
- Permission for continued extraction of limestone using conventional blasting techniques and processing of rock using crushing and screening plant;
- Upgrade of the existing WWTS and percolation area to new Secondary WWTS and constructed soil polishing filter area;
- Provision of the permitted concrete block making facility and concrete batching plant, truck washdown facility with wash water recycled via a closed settlement tank system, the storage of aggregates; and workshop including storage room, canteen and washroom facilities (485m²); and
- Restoration of the overall application site to a natural habitat including a permanent waterbody.

Development Overview

- 5.11 This new planning application will be based on the previous application description and as such will be an application for continuance of use of all previously permitted development.
- 5.12 There will be no requirement for any changes to other facilities, supporting infrastructure, or operational arrangements such as hours of working, extraction volumes or processing methods.

Purpose of this Report

- 5.13 This biodiversity chapter aims to describe the baseline ecological conditions at the Site and to identify potential significant effects associated with the proposed development. Where necessary appropriate mitigation measures will be set out to reduce residual effects to a suitable level.
- 5.14 This chapter forms part of the EIAR that will be submitted with the planning application to assist the competent authority, in this case Roscommon County Council, to carry out an Environmental Impact Assessment (EIA) of the proposed development.
- 5.15 The purpose of this report is to:
 - Describe (any) likely significant effects, any indirect, secondary, cumulative, transboundary, short-term, medium-term, and long-term, permanent, and temporary, positive and negative effects of the project, which result from the proposed works both during construction, operation and restoration;
 - Describe mitigation measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on biodiversity; and
 - Explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced, or offset.
- 5.16 This chapter will address the terrestrial and freshwater habitats and species, with particular attention to rare and protected species as listed under the Checklist of protected and threatened species in Ireland (Nelson et al., 2019).

Evidence of Technical Competence and Experience

- 5.17 This report was prepared by SLR Project Ecologist Victoria Molloy BSc. and SLR Associate Ecologist Michael Bailey carried out the technical review for this report.
- 5.18 Victoria Molloy holds a BSc. in Zoology from the University of Galway. She has three years' experience as a consultant ecologist and is a Qualifying Member of the Chartered Institute of Ecology and Environmental Management (CIEEM). Victoria has prepared a wide range of impact assessment reports including biodiversity chapters for Environmental Impact Assessment Report (EIAR), Ecological Impact Assessment Reports (EclA), Appropriate Assessment (AA) screening reports, and Natura Impact Statements (NIS) for a variety of projects including quarries, forestry licence applications, housing, road, and industrial developments.
- 5.19 Michael Bailey holds a BSc (Hons) in Biology and Ecology from the University of Ulster, and an MSc in Quantitative Conservation Biology from the University of the Witwatersrand, Johannesburg, South Africa. Michael is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM). Michael is an experienced consultant ecologist with field and research experience with mammal, bird, bat and invasive species surveys in Ireland, the UK and Africa. He has prepared Appropriate Assessments and Ecological Impact Assessments for a wide range of infrastructure, mining and extractive industry, and renewable energy projects.

Relevant Legislation and Policy

International legislation and policy

- United Nations (UN) Convention on Biological Diversity (CBD); and
- The Ramsar Convention on Wetlands of International Importance.

European legislation and policy

- EU Habitats Directive on the conservation of natural habitats and of wild fauna and flora (92/43/EEC) (as amended) (the Habitats Directive);
- EU Birds Directive on the conservation of wild birds (2009/147/EC) (as amended);
- The Berne Convention on the Conservation of European Wildlife and Natural Habitats;
- The Bonn Convention on the Conservation of Migratory Species of Wild Animals;
- EU Water Framework Directive establishing a framework for Community action in the field of water policy (2000/60/EC) (as amended);
- EU Environmental Liability Directive (2004/35/EC);
- EU EIA Directive on the assessment of the effects of certain public and private projects on the environment (2011/92/EU) (as amended);
- EU Biodiversity Strategy 2020;
- Regulation (EU) No 1143/2014 of the European Parliament and of the Council of 22 October 2014 on the prevention and management of the introduction and spread of invasive alien species, as amended, together with Commission Implementing Regulation (EU) 2016/1141 and Implementing Regulation (EU) 2019/1262; and
- EU Nature Restoration Law 2023 2022/0195(COD).

National legislation and policy

- The Wildlife Acts 1976, as amended;

- S.I. No. 477/2011 - Regulation 49 and 50 of European Communities (Birds and Natural Habitats) Regulations;
- S.I. No. 272/2009 – European Communities Environmental Objectives (Surface Waters) Regulations, as amended;
- S.I. No. 293/1988 - European Communities (Quality of Salmonid Waters) Regulations;
- European Union Environmental Objectives (Freshwater Pearl Mussel *Margaritifera margaritifera*) (Amendment) Regulations 2009 to 2018;
- The Flora (Protection) Order 2022;
- The Heritage Act, 2018 (as amended);
- Planning and Development Act, 2000 (as amended);
- Project Ireland 2040;
- National Heritage Plan 2030;
- Ireland's 4th National Biodiversity Action Plan 2023 - 2030.
- European Communities (Planning and Development) (Environmental Impact Assessment (EIA)) Regulations 2018, as amended;
- European Communities (Water policy) Regulations, 2003, as amended; and
- European Communities Environmental Objectives (Surface Waters) Regulations 2009.

Local policy

5.20 The relevant local planning policies have been extracted from the Roscommon County Development Plan (CDP) 2022-2028 (Roscommon County Council, 2022). These policies are specific to “Chapter 10: Natural Heritage” of the county development plan and are concerned with the policies and objectives to protect and/or enhance the ecology and biodiversity of the county. In broad terms these objectives and policies aim to ensure correct measures are put in place to identify and protect natural heritage and important environmental features within the county. The full list of relevant policies and objectives are listed in **Appendix 5-A** of this report.

Guidance

5.21 The relevant guidance has been followed:

- Guidelines for Assessment of Ecological Impacts of National roads Schemes (National Roads Authority (NRA, 2009a.);
- Ecological Surveying Techniques for Protecting Flora and Fauna during the Planning of National Road Schemes (NRA, n.d.);
- Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes (NRA, 2009b);
- Surveying Badgers (Harris et al., 1989)
- Guidelines for Ecological Impact Assessment in the UK and Ireland (Chartered Institute of Ecology and Environmental Management (CIEEM), 2018);
- Guidance Note 08/23: Bats and Artificial Lighting at Night (Institute of Lighting Professionals (ILP) and Bat Conservation Trust (BCT), 2023);
- Bat Surveys for Professional Ecologists – Good Practice Guidelines (Collins 2016; and Collins, 2023);
- A Guide to Habitats in Ireland (Fossitt, 2000);

- The Status of Ireland's Breeding Seabirds: Birds Directive Article 12 Reporting 2013 – 2018 (Cummins et al., 2019);
- The Status of EU Protected Habitats and Species in Ireland (National Parks and Wildlife Service (NPWS), 2019);
- Common Standards Monitoring Guidance for Reptiles and Amphibians (Joint Nature Conservation Committee (JNCC), 2004);
- UK BAP Mammals: Interim Guidance for Survey Methodologies, Impact Assessment and Mitigation (Cresswell et al., 2012); and
- New Atlas of the British and Irish Flora: An Atlas of the Vascular Plants of Britain, Ireland, The Isle of Man and the Channel Islands (Preston et al., 2022).

Methodology

5.22 The methods used to carry out the survey of the Site, to evaluate the ecological value and to prepare the biodiversity chapter is outlined in this section. The assessment methodology for this proposal was developed using the standard professional impact assessment guidance published in 2018 by the Chartered Institute of Ecology and Environmental Management (CIEEM).

Scope of the Assessment

5.23 The scope of this Biodiversity Chapter is to identify potential impacts likely to occur from the proposed extraction and restoration operations, and to determine if the effects on biodiversity are significant. The scope of the report includes the provision of mitigation, compensation and enhancement measures as required.

Desk study

5.24 All designated sites for biodiversity within 15 km and with ecological and/or hydrological connectivity have also been considered.

Field survey

5.25 The study area for field surveys comprised the site boundary, although incidental sighting of species beyond this boundary are represented where relevant in this report.

Baseline Data Collection

Desk Study

5.26 A desk study was carried out to collate the available existing ecological information on the Site. The Site and the surrounding area were viewed using existing available satellite imagery¹.

5.27 All designated sites for biodiversity within 15 km and with ecological and/or hydrological connectivity have also been considered.

5.28 The following data sources were used to compile the desk study:

¹ <https://www.google.ie/maps> & <http://www.bing.com/maps/> (Accessed December 2024)

- The National Parks and Wildlife Service (NPWS)² online resources were accessed for information on sites with a statutory designation for nature conservation, specifically European sites (Special Areas of Conservation (SAC) and Special Protection Areas (SPA)), Ramsar sites and Natural heritage Areas (NHAs), and other sites such as proposed Natural Heritage Areas (pNHA) that are not legally designated but are identified as being of conservation interest, and protected habitats and species as defined under the NPWS Checklist of Protected and Threatened Species in Ireland (Nelson et al., 2019).
- The National Biodiversity Data Centre (NBDC)³ online resources were accessed for information on rare and protected habitats and species (Nelson et al., 2019). All records were considered within this assessment; however, where a record was sufficiently old and unlikely to comprise relevant data (e.g., where changes in land management that has occurred in the intervening period), these data have been omitted from the assessment.
- Environmental Protection Agency (EPA) Maps⁴ was accessed for other environmental information, such as surface water features, relevant to preparation of this report.
- Records of Annex I habitats, and Annex II and IV species of the Habitats Directive (92/43/EEC) using Article 12 and Article 17 reports.
- Local policies listed in the Roscommon County Development Plan.
- Birds of Conservation Concern in Ireland (BoCCI) 2020-2026 (Gilbert et al., 2021), published by BirdWatch Ireland and the RSPB NI, is a list of priority bird species for conservation action on the island of Ireland. The BoCCI lists birds which breed and/or winter in Ireland and classifies them into three separate lists; Red, Amber and Green; based on the conservation status of the bird and hence their conservation priority. Birds on the Red List are those of highest conservation concern, Amber List are of medium conservation concern and Green List are not considered threatened.
- Wildlife Acts 1976 – 2018 (ISB, n.d.), the Red List of Terrestrial Mammals (Marnell et al., 2019)
- Annexes of the EU Habitats Directive 92/43/EEC¹² (European Commission, n.d.).
- Roscommon County Council website was accessed for information on relevant planning policy while the planning portal⁵ was accessed for information on other planning applications within the Site and immediate surrounding area.
- The drawings and the full project description are contained within other sections of this EIAR which also informed the desk study. Other chapters of the EIAR reviewed included Chapter 7 - Water, Chapter 8 - Air Quality, Chapter 10: Noise & Vibration and Chapter 13 - Landscape.

Field Survey(s)

5.29 **Table 5-1** provides an overview of the ecological surveys that have been undertaken on the Site.

² www.npws.ie (Accessed December 2024)

³ <http://maps.biodiversityireland.ie/#/Map> (Accessed December 2024)

⁴ <http://gis.epa.ie/> (Accessed December 2024)

⁵ <https://www.myplan.ie/> (Accessed December 2024)

Table 5-1: Summary of Surveys Undertaken on the Site

Date	Survey Type	Ecologist	Scope of Survey and Relevant Guidance Followed
11/06/2024	Preliminary Ecological Appraisal	Victoria Molloy	Identify initial ecological constraints to the Site and scope for the need for further (Phase 2) surveys.
23/07/2024	Continued Habitat Survey	Victoria Molloy	Habitat mapping following the guidance set out in <i>A guide to habitats in Ireland</i> (Fossitt, 2000).
11/06/2024	Breeding Bird Survey	Victoria Molloy	Assess the site for breeding birds by determining species presence and breeding behaviors following the guidance set out under the current Bird Survey Guidelines (n.d.) and using British Trust for Ornithology (BTO) species (BTO, n.d.a) and behavior codes (BTO, n.d.b).
26-27/08/2024	Marsh Fritillary Survey	Victoria Molloy	- Assess the site for breeding marsh fritillary by surveying for marsh fritillary larval webs and conducting habitat condition assessments for marsh fritillary. - The larval web survey and habitat condition assessment followed the methodology outlined by the National Biodiversity Data Centre for the marsh fritillary monitoring scheme and was supplemented with guidance notes from the UK Butterfly Monitoring Scheme.
14/05/2025	Updated Preliminary Ecological Appraisal	Victoria Molloy	Provide updated baseline data for the Site and identification of any additional ecological constraints.

Preliminary Ecological Appraisal

- 5.30 A preliminary ecological appraisal (PEA) of the Site was undertaken in June 2024 to identify initial ecological constraints to the Site and scope for the need for further (Phase 2) surveys. An updated preliminary ecological appraisal was undertaken in May 2025.
- 5.31 All habitats within the Site were mapped following the guidance set out in *A guide to habitats in Ireland* (Fossitt, 2000). The dominant plant species present in each habitat type were recorded. A continued habitat survey was conducted in July 2024 to map and assess potential Annex I habitat on-site in further detail.
- 5.32 The potential presence of rare and protected flora and fauna was assessed during the PEA, including the presence of badger setts and activity and other rare and protected mammals, birds, reptiles, amphibians, invertebrates, and invasive non-native species (INNS), listed on the Third Schedule of the EC Birds and Natural Habitats Regulations 2011.

Breeding Bird Survey

- 5.33 One breeding bird survey was conducted to assess the Site for breeding bird activity. The survey was conducted during the optimal survey season (i.e., between March – July) and during good weather conditions with high visibility.
- 5.34 The methodology followed the current Bird Survey Guidelines (n.d.). All birds seen and/or heard were recorded digitally using the British Trust for Ornithology (BTO) species and behaviour codes (**Table 5-2**) to record bird behaviours that may indicate breeding within the Site.

Table 5-2: BTO breeding status codes (BTO, n.d.)

Breeding status	Details
Non-breeding	Flying over
	Species observed but suspected to be still on migration
	Species observed but suspected to be summering non-breeder
Possible breeder	Species observed in breeding season in suitable nesting habitat
	Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat
Probable breeder	Pair observed in suitable nesting habitat in breeding season
	Permanent territory presumed through registration of territorial behaviour (song etc) on at least two different days a week or more part at the same place or many individuals on one day
	Courtship and display (judged to be in or near potential breeding habitat; be cautious with wildfowl)
	Visiting probable nest site
	Agitated behaviour or anxiety calls from adults, suggesting probable presence of nest or young nearby
	Nest building or excavating nest-hole
Confirmed breeding	Distraction-display or injury feigning
	Used nest or eggshells found (occupied or laid within period of survey)
	Recently fledged young (nidicolous species) or downy young (nidifugous species). Careful consideration should be given to the likely provenance of any fledged juvenile capable of significant geographical movement. Evidence of dependency on adults (e.g. feeding) is helpful. Be cautious, even if the record comes from suitable habitat.
	Adults entering or leaving nest-site in circumstances indicating occupied nest (including high nests or nest holes, the contents of which cannot be seen) or adults seen incubation.
	Adult carrying faecal sac or food for young
	Nest containing eggs
	Nest with young seen or heard

Marsh Fritillary Survey

- 5.35 The larval web survey followed the methodology outlined by the National Biodiversity Data Centre for the marsh fritillary monitoring scheme⁶. The survey methodology was supplemented with guidance notes from the UK Butterfly Monitoring Scheme⁷. A transect walk was conducted, searching for larval webs in an area 1 m either side of the transect. Following the survey, the estimated number of larval webs was calculated for the sub-sites surveyed with a representative sample transect.
- 5.36 The suitability of each sub-site for breeding marsh fritillary was assessed using methodology outlined by the National Biodiversity Data Centre for the marsh fritillary monitoring scheme⁶. Fixed point habitat recording was carried out every 20-30 paces during the transect walks

⁶ <https://biodiversityireland.ie/surveys/marsh-fritillary-monitoring-scheme/> (last accessed August 2024)

⁷ <https://ukbms.org/sites/default/files/downloads/UKBMS%20Ng2%20-%20Marsh%20Frit%20Webs%20Guidance%20notes.pdf> (last accessed August 2024)

described above. For each stopping point the attributes listed in **Table 5-3** were measured and recorded. At the end of the transect, the cover (%) of tall (>0.5m) scrub for the whole sub-site was also recorded. Following the survey, the habitat condition and management alerts for each sub-site were assessed according to the criteria in **Table 5-4**.

Table 5-3: Key for Recording Attributes for Habitat Condition Assessment

Attribute	Recording Key			
Vegetation Height:	A = <12cm	B = 12-25 cm	C = 25-50 cm	D = >50 cm
Devil's Bit Scabious Abundance:	A = 1-2 plants/m ²	B = 3-9 plants/m ²	C = 10+ plants/m ²	D = None
Structured Vegetation:	Mark with an 'X' if there is presence of any steps in vegetation or ground that provide localised protection from elements at ground level.			
Low Invading Scrub:	Mark with an 'X' if low invading scrub (e.g. birch, gorse, bog myrtle) <25 cm tall and >10% cover present. The word 'invading' is important here. Do not include scrub that is an integral part of the habitat (e.g. Juniper in Juniper heath systems).			
Evidence of Stock Grazing:	Mark with an 'X' if localised evidence present (e.g. poaching, dung, etc.).			

