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APPENDICES

Appendix 5-A Relevant Legislation and Planning Policy

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5-A.2 Habitats and Birds Directive

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Introduction

- 5.1 This Biodiversity chapter forms part of the Environmental Impact Assessment Report (EIAR) prepared for Breedon Materials Ltd. trading as Breedon Ireland hereafter referred to as "Breedon" in support of a planning application to Laois County Council for the proposed continued use and extension to the existing permitted sand and gravel extraction operation at Mounthall and Cummer townlands, Camross, Co. Laois.

Site Description

- 5.2 The overall planning application area is located at approximate ITM coordinate X 626656, Y 698131 and covers approximately 12.2 hectares (ha) and comprises of the existing permitted sand and gravel pit and several agricultural fields currently under pasture with some intervening areas of scrub / vegetation. The extent of the site is shown in Chapter 2 on **Figure 2-1**.

Project Description

Existing Sand and Gravel pit

- 5.3 The existing permitted sand and gravel pit is located within the northern portion of the application area and includes the existing entrance onto the L10317.
- 5.4 The existing pit consists of a single face extraction area typically 8m in height. Ground levels rise from the entrance at c. 194m AOD westwards to the toe of the existing face along the western boundary where ground levels are c. 200-203m AOD. At the site entrance, the existing gate is set back from the edge of the public road, with the area between the gate and road consisting of a concrete hard surface. The internal access route from the entrance gate to the extraction area consists of hardcore road. There are no structures within the existing pit.

Extension Lands

- 5.5 The proposed extraction operations (c. 8 ha) are intended to gradually advance through the existing agricultural lands to the south of the existing pit, as shown on **Figure 2-2**. The extension lands are undulating, and ground levels are variable from c. 205m AOD adjacent to the existing pit to the north, falling south-eastwards to c. 195m AOD, before rising to 205m AOD and again falling away to c. 180m AOD in the southeast corner of the site.
- 5.6 The extension lands are bisected internally with native hedgerows, gorse and bramble scrub and some immature broadleaved woodland mixed with gorse scrub. There is a small pond (c. 20m in diameter) located along the eastern site boundary, outside of the proposed extraction area which will be retained.
- 5.7 Two overhead powerline routes bisect the application site which provide power to the local residences and farms. One line runs NW to SE and the other runs NE to SW and they intersect near the centre of the extension extraction area. There are currently 5 no. electricity poles located within the proposed extension extraction area.
- 5.8 The application area includes an extensive deposit of sand and gravel which is proposed to be extracted and processed on site.



Purpose of the Report

- 5.9 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.
- 5.10 This chapter forms part of the EIAR that will be submitted with the planning application to assist the competent authority, in this case Laois County Council, to carry out an Environmental Impact Assessment (EIA) of the proposed development.
- 5.11 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.
- 5.12 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

- 5.13 This report was prepared by SLR Project Ecologist Jake Matthews and SLR Graduate Ecologist Lorcan Kelly. SLR Associate Ecologist Michael Bailey carried out the technical review.
- 5.14 Jake Matthews is an Associate Member of the Chartered Institute of Ecology and Environmental Management (ACIEEM) and holds an MSc in ecology and environmental management from Liverpool Hope University and a BSc in wildlife conservation from the University of Salford. Jake has over five years' experience as a consultant ecologist and has worked on a variety of developments including EIAR chapters, AA screenings and NIS reports.
- 5.15 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). He has prepared Appropriate Assessments and Ecological Impact Assessments for a wide range of projects in Ireland and the UK.

Relevant Legislation

Legislation

- 5.16 This section details the relevant legislation, policy and guidance used within the assessment (also refer to 0). The main pieces of legislation in terms of ecology in regard to developments such as this are as follows;

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

- 5.17 The relevant local planning policies have been extracted from the Laois County Development Plan (CDP) 2021-2027 (Laois County Council (LCC), 2022). These policies are specific to “Chapter 11 – Biodiversity and 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 County Laois. 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 County Laois. The full list of relevant policies and objectives are in 0 of this report.

Guidance

- 5.18 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).

Consultation

- 5.19 A formal pre-planning consultation meeting was held online between officials of Laois County Council, SLR and the Applicant on the 1st May 2024.
- 5.20 Consultation with Inland Fisheries Ireland (IFI) resulted in a request for aquatic surveys to be undertaken on the adjacent stream located close to the site. Moreover, it was requested by IFI that any designated sites located downstream of this stream



was considered (this has been included in the accompanying AA Screening and NIS report).

Methodology

- 5.21 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

- 5.22 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

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

Field survey

- 5.24 The study area for field surveys comprised the site boundary (shown as a red line boundary on **Figure 2-1**) and the proposed extraction area (shown as a dashed black line on **Figure 2-1**), although incidental sighting of species beyond this boundary are represented where relevant in this report.

Baseline Data Collection

Desk Study

- 5.25 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.
- 5.26 The following data sources were used to compile the desk study:
- 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

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

² www.npws.ie Accessed May 2024.