Table 5-4: Habitat Condition Assessment Key

Habitat Condition	Description
Good	>20% freq. of Scabious of category B/C abundance growing in 12-25 cm tall swards <10% cover of tall scrub (>0.5 m tall).
Suitable (Under-grazed)	>20% freq. of Scabious of category B/C abundance growing in >25 cm tall swards <20% freq. of Scabious of category B/C abundance growing in 12-25 cm tall swards.
Suitable (Over-grazed)	>20% freq. of Scabious of category B/C abundance growing in <12cm tall swards <20% freq. of Scabious of category B/C abundance growing in 12-25 cm tall swards.
Unsuitable	<5% freq. of Scabious of category B/C abundance growing in >25 cm tall swards.
Management Alerts	
Under-grazing Indicators	>10% cover of tall scrub (>0.5cm) >75% freq. of structured vegetation >10% freq. of low invading scrub <20% freq. of evidence of stock grazing Mean vegetation height >25cm.
Over-grazing Indicators	<25% freq. of structured vegetation >80% freq. of evidence of stock grazing Mean vegetation height <12cm.

Limitations

Desk Study

5.37 Desk study data is unlikely to be exhaustive, especially in respect of species, and is intended mainly to set a context for the study. It is therefore possible that important habitats or protected

species not identified during the data search do in fact occur within the vicinity of the site. Interpretation of maps and aerial photography has been conducted in good faith, using recent imagery, but it has not been possible to verify the accuracy of any statements relating to land use and habitat context outside of the field study area.

- 5.38 The lack of ecological records returned in the data search does not conclude the absence of a species. Such an absence of records may simply indicate an under-recording of the area.
- 5.39 In accordance with CIEEM's Advice Note on the Lifespan of Ecological Reports and Surveys⁸, the details of this report will remain valid for a period of 18-months from the date of the most recent PEA survey (i.e.: until 13 November 2026). After which the validity of this assessment should be reviewed to determine whether further updates are necessary.

Field Surveys

- 5.40 Some areas within the southern area of unmanaged land were inaccessible due to dense growth of scrub and steep slopes posing a health and safety risk. Where possible, these areas were assessed by binoculars from a vantage point on-site. In areas that were inaccessible and could not be viewed from a vantage point, their habitats were assessed using satellite imagery. This limitation is relevant for all the surveys conducted on-site.

Breeding Bird Survey

- 5.41 The breeding bird survey was limited to the accessible parts of the southern area of unmanaged land, as this was identified as being the most suitable area for breeding passerine birds on-site. The habitats that are due to be lost are located to the north of the Site and are located adjacent to the currently active quarry where activity will cause disturbance to breeding birds. Therefore, the habitats that will be lost are unlikely to support notable, rare or protected breeding bird species and are only favourable for common, green-listed bird species. Therefore, following the results of this bird survey and the breeding bird survey guidelines⁹, it was determined that a single breeding bird survey was sufficient given the low value of the habitats for breeding birds.

Marsh Fritillary Survey

- 5.42 Significant portions of the survey area are inaccessible due to dense growth of scrub and steep slopes posing a health and safety risk. These areas could not be investigated for breeding marsh fritillary during the survey but are likely to contain further areas of suitable breeding habitat. The habitats within these inaccessible areas were assessed using visual inspection with binoculars where possible and aerial satellite imagery. From these assessments, there is an estimated 3.5 ha of possibly suitable habitat that could not be accessed during this survey. As such, the estimated population size reported in this survey should be considered an underestimate of the total population of larval webs on-site. The results of the marsh fritillary survey are presented in **Appendix 5-C**.

Assessment Approach

- 5.43 The ecological evaluation and assessment within this chapter has been undertaken with reference to relevant parts of the 2018 Guidelines for Ecological Impact Assessment in the UK and Ireland developed by the Chartered Institute of Ecology and Environmental Management (CIEEM, September 2018).

⁸ CIEEM (2019) Advice Note on the Lifespan of Ecological Reports and Surveys

⁹ <https://birdsurveyguidelines.org/>

- 5.44 Although this is recognised as current good practice for ecological assessment, the guidance itself recognises that it is not a prescription about exactly how to undertake an ecological impact assessment (EclA); rather, they “*provide guidance to practitioners for refining their own methodologies*”. For the full guidance, refer to <https://www.cieem.net/data/files/ECIA%20Guidelines.pdf>. The approach to impact assessment also has regard to advice set out in the EPA draft guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR) published in 2022.

Important Ecological Features

- 5.45 Important Ecological Features (IEFs) can be important for a variety of reasons. Importance may relate, for example, to the quality or extent of the site or habitats therein; habitat and/ or species rarity; the extent to which such habitats and/ or species are threatened throughout their range, or to their rate of decline. IEFs comprise the following:
- Designated sites including European, nationally, and locally designated sites;
 - Habitats listed on Annex I of the Habitats Directive;
 - Populations of bird species listed on Annex I of the Birds Directive; on local biodiversity action plan or are provided protection through policies listed under the county development plans;
 - Populations of protected and threatened species in Ireland as defined by Nelson et al. (2019) and/or the local biodiversity action plan; or
 - Habitats that comprise a significant resource for a rare or protected species.

Determining Importance

- 5.46 The importance of an ecological feature should be considered within a defined geographical context. The following frame of reference has been used in this case, relying on known/ published accounts of distribution and rarity where available, and professional experience:
- International (European);
 - National (Ireland);
 - County (Roscommon);
 - Local (i.e., within circa 5km); and
 - Negligible.
- 5.47 The above frame of reference is applied to the IEFs identified during the desk study and surveys to inform this report.
- 5.48 In assigning a level of value to the population of a species, it is necessary to consider its distribution and status, including a consideration of trends based on available historical records. Examples of relevant lists and criteria include species of European conservation importance (as listed on Annexes II, IV and V of the Habitats Directive or Annex 1 of the Birds Directive), species protected under the Wildlife Acts 1976 - 2012 and BoCCI.
- 5.49 The level of value is determined by reference to standard criteria. All features of Local value and higher are considered in the assessment if they are likely to be significantly affected. Other features are also considered in the assessment if they are protected by law or policy, or otherwise require consideration in the development process.

Impact Assessment

- 5.50 The impact assessment process involves the following steps:

- identifying and characterising potential impacts;
- incorporating measures to avoid and mitigate (reduce) these impacts;
- assessing the significance of any residual effects after mitigation;
- identifying appropriate compensation measures to offset significant residual effects (if required); and
- identifying opportunities for ecological enhancement.

5.51 When describing impacts, reference has been made to the following characteristics, as appropriate:

- Positive or negative;
- Extent;
- Magnitude;
- Duration;
- Timing;
- Frequency; and
- Reversibility.

5.52 The impact assessment process considers both direct and indirect impacts: direct ecological impacts are changes that are directly attributable to a defined action (e.g., the physical loss of habitat occupied by a species during the construction process). Indirect ecological impacts are attributable to an action, but which affect ecological resources through effects on an intermediary ecosystem, process, or feature (e.g., the creation of roads which cause hydrological changes, which, in the absence of mitigation, could lead to the drying out of wet grassland).

5.53 Consideration of conservation status is important for evaluating the effects of impacts on individual habitats and species and assessing their significance:

- 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.

5.54 The threshold of importance is based at 1% of the existing background population / area (CIEEM, 2018).

Significant Effects

5.55 The 2018 CIEEM guidance sets out information in paragraphs 5.24 through to 5.28 of the guidance documents which describes the concept of ecological significance. Significant effects are qualified with reference to an appropriate geographic scale, and the scale of significance of an effect may or may not be the same as the geographic context in which the feature is considered important.

5.56 A significant effect, for the purposes of EclA, is defined as an effect that either supports or undermines biodiversity conservation objectives for '*important ecological features*' or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide-ranging (enhancement of

biodiversity). Effects can be considered significant at a wide range of scales from international to local.

- 5.57 The nature of the identified effects on each assessed feature is characterised. This is considered, along with available research, professional judgement about the sensitivity of the feature affected, and professional judgement about how the impact is likely to affect the site, habitat, or population's structure and continued function. Where it is concluded that an effect would be likely to reduce the importance of an assessed feature, it is described as significant. The degree of significance of the effect takes into account the geographic context of the feature's importance and the degree to which its interest is judged to be affected.

Cumulative Effects

- 5.58 Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location. Cumulative effects can occur where a proposed development results in individually insignificant impacts that, when considered in-combination with impacts of other proposed or permitted plans and projects, can result in significant effects.
- 5.59 Other plans and projects that should be considered when establishing cumulative effects are:
- proposals for which consent has been applied but which are awaiting determination;
 - projects which have been granted consent, but which have not yet been started, or which have been started but are not yet completed (i.e., under construction);
 - proposals which have been refused permission, but which are subject to appeal, and the appeal is undetermined;
 - constructed developments whose full environmental effects are not yet felt and therefore cannot be accounted for in the baseline; or
 - developments specifically referenced in a National Policy Statement, a National Plan, or a Local Plan.

Avoidance, Mitigation, Compensation and Enhancement

- 5.60 When seeking mitigation or compensation solutions, efforts should be consistent with the geographical scale at which an effect is significant. For example, mitigation and compensation for effects on a species population significant at a county scale should ensure no net loss of the population at a county scale. The relative geographical scale at which the effect is significant will have a bearing on the required outcome which must be achieved.
- 5.61 Where potentially significant effects have been identified, the mitigation hierarchy has been applied, as recommended in the CIEEM Guidelines. The mitigation hierarchy sets out a sequential approach beginning with the avoidance of impacts where possible, the application of mitigation measures to minimise unavoidable impacts and then compensation for any remaining impacts. Once avoidance and mitigation measures have been applied, residual effects are then identified along with any necessary compensation measures, and incorporation of opportunities for enhancement.
- 5.62 It is important to clearly differentiate between avoidance mitigation, compensation and enhancement and these terms are defined here as follows:
- Avoidance is used where an impact has been avoided, e.g. through changes in scheme design;
 - Mitigation is used to refer to measures to reduce or remedy a specific negative impact in situ;

- Compensation describes measures taken to offset residual effects, i.e. where mitigation in situ is not possible; and
- Enhancement is the provision of new benefits for biodiversity that are additional to those provided as part of mitigation or compensation measures, although they can be complementary.

Baseline Ecological Conditions

- 5.63 This section sets out the current baseline conditions for the ecological features considered within the Site and provides a clear description of the changes that would occur as a result of the proposed development using the findings of the desk study and field survey.

Sites Designated for Nature Conservation

- 5.64 Sites which have been designated for nature conservation are discussed in this section. These designations may include European sites, Natural Heritage Areas, National Parks, Nature Reserves, and Ramsar Sites.

European Designated Sites

- 5.65 An Appropriate Assessment (AA) screening report and Natura Impact Assessment (NIS) report has been provided alongside this report (SLR, 2025). **Table 5-5** lists the European sites identified within 15 km of the Site, as shown in **Figure 5-2**. Sites beyond this distance have been scoped out as it is considered that the potential impacts caused by the proposed development are likely to have an imperceptible effect on sites beyond this distance.
- 5.66 The Appropriate Assessment Screening and Natura Impact Statement (NIS) report prepared for this Project, concluded that Likely Significant Effects (LSEs) were possible for the following European sites:
- Lough Croan Turlough SAC (000610);
 - Castlesampson Esker SAC (001625);
 - Lough Croan Turlough SPA (004139); and
 - River Suck Callows SPA (004097).
- 5.67 All other European sites have been scoped out from potential impacts in the AA Screening and NIS report and have, therefore, not been assessed further in this chapter.

Table 5-5: List of European Sites Within 15km of the Project Site

European Site	Distance ¹⁰	Qualifying Interests ¹¹
Special Areas of Conservation (SACs)		
Ballynamona Bog and Corkip Lough SAC (002339)	2 km southeast	- Turloughs [3180] - Active raised bogs [7110] - Degraded raised bogs still capable of natural regeneration [7120] - Depressions on peat substrates of the Rhynchosporion [7150] - Bog woodland [91D0] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002339.pdf
Lough Croan Turlough SAC (000610)	3.1 km north	Turloughs [3180] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000610.pdf
Killeglan Grassland SAC (002214)	3.25 km southwest	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002214.pdf
Castlesampson Esker SAC (001625)	3.6 km south	- Turloughs [3180] - Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO001625.pdf
Lough Funshinagh SAC (000611)	5.3 km northeast	- Turloughs [3180] - Rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidens</i> p.p. vegetation [3270] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000611.pdf
Four Roads Turlough SAC (001637)	7.15 km northwest	Turloughs [3180] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO001637.pdf
Lough Ree SAC (000440)	9.4 km east	- Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150] - Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]

¹⁰ When measured in a straight line over the shortest distance between the site and European site.

¹¹ For SPAs, the bird species that are the reason for designation are Species of Conservation Interest (SCIs) and for SACs the habitats and species that are the reason for designation are its Qualifying Interests (QIs). For convenience, the term qualifying interest or QI is used here for both SPAs and SACs.

⁹ [Protected Sites in Ireland | National Parks & Wildlife Service \(npws.ie\)](https://www.npws.ie)

European Site	Distance ¹⁰	Qualifying Interests ¹¹
		- Active raised bogs [7110] - Degraded raised bogs still capable of natural regeneration [7120] - Alkaline fens [7230] - Limestone pavements [8240] - Bog woodland [91D0] - Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0] <i>Lutra lutra</i> (Otter) [1355] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000440.pdf
Lisduff Turlough SAC (000609)	10.8 km northwest	Turloughs [3180] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000609.pdf
River Shannon Callows SAC (000216)	12.9 km southwest	<i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410] - Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510] - Alkaline fens [7230] - Limestone pavements [8240] - Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0] <i>Lutra lutra</i> (Otter) [1355] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000216.pdf
Ballinturly Turlough SAC (000588)	14.55 km northwest	Turloughs [3180] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000588.pdf
Aughrim (Aghrane) Bog SAC (002200)	14.7 km northwest	Degraded raised bogs still capable of natural regeneration [7120] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002200.pdf
Ballygar (Aghrane) Bog SAC (002199)	15 km northwest	- Active raised bogs [7110] - Degraded raised bogs still capable of natural regeneration [7120] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002199.pdf
Special Protection Areas (SPAs)		
Lough Croan Turlough SPA (004139)	3.1 km north	- Shoveler (<i>Anas clypeata</i>) [A056] - Golden Plover (<i>Pluvialis apricaria</i>) [A140] - Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] - Wetland and Waterbirds [A999]

European Site	Distance ¹⁰	Qualifying Interests ¹¹
		https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004139.pdf
River Suck Callows SPA (004097)	4.6 km west	- Whooper Swan (<i>Cygnus cygnus</i>) [A038] - Wigeon (<i>Anas penelope</i>) [A050] - Golden Plover (<i>Pluvialis apricaria</i>) [A140] - Lapwing (<i>Vanellus vanellus</i>) [A142] - Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] - Wetland and Waterbirds [A999] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004097.pdf
Four Roads Turlough SPA (004140)	7.15 km northwest	- Golden Plover (<i>Pluvialis apricaria</i>) [A140] - Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] - Wetland and Waterbirds [A999] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004140.pdf
Lough Ree SPA (004064)	9.4 km east	- Little Grebe (<i>Tachybaptus ruficollis</i>) [A004] - Whooper Swan (<i>Cygnus cygnus</i>) [A038] - Wigeon (<i>Anas penelope</i>) [A050] - Teal (<i>Anas crecca</i>) [A052] - Mallard (<i>Anas platyrhynchos</i>) [A053] - Shoveler (<i>Anas clypeata</i>) [A056] - Tufted Duck (<i>Aythya fuligula</i>) [A061] - Common Scoter (<i>Melanitta nigra</i>) [A065] - Goldeneye (<i>Bucephala clangula</i>) [A067] - Coot (<i>Fulica atra</i>) [A125] - Golden Plover (<i>Pluvialis apricaria</i>) [A140] - Lapwing (<i>Vanellus vanellus</i>) [A142] - Common Tern (<i>Sterna hirundo</i>) [A193] - Wetland and Waterbirds [A999] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004064.pdf
Middle Shannon Callows SPA (004096)	12.9 km southwest	- Whooper Swan (<i>Cygnus cygnus</i>) [A038] - Wigeon (<i>Anas penelope</i>) [A050] - Corncrake (<i>Crex crex</i>) [A122] - Golden Plover (<i>Pluvialis apricaria</i>) [A140] - Lapwing (<i>Vanellus vanellus</i>) [A142] - Black-tailed Godwit (<i>Limosa limosa</i>) [A156] - Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] - Wetland and Waterbirds [A999] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004096.pdf

Natural Heritage Areas

5.68 **Table 5-6** details the Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs) within 15 km of the proposed development, as shown in **Figure 5-3**.

Table 5-6: List of Proposed Natural Heritage Areas Within 15 km of the Site

Natural Heritage Area	Distance ¹²	Details
Natural Heritage Areas (NHAs)		
Suck River Callows NHA (000222)	4.6 km west	Peatlands [4] and birds [12]. It is anticipated that this NHA is designated for the same QI species as the River Suck Callows SPA which it overlaps with.
Annaghbeg Bog NHA (002344)	9.6 km southwest	Peatlands [4].
Castle Ffrench East Bog NHA (001244)	10.75 km west	Peatlands [4].
Castle Ffrench West Bog NHA (000280)	12.3 km west	Peatlands [4].
Killure Bog NHA (001283)	12.75 km southwest	Peatlands [4].
Carrickynaghtan Bog NHA (001623)	12.95 km southeast	Peatlands [4].
Ballygar Bog NHA (000229)	13.4 km northwest	Peatlands [4].
Crit Island West NHA (000254)	14.6 km southwest	Peatlands [4].
Aughrim Bog NHA (001227)	14.75 km northwest	Peatlands [4].
Proposed Natural Heritage Areas (pNHAs)		
Feacle Turlough pNHA (001634)	0.55 km south	Turlough and northern yellow cress <i>Rorippa islandica</i> .
Lough Croan Turlough pNHA (004139)	3.1 km north	It is anticipated that this pNHA is designated for the same QIs as the Lough Croan Turlough SAC and SPA which it overlaps with.

¹² When measured in a straight line over the shortest distance between the site and NHA/pNHA.

Natural Heritage Area	Distance ¹²	Details
Castlesampson Esker pNHA (001625)	3.6 km southeast	It is anticipated that this pNHA is designated for the same QIs as the Castlesampson Esker SAC which it overlaps with.
Lough Funshinagh pNHA (000611)	5.3 km northeast	It is anticipated that this pNHA is designated for the same QIs as the Lough Funshinagh SAC which it overlaps with.
Four Roads Turlough pNHA (004140)	7.15 km northwest	It is anticipated that this pNHA is designated for the same QIs as the Four Roads Turlough SAC and SPA which it overlaps with.
Lough Ree pNHA (004064)	9.4 km east	It is anticipated that this pNHA is designated for the same QIs as the Lough Ree SAC and SPA which it overlaps with.
Cranberry Lough pNHA (001630)	10.1 km south	Lake.
Lisduff Turlough pNHA (000609)	10.8 km northwest	It is anticipated that this pNHA is designated for the same QIs as the Lisduff Turlough SAC which it overlaps with.
River Shannon Callows pNHA (004096)	12.9 km southwest	It is anticipated that this pNHA is designated for the same QIs as the River Shannon Callows SAC and SPA which it overlaps with.
Ballinasloe Esker pNHA (001779)	14 km southwest	Esker woodland.
Ballinturly Turlough pNHA (000588)	14.6 km northwest	It is anticipated that this pNHA is designated for the same QIs as the Ballinturly Turlough SAC which it overlaps with.

Habitats

5.69 Habitats present within the Site, as recorded during the preliminary ecological assessment survey, are described in this section. Habitat classification follows that of '*A Guide to Habitats in Ireland*' (Fossitt, 2000). A habitat map for the site is provided in **Figure 5-1**.

Desk Study

5.70 Consultation with Biodiversity Maps¹³ returned no results from the National Survey of Native Woodlands (NSNW) identified by Perrin *et al.* (2008) or ancient and long-established woodland within or adjacent to the Site.

5.71 Consultation with NPWS Article 17 GIS and Metadata – interactive map viewer for 2019 spatial data¹⁴ returned results of Annex I [6210] orchid-rich calcareous grassland on-site and surrounding the Site. The grasslands are classified as being of bad quality in this data.

¹³ <https://maps.biodiversityireland.ie/Map>. (Accessed December 2024)

¹⁴ <https://storymaps.arcgis.com/collections/1a721520030d404f899d658d5b6e159a?item=1>. (Accessed December 2024)

Field Survey

Active Mines and Quarries (ED4)

- 5.72 The existing active quarry is located in the northern part of the Site.
- 5.73 This habitat provides very limited value to biodiversity. In addition, the level of human activity on this habitat on-site further reduces its biodiversity value. Therefore, it is evaluated to be of **negligible importance**.

Spoil and Bare Ground (ED2)

- 5.74 There are many areas of bare ground formed by ground clearance, roads and paths and some spoil storage in the northern section of the Site where extraction activities are ongoing.
- 5.75 There is a small area of existing overburden storage area located to the southwest of the quarry void which currently has a footprint of c. 2.9 hectares. This area is transitioning towards recolonising bare ground where it has been left unmanaged. Recolonising plant species include common birds foot trefoil, hawkweeds *Hieracium* sp., ribwort plantain, lesser trefoil *Trifolium dubium*, creeping buttercup, Yorkshire fog, cocksfoot, sweet vernal grass, immature willows *Salix* sp., rushes *Juncus* sp., common milkwort, and coltsfoot *Tussilago farfara*. Some orchid species, *Dactylorhiza* sp., and lesser twayblade are located along the edges of the path in the southern part of the Site.
- 5.76 This habitat provides very limited value to biodiversity. This area will continue to be used as an overburden storage area to a maximum size of 3.9 hectares, and this will maintain a low biodiversity value. Therefore, it is evaluated to be of **negligible importance**.

Reservoirs (FL7)

- 5.77 There are two reservoirs located within the existing active quarry area.
- 5.78 This habitat provides very limited value to biodiversity. In addition, the level of human activity around this habitat on-site further reduces its biodiversity value. Therefore, it is evaluated to be of **negligible importance**.

Dry Calcareous and Neutral Grassland (GS1)

- 5.79 In the northern section of the existing active quarry there are small, isolated areas of this habitat which have not been impacted by the recent quarry activities, but some areas have small overburden piles. Most of this habitat is found in the undeveloped southern section of the quarry but a majority of it has formed a mosaic habitat with scrub woodland species. The southern grassland areas are currently unmanaged and are significantly more species-rich than the grassland areas in the northern part of the Site.
- 5.80 The grassland to the north of the Site comprises of the following grass species: cocksfoot *Dactylis glomerata*, Yorkshire fog *Holcus lanatus*, *Poa* sp., and sweet vernal grass *Anthoxanthum odoratum*. There is also a variety of common wildflowers such as common birds foot trefoil *Lotus corniculatus*, yarrow *Achillea millefolium*, white clover *Trifolium repens*, dandelion *Taraxacum* agg., creeping buttercup *Ranunculus repens*, tormentil *Potentilla erecta*, kidney vetch *Anthyllis vulneraria*, slender St. John's wort *Hypericum mutilum*, wild thyme *Thymus drucei*, ribwort plantain *Plantago lanceolata*, common milkwort *Polygala vulgaris*, silverweed *Potentilla anserina*, bitter vetch *Lathyrus linifolius*, germander speedwell *Veronica chamaedrys*, pignut *Conopodium majus*, and tufted vetch *Vicia cracca*. Scrub species such as low-growing bramble *Rubus fruticosus* agg. and bracken *Pteridium aquilinum* are also present. A patch of orchids *Dactylorhiza* sp. is located near the quarry spoil heaps within this northern area of grassland (refer to Target **Note 1** on **Figure 5-1**). No other orchids were recorded within the northern part of the Site.
- 5.81 The grassland to the south of the Site has the same plant species assemblage as listed above, in addition to the following grass species: quaking grass *Briza media*, crested dog's tail

Cynosurus cristatus, *Brachypodium sylvaticum*, *Danthonia decumbens*, *Agrostis* sp., purple moor grass *Molinia caerulea*, and *Festuca* sp. Sedges are also present including *Carex pulicaris* and other *Carex* spp. The wildflower assemblage includes the same species as the northern grassland habitat with the addition of bulbous buttercup *Ranunculus bulbosus*, lady's mantle *Alchemilla vulgaris*, red clover *Trifolium pratense*, rough hawkbit *Leontodon hispidus*, lady's bedstraw *Galium verum*, meadow vetchling *Lathyrus pratensis*, devil's bit scabious *Succisa pratensis*, mountain everlasting *Antennaria dioica*, carline thistle *Carlina vulgaris*, field scabious *Knautia arvensis*, selfheal *Prunella vulgaris*, yellow-wort *Blackstonia perfoliata*, and mouse ear hawkweed *Pilosella officinarum*. There are also some patches of common ling *Calluna vulgaris* within the grassland habitat. Orchids are widespread in this area of grassland with marsh orchids *Dactylorhiza* sp., fragrant orchids *Gymnadenia* sp. and lesser twayblade *Neottia cordata* found throughout the habitat. Some individuals of early purple orchid *Orchis mascula* were also noted (refer to Target **Notes 3** and **6** on **Figure 5-1**). This area of grassland forms a mosaic with scrub and dense bracken habitats with limited areas of open grassland. It is possible that further patches of open grassland are located in the inaccessible areas on-site, as this habitat is indistinguishable from dense bracken when viewed from satellite imagery.

- 5.82 The southern area of grassland would be classified as semi-natural dry grassland in good condition due to the presence of at least six positive indicator species and at least ten high-quality indicator species listed in **Table Table 5-7** below¹⁵. As such, it may be considered a priority Annex I semi-natural dry grassland on calcareous substrate [6210].

Table 5-7: Positive and High-Quality Indicator Species for Annex I Semi-Natural Dry Grassland on calcareous substrates present in the southern part of the Site

High-Quality Indicator Species	Positive Indicator Species
Mountain Everlasting <i>Antennaria dioica</i>	Lady's Bedstraw <i>Galium verum</i>
Kidney Vetch <i>Anthyllis vulneraria</i>	Hawkbit spp. <i>Leontodon</i> spp.
Yellow-wort <i>Blackstonia perfoliata</i>	Common Bird's Foot Trefoil <i>Lotus corniculatus</i>
Quaking-grass <i>Briza media</i>	Mouse-ear Hawkweed <i>Pilosella officinarum</i>
Carline Thistle <i>Carlina vulgaris</i>	Bulbous Buttercup <i>Ranunculus bulbosus</i>
Field Scabious <i>Knautia arvensis</i>	Wild Thyme <i>Thymus polytrichus</i>
Marsh Orchids <i>Dactylorhiza</i> sp.	
Lesser Twayblade <i>Neottia cordata</i>	
Early Purple Orchid <i>Orchis mascula</i>	
Fragrant Orchids <i>Gymnadenia</i> sp.	

- 5.83 The grassland habitat in the northern part of the Site is evaluated to be of **local-level importance**.
- 5.84 The grassland habitat in the southern part of the Site is of higher value to biodiversity, however this habitat will not be impacted or lost during the proposed development, as it is located outside

¹⁵ https://bsbi.org/wp-content/uploads/dlm_uploads/Semi_Natural_Calcareous_Grasslands_6210.pdf (Accessed December 2024)

the proposed revised extraction area. Therefore, this area can be reasonably excluded from further consideration in this report.

Immature Woodland (WS2)

- 5.85 An area of immature broadleaved woodland is located within the southern, unmanaged part of the Site where the scrub habitat is transitioning towards woodland. This habitat is dominated by hazel and hawthorn with bramble and blackthorn also present in the understorey.
- 5.86 This immature woodland habitat is evaluated to be of **local-level importance**.

Improved Agricultural Grassland (GA1)

- 5.87 There is a field of improved agricultural grassland located in the north-eastern corner of the Site. This habitat is dominated by perennial ryegrass *Lolium perenne* with occasional cocks foot also present. Broadleaved herbs are occasionally found within this field including nettles, common daisy, creeping buttercup and *Rumex* sp. The sward is long in and there are no signs of active use, management, or grazing.
- 5.88 This habitat provides limited value to biodiversity. Therefore, it is evaluated to be of **negligible importance**.

Scrub (WS1)

- 5.89 Scrub occurs on-site mainly as a mosaic with grassland and dense bracken habitat on-site. The scrub on-site is dominated by bramble, hawthorn *Crataegus monogyna* and blackthorn *Prunus spinosa* with some areas of gorse *Ulex* sp. scrub also present. Other species found within the scrub on-site include immature hazel *Corylus avellana*, bracken, wild strawberry *Fragaria vesca*, ivy *Hedera helix* and thistles *Cirsium* sp.
- 5.90 This habitat is widespread and common, although it does provide some foraging and refuge value to local fauna. Therefore, it is evaluated to be of **local-level importance**.

Dense Bracken (HD1)

- 5.91 Bracken is present throughout the southern grassland/scrub mosaic. Some continuous areas of dense bracken are also present. It is possible that other continuous areas of dense bracken are present in the areas of the Site that were inaccessible during the field survey due to dense scrub.
- 5.92 This habitat is of limited biodiversity value to local fauna and the more valuable habitats on-site, such as the semi-natural grasslands, would benefit from this habitat being managed more intensively. Therefore, it is evaluated to be of **negligible importance**.

Hedgerows (WL1)

- 5.93 There is approximately 860 m of managed hedgerow located along the northern Site boundary. This hedgerow is composed of planted hawthorn and beech *Fagus sylvatica*. This habitat is widespread and common, although it does provide foraging and refuge value to local fauna, in addition to providing connectivity with habitats in the surrounding landscape.
- 5.94 This habitat is evaluated to be of **local-level importance**.

Species

Desk Study

- 5.95 The NBDC database was searched for records of rare and/or protected species from the 2 km grid squares M84W, M84X, M94B, and M94C within which the Site is located. The records of rare and/or protected species are presented in **Table 5-8** below.

Table 5-8 Rare and/or Protected Species Recorded Within 2 km Grid Squares M84W, M84X, M94B, and M94C

Species	Date of Last Record	No. of Records	Conservation Status	Dataset
Barn Owl <i>Tyto alba</i>	2021	1	Birds of Conservation Concern: Red List	Birds of Ireland
Barn Swallow <i>Hirundo rustica</i>	2011	2	Birds of Conservation Concern: Amber List	Bird Atlas 2007 - 2011 and The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
Black-headed Gull <i>Larus ridibundus</i>	1991	1	Birds of Conservation Concern: Amber List	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
Common Coot <i>Fulica atra</i>	2011	2	Birds of Conservation Concern: Amber List	Bird Atlas 2007 - 2011
Common Starling <i>Sturnus vulgaris</i>	2011	2	Birds of Conservation Concern: Amber List	Bird Atlas 2007 - 2011 and The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
Common Swift <i>Apus apus</i>	1991	1	Birds of Conservation Concern: Red List	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
Eurasian Curlew <i>Numenius arquata</i>	2001	1	Birds of Conservation Concern: Red List	Irish Wetland Birds Survey (I-WeBS) 1994-2001.
Eurasian Teal <i>Anas crecca</i>	2001	1	Birds of Conservation Concern: Amber List	Irish Wetland Birds Survey (I-WeBS) 1994-2001.
House Martin <i>Delichon urbicum</i>	2011	1	Birds of Conservation Concern: Amber List	Bird Atlas 2007 - 2011
House Sparrow <i>Passer domesticus</i>	2011	1	Birds of Conservation Concern: Amber List	Bird Atlas 2007 - 2011
Northern Lapwing <i>Vanellus vanellus</i>	2001	1	Birds of Conservation Concern: Red List	Irish Wetland Birds Survey (I-WeBS) 1994-2001.
Sand Martin <i>Riparia riparia</i>	2011	1	Birds of Conservation Concern: Amber List	Bird Atlas 2007 - 2011
Tufted Duck <i>Aythya fuligula</i>	2011	1	Birds of Conservation Concern: Amber List	Bird Atlas 2007 - 2011
Whooper Swan <i>Cygnus cygnus</i>	2001	1	EU Birds Directive: Annex I Birds of Conservation Concern: Amber List	Irish Wetland Birds Survey (I-WeBS) 1994-2001.
Yellowhammer <i>Emberiza citrinella</i>	1991	1	Birds of Conservation Concern: Red List	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
Dingy Skipper <i>Erynnis tages</i>	2017	1	Red List: Near Threatened	Butterflies of Ireland pre-2022
Marsh Fritillary <i>Euphydryas aurinia</i>	2011	1	EU Habitats Directive: Annex II Red List: Vulnerable	All Ireland Marsh Fritillary Database
Small Blue <i>Cupido minimus</i>	2017	1	Red List: Endangered	Butterflies of Ireland pre-2022

Small Heath <i>Coenonympha pamphilus</i>	2017	2	Red List: Near Threatened	Butterflies of Ireland pre-2022
Wall <i>Lasiommata megera</i>	2017	2	Red List: Endangered	Butterflies of Ireland pre-2022
Red-tailed Carder Bee <i>Bombus ruderarius</i>	2010	1	Red List: Vulnerable	Bees of Ireland
Shrill Carder Bee <i>Bombus sylvarum</i>	2010	1	Red List: Endangered	Bees of Ireland
Rose-moss <i>Rhodobryum roseum</i>	2021	1	Red List: Near Threatened	Bryophytes of Ireland
Eurasian Badger <i>Meles meles</i>	2014	8	Protected Species: Wildlife Act	Badger Setts of Ireland Database
Lesser Noctule <i>Nyctalus leisleri</i>	2011	8	Protected Species: Wildlife Act	National Bat Database of Ireland
Soprano Pipistrelle <i>Pipistrellus pygmaeus</i>	2011	1	Protected Species: Wildlife Act	National Bat Database of Ireland

Rare and Protected Flora

- 5.96 The data search returned one record of rose-moss *Rhodobryum roseum* within the 2 x 2 km squares. Rose-moss is listed as near threatened on the Irish Red Lists (Lockhart et al., 2012). There are no other records of rare and protected plant species within the 2 x 2 km grid squares.
- 5.97 No notable protected plant species were noted within the Site during the field surveys. Therefore, they have been scoped out from further assessment.