³ <http://maps.biodiversityireland.ie/#/Map> Accessed May 2024.



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.
- Habitats and species listed under the Mountrath Biodiversity Action Plan (Mac Gowan, 2015).
- Local policies listed in the Co. Laois 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.
- The protection of mammals is evaluated using one or more of the following documents; Wildlife Acts 1976 – 2018 (ISB, n.d.), the Red List of Terrestrial Mammals (Marnell et al., 2019), and Annexes of the EU Habitats Directive 92/43/EEC¹² (European Commission, n.d.).
- Laois 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 for the sand and gravel pit 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 and Chapter 13 - Landscape.**

Field Survey(s)

- 5.27 The fieldwork carried out to inform the preparation of this report is discussed in the following sections.

Terrestrial Ecology

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

⁴ <http://gis.epa.ie/> Accessed May 2024.

⁵ <https://www.myplan.ie/> Accessed July 2024.



Biodiversity 5

Table 5-1: Surveys undertaken on the Site

Date	Survey type	Ecologist	Weather		Scope of survey and relevant guidance followed
16/01/2024	Preliminary ecological appraisal	Jake Matthews	Temp. ⁶	-1 - 2	- Identify initial ecological constraints to the Site and scope for the need for further (Phase 2) surveys. - Habitat mapping following the guidance set out in <i>A guide to habitats in Ireland</i> (Fossitt, 2000). - Potential roost assessment (PRA) following guidance laid out in Bat surveys for professional ecologists (Collins, 2023), which was undertaken to assess the overall site suitability to support roosting, foraging and commuting bats. All trees that were to be impacted were assessed for their potential to support bat roosts. - Assess the hedgerows within the Site for their significance and their condition following the current guidance laid out in the <i>Hedgerow Appraisal System - Best Practise Guidance on Hedgerow Survey, Data Collation and Appraisal</i> (Foulkes et al, 2013).
			Wind speed ⁷	1	
			Cloud cover ⁸	0	
			Precipitation	None	
03/07/2024	Updated habitat survey including hedgerow assessment	Jake Matthews	Temp.	12	
			Wind speed		
			Cloud cover	4	
			Wind speed	3/8	
05/03/2024	Breeding bird survey 1	Jake Matthews	Precipitation	None	
			Temp.	5	
			Wind speed	3	
			Cloud cover	8/8	
11/04/2024		Jake Matthews	Precipitation	Moderate at times	
			Temp.	12	
		Jake Matthews	Wind speed	1	

⁶ Measured in °C

⁷ Measured on the Beaufort scale

⁸ Measured in Oktas



Biodiversity 5

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Date	Survey type	Ecologist	Weather	Scope of survey and relevant guidance followed
	Breeding bird survey 2		Cloud cover 8	
			Precipitation None	
18/04/2024	Breeding bird survey 3	Jake Matthews	Temp. 7	
			Wind speed 2	
			Cloud cover 8	
			Precipitation Short shower mid-survey	
02/05/2024	Breeding bird survey 4	Jake Matthews	Temp. 8	
			Wind speed 4	
			Cloud cover 8	
			Precipitation Short shower at start of survey	
04/04/2024	Hen harrier survey	Hugo Brooks	Temp. 6 - 9	Assess the site for nesting/breeding hen harrier following guidelines set out in <i>Raptors: A field guide for surveys and monitoring</i> (Hardey et al., 2013).
			Wind speed 1 - 2	
			Cloud cover 8/8	
			Precipitation None	
16/05/2024			Temp. 10 - 16	



Biodiversity 5

Date	Survey type	Ecologist	Weather	Scope of survey and relevant guidance followed
	Hen harrier survey 2	Hugo Brooks	Wind speed 2 Cloud cover 1 - 4 Precipitation None	
17/04/2024	Bat activity survey	Alice Magee & Hugo Brooks	Temp. 9 Wind speed 2 - 6 Cloud cover 6/8 Precipitation None	Assess the site for commuting and foraging bats following guidance laid out in Bat surveys for professional ecologists (Collins, 2016 and Collins, 2023).
03/07/2024	Bat roost survey	Jake Matthews & Hugo Brooks	Temp. 10 - 12 Wind speed 4 – 6 Cloud cover 2 – 3/8 Precipitation None	Assess trees identified during the PRA as having bat roosting potential to confirm if bat roosts are present, following guidance laid out in Bat surveys for professional ecologists (Collins, 2016 and Collins, 2023).
05/06/2024 - 03/07/2024	Pine marten & other mammals monitoring	Jake Matthews	N/A	Assess whether the Site and adjacent woodland support pine marten and other rare and protected species such as red squirrel.