Rare and Protected Fauna

Amphibians

- 5.98 The data search returned no records of notable amphibians within the 2 x 2 km squares. No notable amphibians were noted on-site during the field surveys.
- 5.99 There are potentially suitable breeding habitats on-site for amphibians such as quarry reservoirs and ephemeral pools. However, amphibian breeding on-site is unlikely due to the quarry cliffs acting as barriers to dispersal into reservoirs and the ephemeral nature of the other pools on-site.
- 5.100 The Site is, therefore, considered to be of **negligible importance** for amphibians.

Invertebrates

- 5.101 The data search returned records of dingy skipper, marsh fritillary, small blue, small heath, wall butterfly, red-tailed carder bee, and shrill carder bee within the 2 x 2 km squares. Marsh fritillary is protected under Annex II of the EU Habitats Directive and is listed as vulnerable on the Irish Red Lists. Small blue and wall butterflies are listed as endangered, and small heath and dingy skipper are listed as near threatened (Regan et al., 2010). The shrill carder bee and the red-tailed carder bee are listed as endangered and vulnerable respectively (Fitzpatrick et al., 2006).
- 5.102 Marsh fritillary *Euphydryas aurinia*, small heath *Coenonympha pamphilus*, and dingy skipper *Erynnis tages* were observed on-site during the preliminary ecological assessment survey.

- 5.103 The marsh fritillary larval web survey conducted in 2024 concluded that the areas surveyed (2.289 ha) were utilised by marsh fritillary for breeding. These areas consisted of the semi-natural grassland habitat located in the unmanaged area in the south of the Site. No other parts of the Site were surveyed. A total of 22 occupied larval webs were recorded during the survey. This equates to an estimated population of 73 occupied larval webs for the entire survey area. However, this should be considered an underestimate of the total number of occupied larval webs on-site, as noted in the field survey limitations outlined earlier in this report. All of the areas surveyed were assessed during the habitat condition assessment survey as being suitable (under-grazed) for marsh fritillary and all sub-sites had 4 out of 5 indicators of under-grazing.
- 5.104 The grassland, scrub, and immature woodland habitats on-site are likely to support other common and widespread invertebrate species, as they contain a variety of flowering plants.
- 5.105 Invertebrates are evaluated to be of **local-level importance** due to the presence of suitable habitat for a range of invertebrate species within the Site.

Birds

- 5.106 The data search returned records of several red and amber listed birds within the 2 x 2 km squares (refer to **Table 5-8**). Whooper swan is included in the bird species recorded within the 2 x 2 km squares. Whooper swans are protected under Annex I of the EU Birds Directive.
- 5.107 The following species were noted as incidental sightings on-site during the preliminary ecological appraisal survey and the follow-up habitat survey: peregrine falcon and stonechat. Four possible sand martin nests were identified in the northern area of the Site (refer to Target **Note 2** on **Figure 5-1**). These nests appear to be currently inactive, and no sand martins were observed on-site.
- 5.108 The scrub and woodland habitat to the south of the Site would provide suitable nesting and foraging habitat for a variety of common and widespread passerine species, in addition to some amber and red listed species.
- 5.109 However, the only habitats that will be lost are to the north of the Site and to the south of the existing quarry where current quarry activities will cause disturbance to breeding birds. The only potential breeding birds observed on-site were common species as listed in **Table 5-9**. Therefore, the habitats being lost are unlikely to support notable, rare or protected breeding bird species.
- 5.110 A summary of the breeding bird survey results is shown in **Table 5-9**.

Table 5-9: Summary of Breeding Bird Survey Results

Species	Count	Breeding Status	Conservation Status
Willow warbler	6	Possible	Amber List
Blackcap	1	Possible	Green List
Wren	5	Possible	Green List
Meadow Pipit	1	Possible	Red List
Whitethroat	2	Possible	Green List
Pheasant	1	Non-breeding	Green List
Robin	2	Possible	Green List
Wood pigeon	2	Probable	Green List
Chiffchaff	2	Possible	Green List
Blue tit	1	Possible	Green List

Species	Count	Breeding Status	Conservation Status
Blackbird	1	Probable	Green List
Skylark	1	Non-breeding	Amber List
Total	25		

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- 5.111 The quarry faces may provide suitable nesting habitat for peregrine and kestrel. No nests were identified on the quarry faces that could be observed during the preliminary ecological appraisal. However, a quarry worker on-site indicated to the surveyor that there have been two separate bird of prey nests present on the quarry faces during previous years.
- 5.112 There are records of breeding curlew in the vicinity of the Site. Curlews are water-dependant and are known to breed in the turloughs in the surrounding area. However, the Site does not contain suitable breeding habitat for breeding curlew or other waterbirds.
- 5.113 The bird assemblage on-site is evaluated to be of **local-level importance** due to the presence of amber and red listed birds and suitable breeding and foraging habitat within the Site.

Mammals

Bats

- 5.114 The data search returned records of lesser noctule and soprano pipistrelle within the 2 x 2 km squares.
- 5.115 The Site is considered to be of moderate value to foraging and commuting bats due to the presence of suitable habitats (i.e. scrub/woodland clearings, hedgerow, and treelines) which have good connectivity with the surrounding hedgerow network.
- 5.116 A group of five trees with bat roosting potential were identified at Target **Note 8** on **Figure 5-1**. These trees will be retained during the continued use of the quarry.
- 5.117 All other trees noted on-site during the field surveys are not of a sufficient size and maturity to provide roosting opportunities for bats. The buildings on-site are all actively used and maintained and, as such, are unlikely to be utilised by bats for roosting.
- 5.118 Bats are evaluated to be of **local-level importance** due to the presence of suitable foraging and commuting habitat within the Site.

Other Mammals

- 5.119 The data search returned records of Eurasian badger within the 2 x 2 km squares.
- 5.120 A deceased shrew was observed on-site during the preliminary ecological appraisal. A fox was observed during the follow-up habitat survey.
- 5.121 Possible squirrel feeding signs (halved hazelnuts) were noted in the grassland/scrub mosaic adjacent to the area of immature woodland. This may indicate the presence of red squirrel on-site, as grey squirrels are not known to be present in the vicinity of the Site (Lawton et al., 2020). The immature woodland on-site will be retained and, therefore, there will be no loss of potentially suitable habitat for red squirrels on-site and this species can be excluded from further consideration in this report.
- 5.122 No other signs of mammal activity (droppings, badger setts, burrows, etc.) were noted during the field surveys.
- 5.123 The Site contains habitats that may support widespread and common mammals including grassland, scrub, and immature woodland.
- 5.124 Mammals are evaluated to be of **local-level importance** due to the presence of suitable habitats to support widespread and common mammals within the Site.

Invasive Species

- 5.125 The data search returned no records of invasive species within the 2 x 2 km squares. No invasive species were noted on-site during the field surveys.
- 5.126 Therefore, invasive species are considered to be absent from the Site and can be reasonably excluded from further consideration in this report.

Summary of Important Ecological Features

- 5.127 **Table 5-10** summarises all important ecological features for which detailed assessment is required. The geographical scale of importance for the ecological features within the Site are summarised along with their legal status and a rationale, where appropriate, for carrying forward any features for detailed assessment.
- 5.128 All ecological features scoped out from further assessment have been detailed in the previous section.

Table 5-10: Summary of Important Ecological Features Subject to Detailed Assessment

Ecological Feature	Scale at which Feature is Important	Comments on Legal Status and/or Importance
Sites Designated for Nature Conservation		
European Designated Sites	International	Natura 2000 sites are protected under the Habitats Directive (Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, which is transposed into Irish law primarily through the European Communities (Birds and Natural Habitats) Regulations 2011 –21, (S.I. 477 of 2011, as amended) (“Birds and Natural Habitats Regulations”)) and the Planning and Development Acts 2000 -22.
Natural Heritage Areas	National/Local	Natural Heritage Areas are afforded local protection under the following policy from the County Development Plan: <i>“NH 10.10 Actively promote the conservation and protection of areas designated as an NHA (including proposed sites) and to only consider proposals for development within or affecting an NHA where it can be clearly demonstrated that the proposed development will not have a significant adverse effect on the NHA or pNHA.”</i>
Habitats		
Dry Calcareous and Neutral Grassland	Local	- Some areas exhibit Annex I grassland - Provides suitable habitat for local fauna.
Immature Woodland	Local	Provides suitable habitat for local fauna.
Scrub	Local	Provides suitable habitat for local fauna.
Hedgerows	Local	Provides suitable habitat for local fauna.
Species		
Invertebrates	Local	Marsh Fritillary are known to forage and breed in the grassland and scrub habitats located on-site.
Birds	Local	Peregrine and kestrel may nest on the quarry faces surrounding the quarry void.

Ecological Feature	Scale at which Feature is Important	Comments on Legal Status and/or Importance
		- All birds are protected under the Wildlife Acts 1976 and subsequent amendments during the bird breeding season (i.e., 1st March to 31st August). - Kestrels are red listed on the Birds of Conservation Concern Ireland. - Peregrines are protected under Annex I of the EU Birds Directive. - There is potentially suitable breeding and foraging habitat for other amber and red listed species.
Bats	Local	Potentially suitable foraging and commuting habitat on-site.
Other Mammals	Local	Potentially suitable foraging and breeding habitat on-site.

Assessment of Effects and Mitigation Measures

5.129 This section sets out the potential impacts and their effects on important ecological features. The information available from the desk study and fieldwork has been used to identify impacts and the significant effects including positive, negative, direct, indirect, and cumulative effects. The potential effects resulting from the proposed development works and proposed mitigation measures are discussed in the following sections.

Potential Impacts

European Designated Sites

Potential Impacts

5.130 The following European sites are located on the same WFD groundwater body as the Site:

- Lough Croan Turlough SAC,
- Killeglan Grassland SAC,
- Castlesampson Esker SAC,
- Lough Croan Turlough SPA, and
- River Suck Callows SPA.

5.131 Therefore, there is a potential pathway for the introduction of contaminated groundwater into the above European sites as a result of the proposed development. Contaminants may enter groundwater via the following pathways during the construction and operational phases:

- Suspended solids entering groundwater; and
- Accidental leaking or spillage of fuel.

5.132 The QI for which Killeglan Grassland SAC is designated is not expected to be impacted by changes in groundwater quality. Therefore, the Killeglan Grassland SAC can be excluded from further consideration in this report.

Proposed Mitigation Measures

5.133 As the quarry develops and deepens, and as need arises, a water management system associated with discharge of treated clean water off-site will be installed and implemented. This water management system was granted permission under planning reference no. P. Ref.

04/1479 (ABP PL20.215417). The discharge of the treated clean water from the site will be carried out and subject to a Discharge Licence consent by Roscommon County Council.

- 5.134 The off-site discharge surface water management system will consist of a sump to be provided on the floor of the quarry that will cater for increasing volumes of water which will require attenuation and treatment as the quarry deepening progresses.
- 5.135 Any surface water falling over the site will be directed to the sump along the northern quarry face. From here, the water will be pumped up to ground level to a water settlement pond. The water will pass through the settlement pond (c. 54m x 15m). From the settlement pond, the water will flow through a hydrocarbon interceptor before being discharged off site via a gravity fed buried pipe along the verge of the R363 road before discharge to the Ballyglass river.
- 5.136 In order to mitigate against the risk of pollution to groundwater and surface water occurring at the site the following management measures will be implemented.
- bunded fuel storage tanks are located at the site. Oil and lubricants for plant and machinery are stored on spill pallets in designated storage areas.
 - a hydrocarbon interceptor is in place at the refuelling station.
 - spill kits and spill training has been provided. All new employees are given an induction which includes spill kit training and how to respond to a fuel spill.
 - to control dust, water sprayed from a tractor drawn bowser on dry exposed surfaces and stockpiles (paved roads, unsealed haul roads and hardstand areas) as required;
 - fixed sprinkler system on the hard surface site access road between the site entrance and the weighbridge;
 - areas of bare or exposed soils will, insofar as practicable, be kept to a minimum through the phased extraction proposals;
 - dust blows at the existing site are largely screened by the side walls of the existing quarry and the vegetated screening berms and existing boundary hedgerows;
 - all HGVs exiting the site routed through the existing wheelwash. This minimises the transport of fines by HGVs over the access / egress road and the public road network;
 - periodic sweeping of the internal paved site access road and surrounding public roads carried out as required by a mechanical road sweeper;
 - when the concrete plant is operational, all admixtures will be stored in suitably bunded tanks. Water will be stored in a water tank (c. 3,000 gallon capacity) adjacent to the Concrete Batching Plant. This will be topped up as required.
 - concrete trucks will be washed out in a washing bay adjacent to the Concrete Batching Plant. The wash water will be pumped from the trucks for recycle through a closed series of settlement ponds.

Significance of Residual Effects

- 5.137 Under the current development proposals and recommended mitigation measures in place, it is assessed that the impacts on European designated sites will not be significant.

Natural Heritage Areas

Potential Impacts

- 5.138 There is a potential pathway for impacts to groundwater quality of the Feacle Turlough pNHA as a result of the proposed development.

Proposed Mitigation Measures

- 5.139 As the quarry develops and deepens, and as need arises, a water management system associated with discharge of treated clean water off-site will be installed and implemented. This water management system was granted permission under planning reference no. P. Ref. 04/1479 (ABP PL20.215417). The discharge of the treated clean water from the site will be carried out and subject to a Discharge Licence consent by Roscommon County Council.
- 5.140 The off-site discharge surface water management system will consist of a sump to be provided on the floor of the quarry that will cater for increasing volumes of water which will require attenuation and treatment as the quarry deepening progresses.
- 5.141 Any surface water falling over the site will be directed to the sump along the northern quarry face. From here, the water will be pumped up to ground level to a water settlement pond. The water will pass through the settlement pond (c. 54m x 15m). From the settlement pond, the water will flow through a hydrocarbon interceptor before being discharged off site via a gravity fed buried pipe along the verge of the R363 road before discharge to the Ballyglass river.
- 5.142 In order to mitigate against the risk of pollution to groundwater and surface water occurring at the site the same management measures mentioned above for European sites will be implemented.

Significance of Residual Effects

- 5.143 Under the current development proposals and recommended mitigation measures in place, it is assessed that the impacts on Natural Heritage Areas will not be significant.

Dry Calcareous and Neutral Grassland

Potential Impacts

- 5.144 Removal of small areas of dry calcareous and neutral grassland will be required to facilitate the proposed development including the storage of overburden in the southern area of the development.
- 5.145 There is the potential to affect Annex I grassland areas and habitat which contains flowing species upon which the Marsh Fritillary butterfly, a protected species in Ireland, is dependant.

Proposed Mitigation Measures

- 5.146 It is proposed that the majority of the grassland habitat on-site, including the grassland with high value to biodiversity in the southern area of the Site will be retained during the proposed development.
- 5.147 The existing overburden storage area located to the southwest of the quarry void currently has a footprint of c. 2.9 hectares, while the current permitted overburden storage area has a footprint of 13.4 hectares. With the placement of the yet to be stripped overburden, the final overburden footprint is expected to cover c. 3.9 hectares. However, the final footprint and the placement of overburden within the southern area will not impact any of the Marsh Fritillary butterfly habitat identified during ecological surveys carried out in 2024.
- 5.148 Upon completion of the extraction works the extraction void will be left to naturally fill with water to create a wetland habitat. The existing grassland and scrub habitat surrounding the quarry will be allowed to recolonise the lake boundaries.

Significance of Residual Effects

- 5.149 Under the current development proposals, which will significantly reduce the amount of grassland habitat needing to be removed, it is assessed that the impacts on dry calcareous and neutral grassland, Annex I habitat and areas of value to the Marsh Fritillary butterfly will not be significant.

Immature Woodland

Potential Impacts

5.150 Removal of small areas of woodland may be required to facilitate the proposed development.

Proposed Mitigation Measures

5.151 A majority of the woodland is located in the existing permitted extraction area in the southern section of the Site. This area has now been excluded from the planned development of the quarry and will therefore not be affected going forward.

Significance of Residual Effects

5.152 Under the current development proposals and recommended mitigation measures in place, it is assessed that the impacts on the woodland habitat will not be significant.

Scrub

Potential Impacts

5.153 Removal of small areas of scrub just to the south of the existing quarry void may need to be required to facilitate the proposed development. The majority of the scrub habitat across the Site will be retained during the proposed development.

Proposed Mitigation Measures

5.154 The scrub habitat located in the northern section of the existing quarry will continue to be retained in place.

5.155 The majority of the scrub habitat in the existing permitted extraction area in the southern section of the Site has now been excluded from the planned development of the quarry and will therefore not be affected going forward.

5.156 It is proposed that all existing scrub habitat within the Site boundary will be retained as much as possible. Upon completion of the extraction works the extraction void will be left to naturally fill with water to create a wetland habitat. The existing grassland and scrub habitat surrounding the quarry will be allowed to recolonise the lake boundaries.

Significance of Residual Effects

5.157 Under the current development proposals and recommended mitigation measures in place, it is assessed that the impacts on scrub will not be significant.

Hedgerows

Potential Impacts

5.158 The proposed development may require the removal of short sections of hedgerows.

Proposed Mitigation Measures

5.159 The existing stonewalls, trees and hedgerows on the site perimeter were retained as part of the original development and will continue to be permanently retained as part of this planning application, and if necessary reinforced, for the duration of the workings.

5.160 Any hedges and trees planted as part of the proposed landscaping and restoration plans will be comprised of native and typically occurring species present in the local vegetation and/or hedgerows in Co. Roscommon.

Significance of Residual Effects

5.161 Under the current development proposals and recommended mitigation measures in place, it is assessed that the impacts on hedgerows will not be significant.

Invertebrates

Potential Impacts

- 5.162 The proposed development has the potential to result in the loss of important areas of breeding, foraging, and refuge habitat for the protected Marsh Fritillary butterfly, as well as other common and widespread invertebrates.

Proposed Mitigation Measures

- 5.163 It is proposed the majority of the habitat on-site upon which the Marsh Fritillary is dependant, in the southern area of the Site will be retained during the proposed development.
- 5.164 The existing overburden storage area located to the southwest of the quarry void currently has a footprint of c. 2.9 hectares, while the current permitted overburden storage area has a footprint of 13.4 hectares. With the placement of the yet to be stripped overburden, the final overburden footprint is expected to cover c. 3.9 hectares. However, the final footprint and the placement of overburden within the southern area will not impact any of the Marsh Fritillary butterfly habitat identified during ecological surveys carried out in 2024. In addition, the current permitted extraction area of c. 23.7 hectares has been reduced 17.1 hectares to retain the Marsh Fritillary butterfly habitat.

Significance of Residual Effects

- 5.165 Under the current development proposal not to develop the southern area of the permitted site, it is assessed that the impacts on the Marsh Fritillary, and other invertebrates, will not be significant.

Birds

Potential Impacts

- 5.166 Quarrying activity at the Site has continued to expose the limestone bedrock at the Site, resulting in the creation of quarry faces. These quarry faces continue to provide potentially suitable nesting habitat for peregrine and kestrel on the Site.
- 5.167 The proposed development will result in the temporary loss of small areas of foraging and breeding habitat for widespread and common passerine bird species.
- 5.168 The removal of vegetation on-site may have direct or indirect impacts on nesting birds.

Proposed Mitigation Measures

- 5.169 No mitigation measures are required for the continued use of the quarry faces by peregrine and kestrel for nesting.
- 5.170 It is proposed that all existing grassland and scrub habitat which have established within the Site boundary will be retained as much as possible. Upon completion of the extraction works the extraction void will be left to naturally fill with water to create a wetland habitat. The existing grassland and scrub habitat surrounding the quarry will be allowed to recolonise the lake boundaries.
- 5.171 No vegetation loss should be undertaken during the breeding bird season to avoid impacting birds during this sensitive time. If vegetation removal is required during this time as a last resort (using an exemption in the Wildlife Act¹⁶), a nesting bird check conducted by a suitably qualified ecologist should be undertaken no more than 24 hours prior to the planned removal.

¹⁶ Section 40 of the Wildlife Act 1976 as amended by the Wildlife (Amendment) Act 2000 and the Heritage Act 2018 – Section 40(2) (e)

- 5.172 If nesting birds are found during this check, they must be left in situ with a suitable buffer around the nest (detailed by the ecologist following the nesting bird check) until the chicks have fledged. A further nesting bird check should be undertaken to confirm this.

Significance of Residual Effects

- 5.173 Under the current development proposals and recommended mitigation measures in place, it is assessed that the impacts on birds will not be significant.

Bats

Potential Impacts

- 5.174 The proposed development will result in the temporary loss of small areas of foraging and commuting habitat for bats.

Proposed Mitigation Measures

- 5.175 It is proposed that all existing grassland and scrub habitat which have established within the Site boundary will be retained as much as possible. Upon completion of the extraction works the extraction void will be left to naturally fill with water to create a wetland habitat. The existing grassland and scrub habitat surrounding the quarry will be allowed to recolonise the lake boundaries.

Significance of Residual Effects

- 5.176 Under the current development proposals and recommended mitigation measures in place, it is assessed that the impacts on bats will not be significant.

Cumulative Effects

- 5.177 The following plans were reviewed for strategies and objectives that may act in-combination with the project:
- Roscommon County Development Plan 2022-2028
- 5.178 There are no strategies or objectives in the Roscommon County Development Plan 2022-2028 that are likely to result in significant effects when considered in-combination with the proposed development.
- 5.179 A search of recent (within the last five years) planning applications was carried out for applications that may give rise to in combination effects with the project. The majority of the recent planning applications in the vicinity of the Site are for small-scale domestic and agricultural projects that will not result in any cumulative effects with the proposed development. One planning application (ABP Ref. 313750-22) was considered to be of sufficient significance to warrant further consideration for cumulative effects.
- 5.180 A 17-turbine wind farm (Seven Hills Wind Farm) surrounding the quarry to the south, east and west (with the closest infrastructure c. 100m from the site boundary) has been granted planning permission by An Bord Pleanála in November 2023 (ABP Ref. 313750-22). The Biodiversity Chapter of the EIAR accompanying this application concluded that there would be no significant effects on biodiversity, provided the proposed wind farm is installed and decommissioned in accordance with the mitigation measures outlined in the application. Therefore, there is no potential pathways for cumulative effects on biodiversity with the proposed continuance of use at Cam Quarry.
- 5.181 Therefore, the risk of significant effects as a result of the proposed development can be excluded for the project when considered in-combination with other proposed or permitted plans and projects.

Proposed Mitigation and Compensation Measures

Groundwater Quality

- 5.182 As the quarry develops and deepens, and as need arises, a water management system associated with discharge of treated clean water off-site will be installed and implemented. This water management system was granted permission under planning reference no. P. Ref. 04/1479 (ABP PL20.215417). The discharge of the treated clean water from the site will be carried out and subject to a Discharge Licence consent by Roscommon County Council.
- 5.183 The off-site discharge surface water management system will consist of a sump to be provided on the floor of the quarry that will cater for increasing volumes of water which will require attenuation and treatment as the quarry deepening progresses.
- 5.184 Any surface water falling over the site will be directed to the sump along the northern quarry face. From here, the water will be pumped up to ground level to a water settlement pond. The water will pass through the settlement pond (c. 54m x 15m). From the settlement pond, the water will flow through a hydrocarbon interceptor before being discharged off site via a gravity fed buried pipe along the verge of the R363 road before discharge to the Ballyglass river.
- 5.185 In order to mitigate against the risk of pollution to groundwater and surface water occurring at the site the following management measures will be implemented:
- bunded fuel storage tanks are located at the site. Oil and lubricants for plant and machinery are stored on spill pallets in designated storage areas;
 - a hydrocarbon interceptor is in place at the refuelling station;
 - spill Kits and spill training has been provided. All new employees are given an induction which includes spill kit training and how to respond to a fuel spill;
 - to control dust, water sprayed from a tractor drawn bowser on dry exposed surfaces and stockpiles (paved roads, unsealed haul roads and hardstand areas) as required;
 - fixed sprinkler system on the hard surface site access road between the site entrance and the weighbridge;
 - areas of bare or exposed soils will, insofar as practicable, be kept to a minimum through the phased extraction proposals;
 - dust blows at the existing site are largely screened by the side walls of the existing quarry and the vegetated screening berms and existing boundary hedgerows;
 - all HGVs exiting the site routed through the existing wheelwash. This minimises the transport of fines by HGVs over the access / egress road and the public road network;
 - periodic sweeping of the internal paved site access road and surrounding public roads carried out as required by a mechanical road sweeper;
 - when the concrete batching plant is operational, all admixtures will be stored in suitably bunded tanks. Water will be stored in a water tank (c. 3,000 gallon capacity) adjacent to the Concrete Batching Plant. This will be topped up as required; and
 - concrete trucks will be washed out in a washing bay adjacent to the Concrete Batching Plant. The wash water will be pumped from the trucks for recycle through a closed series of settlement ponds.

Habitat Loss

- 5.186 It is proposed that all existing grassland and scrub habitat which have established within the Site boundary will be retained as much as possible. Upon completion of the extraction works the

extraction void will be left to naturally fill with water to create a wetland habitat. The existing grassland and scrub habitat surrounding the quarry will be allowed to recolonise the lake boundaries.

Nesting Birds

- 5.187 No vegetation loss should be undertaken during the breeding bird season to avoid impacting birds during this sensitive time. If vegetation removal is required during this time as a last resort (using an exemption in the Wildlife Act¹⁷), a nesting bird check conducted by a suitably qualified ecologist should be undertaken no more than 24 hours prior to the planned removal.
- 5.188 If nesting birds are found during this check, they must be left in situ with a suitable buffer around the nest (detailed by the ecologist following the nesting bird check) until the chicks have fledged. A further nesting bird check should be undertaken to confirm this.

Conclusions

- 5.189 Overall, it is assessed that with the recommended mitigation measures outlined, the proposed development will not have a significant impact on the biodiversity, designated sites, and habitats on the Site. Provided that the proposed works are undertaken in accordance with the proposed design and best practice that is described within this report, significant effects on ecology are not anticipated. As such, the proposed works are in line with environmental and biodiversity planning policy.

¹⁷ Section 40 of the Wildlife Act 1976 as amended by the Wildlife (Amendment) Act 2000 and the Heritage Act 2018 – Section 40(2) (e)

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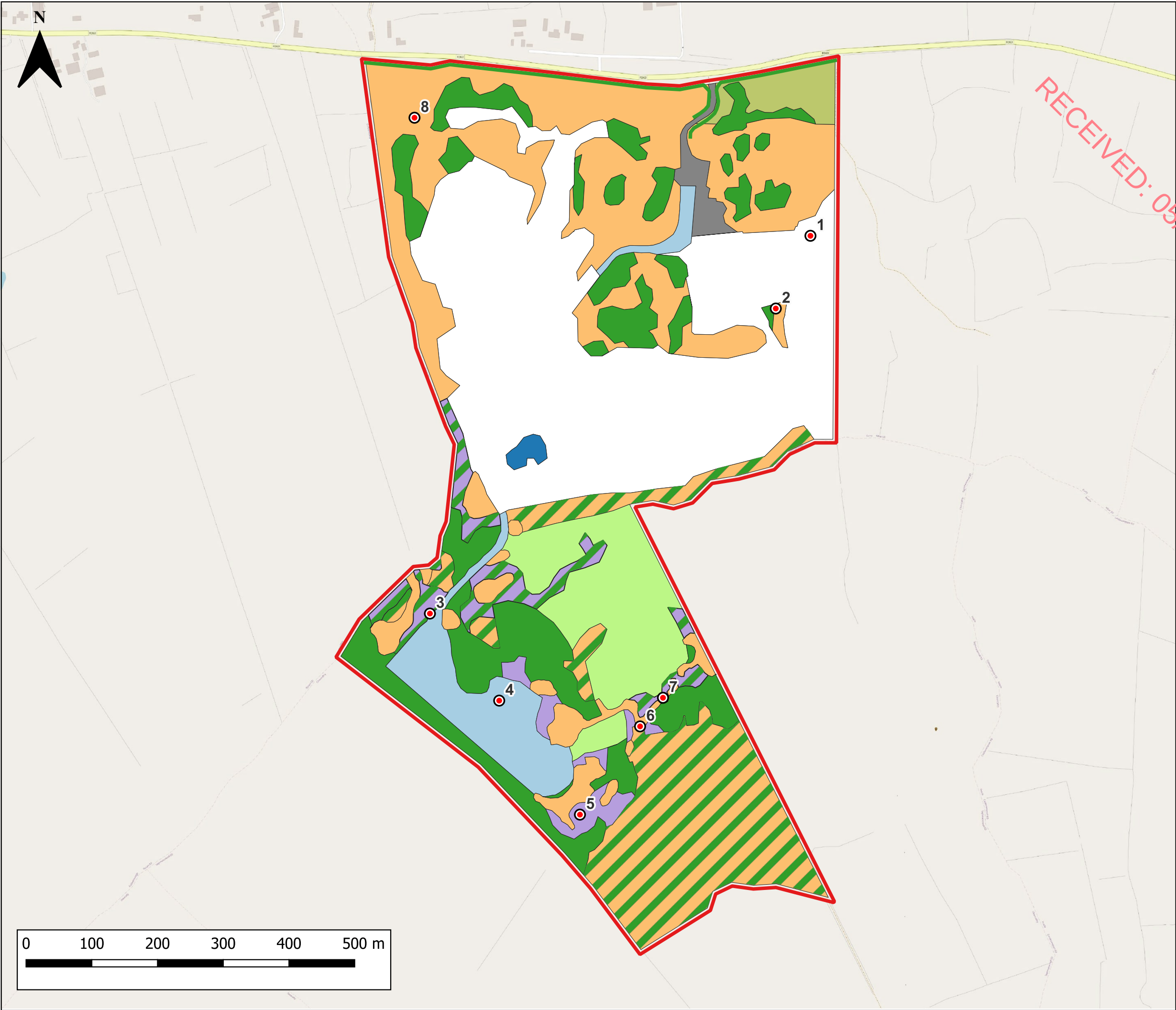
Figures

Figure 5-1: Habitat Map

Figure 5-2: European Sites Map

Figure 5-3: Natural Heritage Areas Map

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NOTES

1. Base Mapping: OpenStreetMap ©
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LEGEND

Site Boundary

Habitats

GS1 - Dry Calcareous and Neutral Grassland

GA1 - Improved Agricultural Grassland

WS1 - Scrub

WS2 - Immature Woodland

HD1 - Dense Bracken

WS1/GS1 - Scrub / Dry Calcareous and Neutral Grassland Mosaic

WS1/HD1 - Scrub/Dense Bracken Mosaic

ED2 - Spoil and Bare Ground

ED4 - Active Quarries and Mines

FL8 - Other Artificial Lakes and Ponds

BL3 - Buildings and Artificial Surfaces

WL1 - Hedgerows

Target Notes



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EIA BIODIVERSITY CHAPTER

CAM QUARRY

Brideswell, Co. Roscommon

Habitat Map

FIGURE 5-1

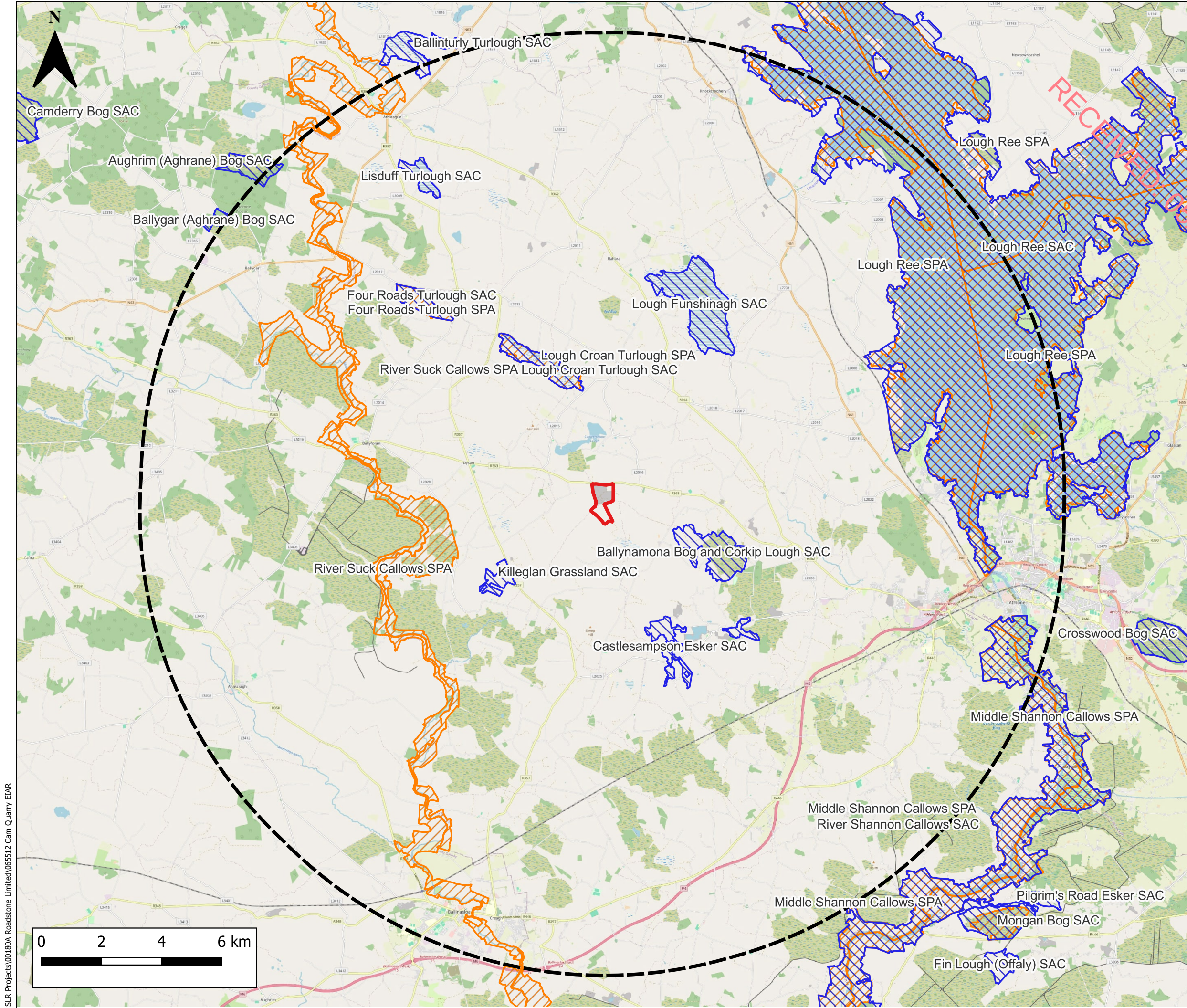
Scale

1:5500 @ A3

Date

NOV 2025

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NOTES

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LEGEND

- Application Site
- 15 km Buffer
- Special Areas of Conservation (SAC)
- Special Protection Areas (SPA)



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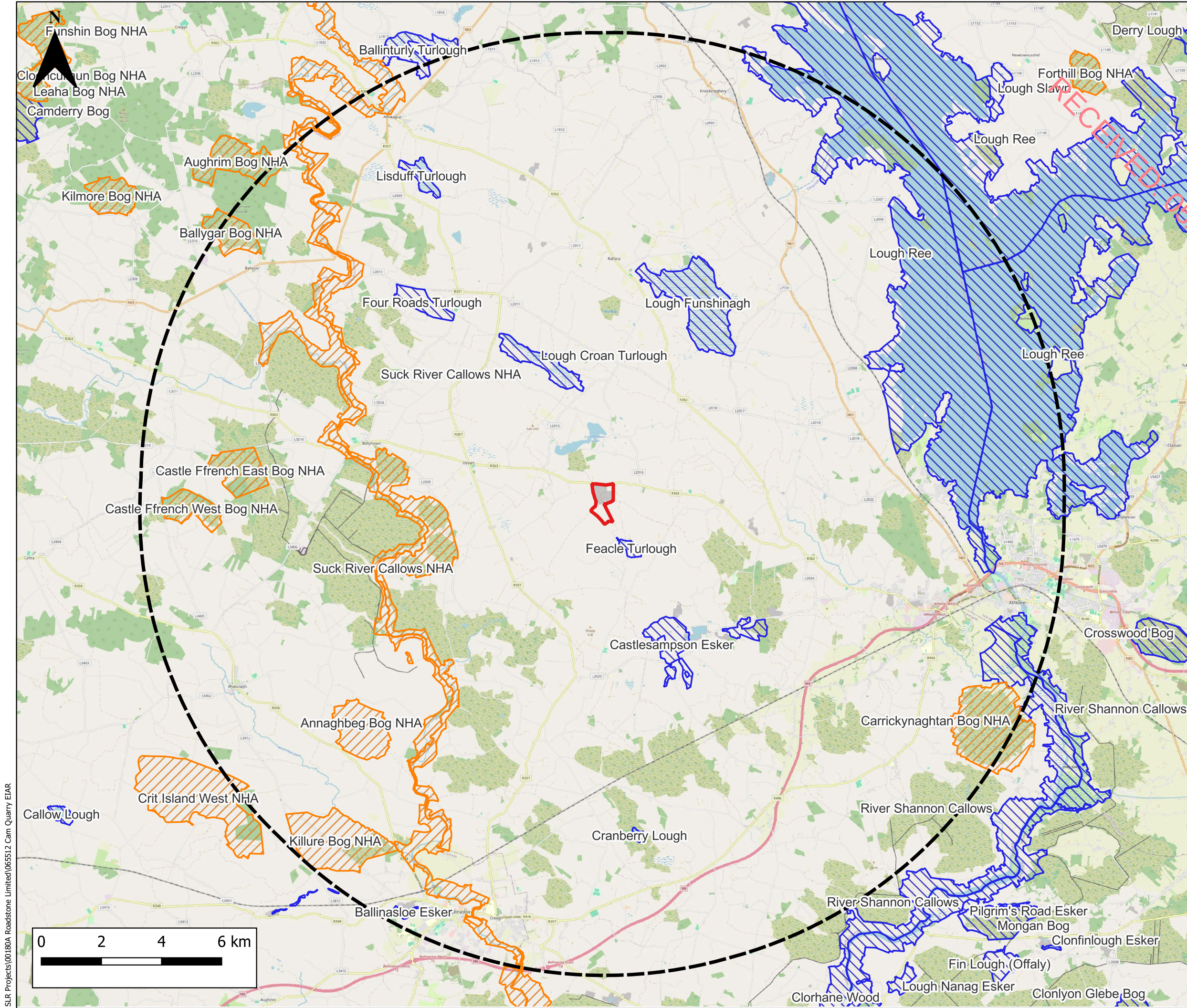
European Sites

FIGURE 5-2

Scale
1:120000 @ A3

Date
NOV 2025

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NOTES

1. Base Mapping: OpenStreetMap © (www.openstreetmap.org/copyright)

LEGEND

- Application Site
- 15 km Buffer
- Proposed Natural Heritage Areas (pNHA)
- Natural Heritage Areas (NHA)

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Natural Heritage Areas

FIGURE 5-3

Scale
1:120000 @ A3

Date
NOV 2025

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Appendix 5-A Relevant Legislation

Relevant Legislation¹⁸

EIA Directive

The EIA Directive, Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment as amended by Council Directive 97/11/EC of 3 March 1997, Directive 2003/35/EC of 26 May 2003 and Directive 2009/31/EC of 23 April 2009, now codified in Directive 2011/92/EU of 13 December 2011 and amended in Directive 2014/52/EU of 16 April 2014, is designed to ensure that projects likely to have significant effects on the environment are subject to a comprehensive assessment of environmental effects prior to project consent being given.

The EIA Directive was first transposed into Irish law by the European Communities (Environmental Impact Assessment) Regulations, 1989 (S.I. No. 349 of 1989) which amended the Local Government (Planning and Project) Act, 1963 (and other legislation) to provide for environmental impact assessment. The European Union (Planning and Project) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018) transpose the requirements of Directive 2014/52/EU, Amending previous Directive 2011/52/EU, on the assessment of the effects of certain public and private projects on the environment (the EIA Directive) into Irish planning law.

Habitats and Birds Directive

The Habitats Directive ensures the conservation of a wide range of rare, threatened or endemic animal and plant species. Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora was adopted in 1992 and aims to promote the maintenance of biodiversity, taking account of economic, social, cultural and regional requirements. It forms the cornerstone of Europe's nature conservation policy with the Birds Directive and establishes the EU wide Natura 2000 ecological network of protected areas, safeguarded against potentially damaging developments.

The Natura 2000 network of protected areas is known as Special Areas of Conservation (SAC) and Special Protection Areas (SPA). In general terms, they are considered to be of exceptional importance in terms of rare, endangered or vulnerable habitats and species within the European Community. The requirements of the Habitats Directive have been transposed into Irish law through the European Communities (Birds and Natural Habitats) Regulations 2011 [S.I. No. 477/2011]. This legislation affords protection to both Special Protection Areas and Special Areas of Conservation.

Special Areas of Conservation (SAC) are designated under the Conservation of Natural Habitats and of Wild Fauna and Flora Directive 92/43/EEC (Habitats Directive) which is transposed into Irish law by the EC (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011). Special Protection Areas (SPA) are classified under the Birds Directive (2009/147/EC on the Conservation of Wild Birds). Article 6(3) of the Habitats Directive requires an 'appropriate assessment' to 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 integrity of a Natura 2000 site, and the incorporation, where necessary, of measures to mitigate or avoid negative effects.

¹⁸ Please note that the summary of relevant legislation provided here is intended for general guidance only. The original legislation should be consulted for definitive information.

National Legislation

Flora and fauna in Ireland are protected at a national level by the Wildlife Acts 1976 to 2018 and the Floral (Protection) Order 2015. Natural Heritage Areas (NHA) are areas that are considered to be important for the habitats present or for the species of plants and animals supported by those habitats. Under the Wildlife Amendment Act 2000, NHAs are legally protected from damage from the date they were formally proposed for designation. Section 19(1) of the Act states that 'Where there is a subsisting natural heritage area order in respect of any land, no person shall carry out, or cause or permit to be carried out, on that land any works specified in the order or any works which are liable to destroy or to significantly alter, damage or interfere with the features by reason of which the designation order was made'.

In addition, a list of proposed NHAs (pNHAs) was published in 1995 but to date these have not had their status confirmed. Prior to statutory designation, pNHAs are subject to limited protection under various agri-environment and forestry schemes and under local authority planning strategies such as County Development Plans.

Regional Spatial and Economic Strategy – Northern and Western Regional Assembly

The relevant regional biodiversity policy objectives are set out in the following section:

RPO 5.5: *Ensure efficient and sustainable use of all our natural resources, including inland waterways, peatlands, and forests in a manner which ensures a healthy society a clean environment and there is no net contribution to biodiversity loss arising from development supported in this strategy. Conserve and protect designated areas and natural heritage areas. Conserve and protect European sites and their integrity.*

RPO 5.7: *Ensure that all plans, projects and activities requiring consent arising from the RSES are subject to the relevant environmental assessment requirements including SEA, EIA and AA as appropriate.*

Relevant Planning Policy

The planning policy and legislation that is relevant to the development.

Roscommon County Development Plan 2022-2028

The relevant local planning policies have been extracted from Volume 1 of the Roscommon County Development Plan 2022-2028. These policies are specific to “Chapter 10: Natural Heritage” and are concerned with the policies and objectives relating to biodiversity:

NH 10.1 *Ensure the protection, conservation and enhancement of the biodiversity of the county.*

NH 10.2 *Support the implementation of the relevant recommendations contained in the National Biodiversity Action Plan, including no net loss in biodiversity, and the All-Ireland Pollinator Plan.*

NH 10.3 *Implement the County Roscommon Heritage Plan and the Biodiversity Action Plan, or any subsequent plans, in partnership with all relevant stakeholders.*

NH 10.4 Proposals where woodland, tree or hedgerow removal is proposed will be required to demonstrate a sufficient level of protection to Annex IV species, such as Bats and Otter, in accordance with the Habitats Directive.

NH 10.5 Ecological Impact Assessment (EclA) will be required for proposed developments likely to significantly impact on natural habitats and/or species, and which are not subject to Environmental Impact Assessment.

NH 10.6 Require all new developments in the early pre-planning stage of the planning process to identify, protect and enhance ecological features by making provision for local biodiversity (e.g. through provision of swift boxes, bat roost sites, green roofs, etc.) having regard to the recommendations outlined in the Habitat Mapping in Co. Roscommon, 2011 and the County Roscommon Swift Survey, 2020.

NH 10.7 Implement Article 6(3) and where necessary Article 6(4) of the Habitats Directive and to ensure that Appropriate Assessment is carried out in relation to works, plans and projects likely to impact on European sites (SACs and SPAs), whether directly or indirectly or in combination with any other plan(s) or project(s). All assessments must be in compliance with the European Communities (Birds and Natural Habitats) Regulations 2011.

NH 10.8 Ensure that no plans, programmes, etc. or projects are permitted that give rise to significant cumulative, direct, indirect or secondary impacts on the integrity of European Sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects, (either individually or in combination with other plans, programmes, etc. or projects).

NH 10.9 Ensure that any plan or project that could have a significant adverse impact (either alone or in combination with other plans and projects) upon the conservation objectives of any Natura 2000 Site or would result in the deterioration of any habitat or any species reliant on that habitat will not be permitted unless in exceptional circumstances.

NH 10.10 Actively promote the conservation and protection of areas designated as an NHA (including proposed sites) and to only consider proposals for development within or affecting an NHA where it can be clearly demonstrated that the proposed development will not have a significant adverse effect on the NHA or pNHA.

NH 10.13 Encourage the retention of hedgerows and other distinctive boundary treatments in rural areas and prevent loss and fragmentation, where practically possible. Where removal of a hedgerow, stone wall or other distinctive boundary treatment is unavoidable, mitigation by provision of the same type of boundary will be required.

NH 10.14 Promote and encourage planting of native hedgerow species in new developments.

NH 10.15 Ensure that hedgerows that are required to be removed in the interests of traffic safety or where breaches to hedgerows occur in compliance with relevant legislation, are replaced by the applicant/developer with suitable native species to the satisfaction of the Council.

NH 10.16 Protect and enhance the valuable peatland resource in County Roscommon whilst protecting the heritage and environmental value of these peatland areas. The aims of the National Peatlands Strategy and the implementation of the National Raised Bog Special Areas of Conservation Management Plan 2017-2022 and the Enhanced Decommissioning Rehabilitation and Restoration Scheme will be supported.

NH 10.17 Work with relevant agencies such as the Bord na Mona, NPWS, Coillte and adjacent local authorities to prepare an after-use framework plan for the peatlands and related infrastructure, to provide for the future sustainable and environmentally sensitive use of large industrial peatlands sites when peat harvesting finishes.

NH 10.18 Manage, enhance and protect the wetlands of the county having regard to the County Roscommon Wetland Survey (2017) and ensure that there is an appropriate level of assessment in relation to proposals which would involve draining, reclaiming or infilling of wetland habitats. The Council shall be available to engage with the NPWS with the objective of facilitating the monitoring and surveying of wetland sites in Roscommon.

NH 10.19 Ensure that the county's watercourses are retained for their biodiversity and flood protection values and to conserve and enhance where possible, the wildlife habitats of the County's rivers and riparian zones, lakes, canals and streams which occur outside of designated areas to provide a network of habitats and biodiversity corridors throughout the county. The Council shall be available to engage with the NPWS with the objective of facilitating the monitoring and surveying of wetland sites in Roscommon.

NH 10.20 Protect waterbodies and watercourses from inappropriate development, including rivers, streams, associated undeveloped riparian strips, wetlands and natural floodplains. To this effect, consideration should be given to Inland Fisheries Ireland's guidance document Planning for Watercourses in the Urban Environment (2020).

NH 10.23 Require all development proposals to address the presence or absence of invasive alien species on proposed development sites and (if necessary) require applicants to prepare and submit an Invasive Species Management Plan where such a species exists to comply with the provisions of the European Union (Birds and Natural Habitats) Regulations 2011 to 2015.

NH 10.24 Ensure, where the presence of invasive species is identified on any proposed development site, that robust treatment measures are detailed to demonstrate how these species will be appropriately managed and controlled.

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Appendix 5-B Site Photographs

Photograph 1: Possible Annex I Dry Calcareous and Neutral Grassland (GS1) in Southern Part of the Site



Photograph 2: Dry Calcareous and Dry Neutral Grassland (GS1) in Northern Part of the Site



Photograph 3: Scrub (WS1)



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Photograph 4: Dense Bracken (HD1)



Photograph 5: Immature Woodland (WS2)



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Photograph 6: Recolonising Bare Ground (ED3)



Photograph 7: Spoil and Bare Ground (ED2)



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Photograph 8: Active Quarries and Mines (ED4), Reservoirs (FL7), and Exposed Calcareous Rock (ER2)



Photograph 9: Improved Agricultural Grassland (GA1)



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Photograph 10: Hedgerows (WL1)



Photograph 11: Possible Sand Martin Nests



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Appendix 5-C Marsh Fritillary Larval Web Survey Report - 2024

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Marsh Fritillary Larval Web Survey Report - 2024

Cam Quarry

Roadstone Ltd

Cam Quarry, Brideswell, Co. Roscommon

Prepared by:

SLR Environmental Consulting (Ireland) Ltd

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SLR Project No.: 501.065512.00001

Client Reference No: 00180

1 July 2025

Revision: Final

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
V0	10 December 2024	Victoria Molloy	Michael Bailey	
Final	1 July 2025	Victoria Molloy	Michael Bailey	

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Basis of Report

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Appendices

- Appendix A Habitat Condition Assessment Results**
Appendix B Figures



1.0 Introduction

1.1 Background

SLR Environmental Consulting (Ireland) (SLR) was commissioned by Roadstone Ltd. to carry out a marsh fritillary larval web survey for the proposed continuance of use of Cam Quarry (hereafter 'the Project') during the year 2024.

1.2 Project Site Description

The site is located within the Townlands of Curry and Cloonacaltry, about 4 km to the west of Brideswell, and c. 12 km west of Athlone, Co. Roscommon. The Site is currently being used as an active limestone quarry, with areas of semi-natural grassland and scrub surrounding the existing quarry and more extensive areas in the southern area of the quarry extension area.

The existing quarry extraction area occupies the central part of the site and currently consists of a 2 no. working faces typically 10-15m in height. Current ground levels over the quarry floor range from c. 70-85m AOD. The extraction area is currently c. 8.4 hectares within an overall permitted extraction area of c. 23.7 hectares. Previously stripped soils and overburden have been used to construct perimeter screening berms.

Over the southern portion of the site, an area of c. 2.9 hectares is currently covered with stripped overburden from the site with the remainder of the area still in its natural state of a mosaic of semi-natural grasslands, scrub and gorse. This area is currently permitted under P. Ref. 04/1479 for both rock extraction and overburden storage.

1.3 Scope of Work

The marsh fritillary survey was limited to the unmanaged area around the overburden storage area located to the south of the Site. The sub-sites investigated as part of this survey are shown in **Figure 1**. This area was identified during previous habitat surveys carried out on 11 June 2024 and 23 July 2024 by SLR Project Ecologist Victoria Molloy as being potentially suitable for breeding marsh fritillary.

1.4 Purpose of the Report

The aim of this report is to estimate the population size in larval webs for marsh fritillary within the sub-sites investigated on-site and to assess the condition of habitats within the sub-sites for breeding marsh fritillary. These data will be used to inform a separate ecological impact assessment and appropriate assessment for the Project. The assessment of potential impacts is beyond the scope of this report.

1.5 Evidence of Technical Competence and Experience

This report was prepared by SLR Project Ecologist Victoria Molloy. The technical review was carried out by Michael Bailey.

Victoria Molloy holds a BSc. in Zoology from the University of Galway (formerly National University of Ireland, Galway). Victoria has three years' experience as a consultant ecologist and has experience in terrestrial ecology, ornithological surveys, invertebrate surveys, and in the preparation of Appropriate Assessments under the Habitats Regulations/Directive and in the writing of Natura Impact Statements. She has previously carried out marsh fritillary larval web surveys and habitat condition assessments for a windfarm project and regularly carries out invertebrate surveys for the Irish Pollinator Monitoring Scheme. Victoria is a Qualifying Member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

Michael Bailey holds a BSc (Hons) in Biology and Ecology from the University of Ulster, and an MSc in Quantitative Conservation Biology from the University of the Witwatersrand, Johannesburg, South Africa. Michael is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM). Michael is an experienced consultant ecologist with field and research experience with mammal, bird, bat and invasive species surveys in Ireland, the UK and Africa. He has prepared Appropriate Assessments and Ecological Impact Assessments for a wide range of infrastructure, mining and extractive industry, and renewable energy projects.

2.0 Methodology

2.1 Desk-based review

The desk-based review collated available information for the presence of marsh fritillary in and around the Project Site. The websites of the National Parks and Wildlife Service (NPWS)¹ and the National Biodiversity Data Centre (NBDC)² were accessed for information on sites designated for nature conservation in the vicinity of the Project Site and marsh fritillary sightings in the local area.

2.2 Field Survey

The survey area was split into four sub-sites (refer to **Figure 1**), for each sub-site a separate larval web survey and habitat condition assessment was carried out on 26 August 2024 and 27 August 2024 by SLR Project Ecologist Victoria Molloy. The weather conditions for the survey dates were as follows:

26 August 2024:

- Wind Speed: 3-4 bft
- Wind Direction: SW
- Precipitation: None
- Temperature: 15-18°C

27 August 2024:

- Wind Speed: 3-4 bft
- Wind Direction: SW
- Precipitation: None
- Temperature: 16-19°C

2.2.1 Larval Web Survey

The larval web survey followed the methodology outlined by the National Biodiversity Data Centre for the marsh fritillary monitoring scheme³. The survey methodology was supplemented with guidance notes from the UK Butterfly Monitoring Scheme⁴.

A transect walk was conducted, searching for larval webs in an area 1 m either side of the transect. A comprehensive search consisting of walked parallel transects approximately 2m apart was carried out for sub-site 1. A complete search was carried out on approximately 0.439 ha of sub-site 3, which is a total of 0.645 ha in size. A representative sample transect was walked for sub-sites 2 and 4, with a distance of 345 and 347 metres respectively. The sample transects are shown in **Figure 1**.

Following the survey, the estimated number of larval webs was calculated for the sub-sites surveyed with a representative sample transect.

¹ www.npws.ie (last accessed August 2024)

² <http://maps.biodiversityireland.ie/#/Map> (last accessed August 2024)

³ <https://biodiversityireland.ie/surveys/marsh-fritillary-monitoring-scheme/> (last accessed August 2024)

⁴ <https://ukbms.org/sites/default/files/downloads/UKBMS%20Ng2%20-%20Marsh%20Frit%20Webs%20guidance%20notes.pdf> (last accessed August 2024)

2.2.2 Habitat Condition Assessment

The suitability of each sub-site for breeding marsh fritillary was assessed using methodology outlined by the National Biodiversity Data Centre for the marsh fritillary monitoring scheme³.

Fixed point habitat recording was carried out every 20-30 paces during the transect walks described above. For each stopping point the attributes listed in **Table 2-1** were measured and recorded. At the end of the transect, the cover (%) of tall (>0.5m) scrub for the whole sub-site was also recorded.

Following the survey, the habitat condition and management alerts for each sub-site were assessed according to the criteria in **Table 2-2**.

Table 2-1: Key for Recording Attributes for Habitat Condition Assessment

Attribute	Recording Key			
Vegetation Height:	A = <12cm	B = 12-25 cm	C = 25-50 cm	D = >50 cm
Devil's Bit Scabious Abundance:	A = 1-2 plants/m ²	B = 3-9 plants/m ²	C = 10+ plants/m ²	D = None
Structured Vegetation:	Mark with an 'X' if there is presence of any steps in vegetation or ground that provide localised protection from elements at ground level.			
Low Invading Scrub:	Mark with an 'X' if low invading scrub (e.g. birch, gorse, bog myrtle) <25 cm tall and >10% cover present. The word 'invading' is important here. Do not include scrub that is an integral part of the habitat (e.g. Juniper in Juniper heath systems).			
Evidence of Stock Grazing:	Mark with an 'X' if localised evidence present (e.g. poaching, dung, etc.).			

Table 2-2: Habitat Condition Assessment Key

Habitat Condition	Description
Good	>20% freq. of Scabious of category B/C abundance growing in 12-25 cm tall swards <10% cover of tall scrub (>0.5 m tall).
Suitable (Under-grazed)	>20% freq. of Scabious of category B/C abundance growing in >25 cm tall swards <20% freq. of Scabious of category B/C abundance growing in 12-25 cm tall swards.
Suitable (Over-grazed)	>20% freq. of Scabious of category B/C abundance growing in <12cm tall swards <20% freq. of Scabious of category B/C abundance growing in 12-25 cm tall swards.
Unsuitable	<5% freq. of Scabious of category B/C abundance growing in >25 cm tall swards.
Management Alerts	
Under-grazing Indicators	>10% cover of tall scrub (>0.5cm) >75% freq. of structured vegetation >10% freq. of low invading scrub <20% freq. of evidence of stock grazing Mean vegetation height >25cm.
Over-grazing Indicators	<25% freq. of structured vegetation >80% freq. of evidence of stock grazing Mean vegetation height <12cm.

2.3 Survey Limitations

The survey was carried out during the optimal period for surveying marsh fritillary larval webs (late August – early September). The weather conditions were not a limiting factor for the surveys.

The population of marsh fritillary larval webs was estimated for sub-sites 2, 3, and 4 as these sites were not completely searched due to issues with safe access limited by dense scrub and topography. For each of these sites, the minimum transect length, recommended by the survey guidance notes from both NBDC and UKBMS, of at least 100m per hectare of suitable habitat was adhered to. This minimum recommendation equates to 2% of the total area of suitable habitat. This was exceeded for each sub-site with 7.7%, 68%, and 13.7% of suitable habitat surveyed for sub-sites 2, 3, and 4 respectively. Therefore, the calculation of estimated larval web population for these sub-sites is not considered to be a significant limitation for this survey.

Significant portions of the survey area are inaccessible due to dense growth of scrub and steep slopes posing a health and safety risk. These areas could not be investigated for breeding marsh fritillary during the survey but are likely to contain further areas of suitable breeding habitat. The habitats within these inaccessible areas were assessed using visual inspection with binoculars where possible and aerial satellite imagery. From these assessments, there is an estimated 3.5 ha of possibly suitable habitat that could not be accessed during this survey (refer to **Figure 4**). As such, the estimated population size reported in this survey should be considered an underestimate of the total population of larval webs on-site.

3.0 Results

3.1 Desk-based Review

3.1.1 Designated Sites

There are no Special Areas of Conservation (SACs), Natural Heritage Areas (NHAs), or proposed NHAs (pNHAs) designated for marsh fritillary within a 20 km⁵ radius of the survey area.

3.1.2 Previous Sightings of Marsh Fritillary

An individual adult marsh fritillary was observed on-site by SLR Project Ecologist Victoria Molloy during a preliminary ecological assessment survey on 11 June 2024.

There is one record of marsh fritillary from 2011 within the NBDC 2km grid squares M84W, M84X, M94B, and M94C, within which the Site is located.

3.2 Larval Web Survey

The locations of occupied and possible unoccupied larval webs recorded during the survey are shown in **Figures 2 and 3**. The survey results for each sub-site are shown in **Table 3-1**.

A total of 22 occupied larval webs were recorded during the survey. This equates to an estimated population of 73 occupied larval webs located in approximately 2.289 ha of suitable habitat that was included in the survey area.

Table 3-1: Summary of Larval Web Survey Results

Sub-Site	Number of Occupied Webs Recorded	Transect Length (m)	Area Surveyed (ha)	Area Suitable Habitat (ha)	Population Size (webs)
1	0	NA	0.248	0.248	0
2	2	345	0.069	0.889	26*
3	17	NA	0.439	0.645	25*
4	3	347	0.0694	0.507	22*
Total	22	NA	0.8254	2.289	73
*Estimated population size was calculated for sub-sites where a representative sample of the sub-site was surveyed instead of a complete search.					

3.3 Habitat Condition Assessment

A summary of the habitat condition assessment results for each sub-site is shown in **Table 3-2**. All four sub-sites were assessed as being suitable (under-grazed) for marsh fritillary and all sub-sites had 4 out of 5 indicators of under-grazing. The full results of the habitat condition assessment are shown in **Appendix A**.

⁵ 20 km is the maximum dispersal distance for marsh fritillary based on currently published literature (Warren, 1994).

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Table 3-2: Summary of Habitat Condition Assessment Results

Sub-Site	Tall Scrub Cover (%)	Mean Veg. Height (cm)	Frequency of DBS (%)	Frequency of DBS Cat. A (%)	Frequency of DBS Cat. B (%)	Frequency of DBS Cat. C (%)	Frequency of 12-25cm swards (%)	Frequency of B/C DBS in B Veg. Height (%)	Frequency of B/C DBS in A Veg. Height (%)	Frequency of B/C DBS in C/D Veg. Height (%)	Frequency of Structured Vegetation (%)	Frequency of Low Invading Scrub (%)	Frequency of Stock Grazing Signs (%)
1	30	>25	70	30	25	15	0	0	0	40	45	80	0
2	30	>25	81	48	26	6	3	0	0	32	61	81	0
3	20	>25	75	25	38	13	8	3	0	48	53	83	0
4	20	>25	87	17	53	17	7	7	0	63	60	90	0

4.0 Summary and Conclusions

Marsh fritillary larval web surveys and habitat condition assessments were carried out on four sub-sites covering approximately 2.289 ha of suitable habitat for marsh fritillary. All four sub-sites were assessed during the habitat condition assessment survey as being suitable (under-grazed) for marsh fritillary and all sub-sites had 4 out of 5 indicators of under-grazing.

A total of 22 occupied larval webs were recorded during the survey. This equates to an estimated population of 73 occupied larval webs. The estimated population size reported in this survey should be considered an underestimate of the total population of larval webs on-site, as significant areas of the survey area could not be accessed that may contain further areas of suitable habitat for breeding marsh fritillary.

Marsh fritillaries are listed under Annex II of the EU Habitats Directive and are listed as vulnerable in the Irish Red List for butterflies.

5.0 References

NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments. Unpublished NPWS report.

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Regan, E.C., Nelson, B., Aldwell, B., Bertrand, C., Bond, K., Harding, J., Nash, D., Nixon, D., & Wilson, C.J. (2010) Ireland Red List No. 4 – Butterflies. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Ireland.

Warren, M. (1994). The UK status and suspected metapopulation structure of a threatened European butterfly, the marsh fritillary *Eurodryas aurinia*. Biological Conservation, 67, pp. 239–249. [http://doi.org/10.1016/0006-3207\(94\)90615-7](http://doi.org/10.1016/0006-3207(94)90615-7)

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Appendix A Habitat Condition Assessment Results

Marsh Fritillary Larval Web Survey Report - 2024

Cam Quarry

Roadstone Ltd

SLR Project No.: 501.065512.00001

1 July 2025



Site Name:		Cam Quarry														Sub-Site:		1																	
Recorder:		VM														Survey Date:		26/08/2024																	
Tall Scrub Cover (%):		30%														Exposure: (e.g. high exposure sites would be open coastal sites)		Low																	
Management observations: (e.g. enclosed, recently grazed or cut, peat cutting, burning, etc.)															Enclosed, unmanaged																				
Aspect and slope description: The main aspect and a brief description of whether the site has suitable habitat covering a variety of aspects (including variation at a micro scale such as banks)															North-facing slope																				
Stop Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Vegetation Height	D	D	C	C	C	D	D	C	D	C	D	D	C	D	C	D	D	C	C	C															
DBS Abundance	B	B	C	A	C	A	A	D	A	A	D	B	A	D	D	B	D	B	C	D															
Mark with an 'X' if attributes below are present at each stop																																			
Structured Vegetation		X	X	X	X			X		X						X		X	X																
Low Invading Scrub	X		X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X															
Evidence of Stock Grazing																																			



Site Name:		Cam Quarry														Sub-Site:		12																		
Recorder:		VM														Survey Date:		27/08/2024																		
Tall Scrub Cover (%):		30%														Exposure: (e.g. high exposure sites would be open coastal sites)		Moderately exposed																		
Management observations: (e.g. enclosed, recently grazed or cut, peat cutting, burning, etc.)															Enclosed, unmanaged																					
Aspect and slope description: The main aspect and a brief description of whether the site has suitable habitat covering a variety of aspects (including variation at a micro scale such as banks)															Sub-site rises to a hilltop in southwest corner																					
Stop Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Vegetation Height	C	D	D	D	C	D	B	D	C	D	D	D	D	C	D	D	D	C	C	C	D	C	C	D	C	D	D	D	D	C	C					
DBS Abundance	B	A	D	A	B	A	D	C	A	A	A	D	C	A	D	A	D	B	A	A	B	D	A	B	B	B	B	A	A	A	B	A				
Mark with an 'X' if attributes below are present at each stop																																				
Structured Vegetation	X	X			X	X	X	X	X	X	X		X			X		X	X	X	X	X			X	X				X						
Low Invading Scrub		X	X	X	X	X	X	X		X	X	X	X	X	X	X	X		X			X	X	X	X	X	X	X	X		X					
Evidence of Stock Grazing																																				



Site Name:		Cam Quarry										Sub-Site:										3																		
Recorder:		VM										Survey Date:										26/08/2024 and 27/08/2024																		
Tall Scrub Cover (%):		20%										Exposure: (e.g. high exposure sites would be open coastal sites)										Low																		
Management observations: (e.g. enclosed, recently grazed or cut, peat cutting, burning, etc.)															Unmanaged																									
Aspect and slope description: The main aspect and a brief description of whether the site has suitable habitat covering a variety of aspects (including variation at a micro scale such as banks)															Varied aspect																									
Stop Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Vegetation Height	C	C	D	D	D	C	C	C	D	D	D	C	D	C	C	C	C	C	C	D	D	D	C	D	D	C	B	D	B	A	D	D	C	C	C	B	C	C	D	C
DBS Abundance	A	C	B	D	C	B	A	A	B	D	C	B	A	D	C	B	B	B	B	B	D	A	B	B	D	A	D	A	A	D	B	B	C	D	A	B	D	A	D	B
Mark with an 'X' if attributes below are present at each stop																																								
Structured Vegetation		X			X	X	X	X		X				X	X	X							X			X	X			X	X	X	X	X		X		X	X	X
Low Invading Scrub	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X		X	X			X			X	X	X	
Evidence of Stock Grazing																																								



Site Name:		Cam Quarry										Sub-Site:		4																					
Recorder:		VM										Survey Date:		27/08/2024																					
Tall Scrub Cover (%):		20%										Exposure: (e.g. high exposure sites would be open coastal sites)		Low																					
Management observations: (e.g. enclosed, recently grazed or cut, peat cutting, burning, etc.)															Unmanaged																				
Aspect and slope description: The main aspect and a brief description of whether the site has suitable habitat covering a variety of aspects (including variation at a micro scale such as banks)															North-west facing slope																				
Stop Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Vegetation Height	D	D	C	C	D	C	B	C	D	D	D	D	C	D	D	D	D	D	D	D	D	D	D	D	D	D	B	D	C	D					
DBS Abundance	B	B	B	B	B	D	C	A	C	B	C	B	B	D	C	A	C	A	A	A	D	B	B	B	B	D	B	B	B	B					
Mark with an 'X' if attributes below are present at each stop																																			
Structured Vegetation	X		X	X		X	X	X	X	X		X	X			X		X	X			X	X		X		X	X							
Low Invading Scrub	X	X		X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
Evidence of Stock Grazing																																			



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Appendix B Figures

Marsh Fritillary Larval Web Survey Report - 2024

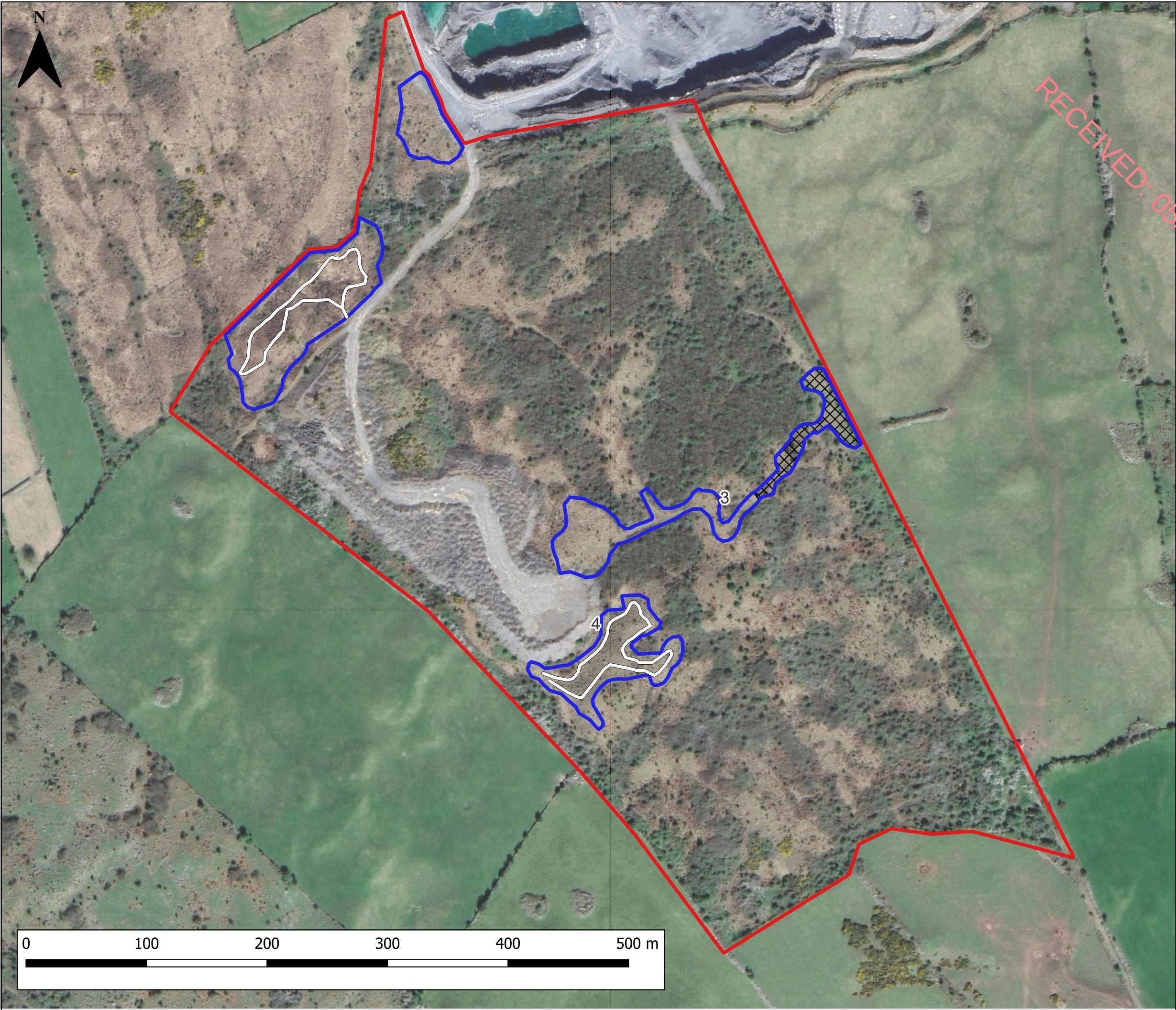
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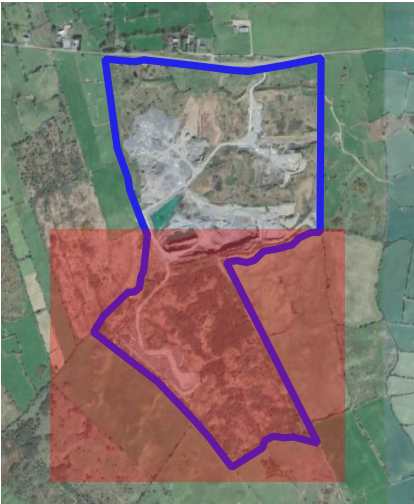
Roadstone Ltd

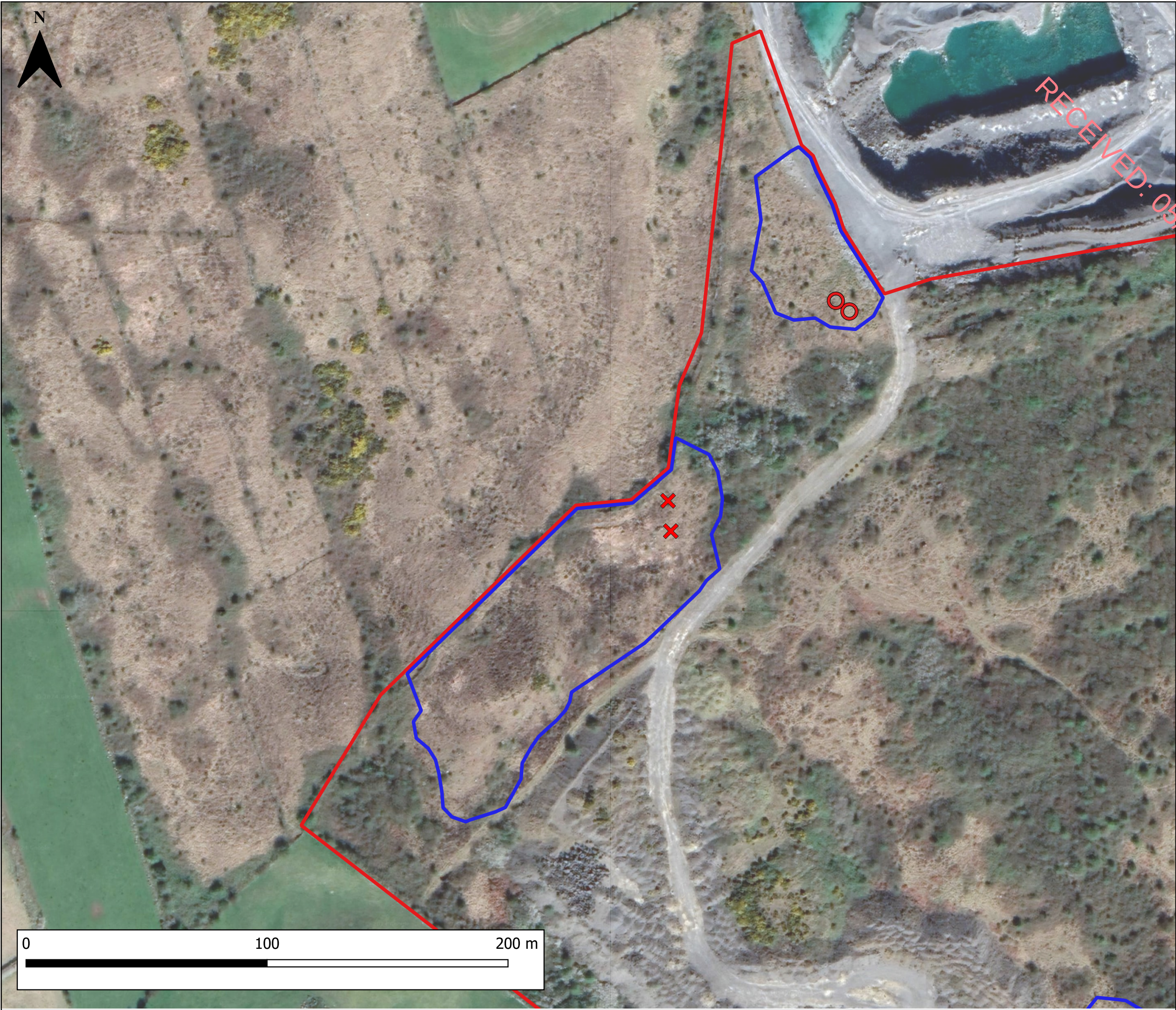
SLR Project No.: 501.065512.00001

1 July 2025

- | | |
|-----------------|---------------------------------------|
| Figure 1 | Survey Area |
| Figure 2 | Survey Results 1 / 2 |
| Figure 3 | Survey Results 2 / 2 |
| Figure 4 | Areas of Possible Suitable MF Habitat |



NOTES 1. Base Mapping: OpenStreetMap © (www.openstreetmap.org/copyright)	
LEGEND Survey Area Sub-Sites Inaccessible Area Representative Sample Transects	
	
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ROADSTONE LTD. MARSH FRITILLARY SURVEY REPORT	
CAM QUARRY Brideswell, Co. Roscommon	
Survey Area	
FIGURE 1	
Scale 1:3000 @ A3	Date SEP 2024



NOTES

1. Base Mapping: OpenStreetMap ©
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LEGEND

Sub-Sites

Inaccessible Area

Larval Webs

× Occupied*

○ Unoccupied (Possible)

*Some of the larval web locations shown on this map contained more than one larval web. Therefore, the number of larval webs represented on the map may differ from the number of webs recorded in the survey results.



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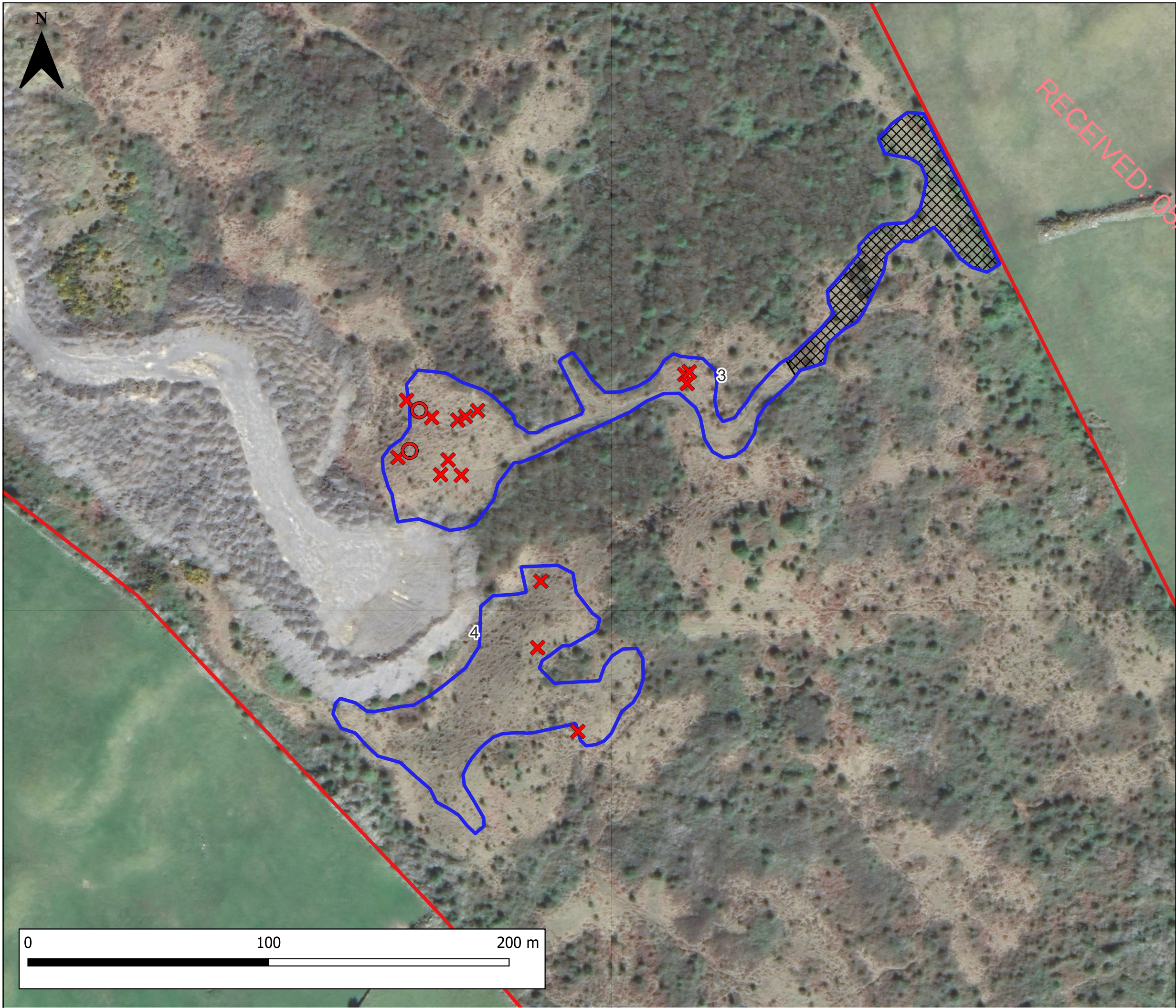
CAM QUARRY
Brideswell, Co. Roscommon

Survey Results 1/2

FIGURE 2

Scale
1:1500 @ A3

Date
SEP 2024



NOTES

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LEGEND

Sub-Sites

Inaccessible Area

Larval Webs

Occupied*

Unoccupied (Possible)

*Some of the larval web locations shown on this map contained more than one larval web. Therefore, the number of larval webs represented on the map may differ from the number of webs recorded in the survey results.

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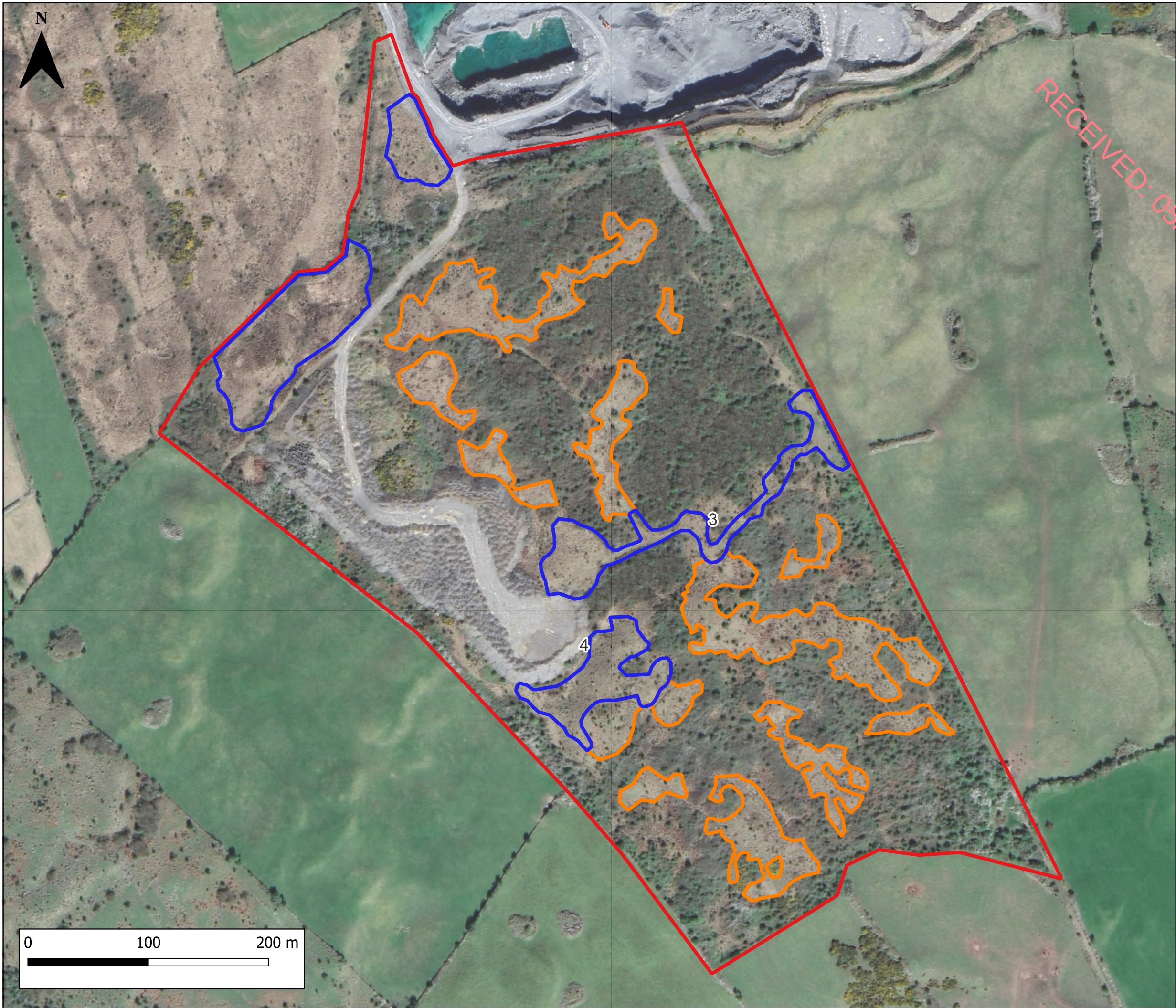
Survey Results 2/2

FIGURE 3

Scale
1:1500 @ A3

Date
SEP 2024

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LEGEND

- Survey Area
- Sub-Sites
- Possibly Suitable Habitat for Marsh Fritillary

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Areas of Possibly Suitable Habitat

FIGURE 4

Scale

1:3000 @ A3

Date

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