Preliminary Ecological Appraisal

- 5.29 A preliminary ecological appraisal (PEA) of the Site was undertaken in January 2024 to identify initial ecological constraints to the Site and scope for the need for further (Phase 2) surveys.
- 5.30 All habitats within the Site were mapped following the guidance set out in *A guide to habitats in Ireland* (Fossitt, 2000). Repeat surveys were carried out in optimal seasonality across the spring and summer months to provide an accurate assessment of the habitats and the flora that they support. The dominant plant species present in each habitat type were recorded.
- 5.31 The potential presence of rare and protected⁹ 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.
- 5.32 The PEA included a Potential Roost Assessment (PRA) which was undertaken following guidance laid out in *Bat surveys for professional ecologists* (Collins, 2016 and Collins, 2023). This was undertaken to identify the overall site suitability to support roosting, foraging and commuting bats (as detailed in **Table 5-2**). All trees located within the site that were subject to impact by the proposed development were assessed for their potential to support bat roosts (refer to **Table 5-2**).

Table 5-2: Potential suitability of trees for roosting bats (Collins, 2016)

Suitability	Description of roosting habitat	Commuting and foraging bats
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting and foraging bats.
Low	A tree of sufficient size and age to contain Potential Roosting Features (PRF) but with none seen from the ground or feature seen with only very limited roosting potential.	Habitat that could be used by small numbers of commuting bats such as gappy hedgerow or unvegetated stream, but isolated (i.e., not very well connected to the surrounding landscape by other habitat). Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree or a patch of scrub.
Moderate	A tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status.	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.

⁹ As listed in the *Checklists of protected and threatened species in Ireland* (Nelson et al., 2019).

Suitability	Description of roosting habitat	Commuting and foraging bats
High	A tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions, and surrounding habitat.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well-connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses, and grazed parkland. Site is close and connected to known roosts.

- 5.33 Following the PEA, the additional species-specific surveys were conducted and are detailed in the following sections.

Updated habitat surveys

- 5.34 Due to the PEA being conducted in sub-optimal season (January), an updated habitat survey was conducted on the Site in June 2024 (i.e. within the optimal survey window for flora), following the same Fossitt (2000) guidance as the PEA. Floral species for each habitat were recorded.
- 5.35 The optimal period to undertake a habitat survey is April - September. The initial PEA survey was completed in January 2024, which is outside the optimal survey window. As such, the updated habitat surveys to identify flora on the site were conducted in May 2024 and June 2024. Therefore, there were no seasonal constraints for flora to the assessment.

Hedgerow assessment survey

- 5.36 All hedgerows within the Site were subjected to a hedgerow assessment following the guidelines set out in the *Hedgerow appraisal system – Best practice guidance on hedgerow surveying, data collation and appraisal* (Foulkes et al., 2013). This survey was conducted during the updated habitat survey in June 2024, which is inside the optimal season for surveying flora.

Amphibians

- 5.37 One pond is located on the Site, which could support smooth newts *Lissotriton vulgaris*. Current guidance (Langton et al., 2001 & TII, 2009) suggest four newt surveys to establish presence. However, if presence is determined no further surveys are required. The presence of both species was identified in this pond incidentally by SLR Project Ecologist Jake Matthews. Therefore, presence was confirmed and no additional surveys was required.

Breeding Birds

- 5.38 Four breeding bird surveys were conducted to assess the Site for breeding bird activity. All surveys were conducted during the optimal survey season (i.e., between March – July) and during good weather conditions with high visibility (refer to **Table 5-1**).

- 5.39 The methodology followed the current Bird Survey Guidelines (n.d.). The survey began approximately 15 – 30 minutes after sunrise and comprised a walked transect route along suitable nesting habitats throughout the Site (see **Figures 5-4** and **5-5**). All birds seen and/or heard were recorded digitally using the British Trust for Ornithology (BTO) species and behaviour codes (**Table 5-3**) to record bird behaviours that may indicate breeding within the Site. Territories of birds were mapped over the repeat surveys providing an estimation of the number of each breeding species.

Table 5-3: 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

Breeding status	Details
	Nest with young seen or heard

- 5.40 A total of four breeding bird surveys were conducted on the Site. The current bird survey guidelines suggest that a total of six surveys should be undertaken unless it can be justified otherwise. Following the completion of the four surveys, similar bird species were repeatedly recorded, and no new rare and protected species bird species were identified. Therefore, it was assessed that after four surveys, an accurate representation of the breeding birds on the site was established.
- 5.41 No wintering bird surveys were conducted on the site as no wintering birds were identified using the site during the initial survey visit in January 2024. Given the nature of the Site, as grazing pasture, it is anticipated that wintering bird assemblage of the site would comprise common and widespread endemic species similar to those identified during the breeding bird surveys. Therefore, this is not considered to pose a significant constraint to the assessment.

Hen Harrier

- 5.42 Two hen harrier surveys were conducted on 04/04/2024 and 16/05/2024 to assess the Site for the presence of breeding hen harrier following the approach laid out in the *Raptors: A field guide for surveys and monitoring* (Hardey et al., 2013). These comprised two sunrise surveys of the Site checking for hen harrier activity within the Site and beyond.
- 5.43 The surveys were conducted during optimal breeding seasonality of March – May and optimal weather conditions with good visibility. The guidance set out in Hardey et al. (2013) recommends four surveys. However, visit 1 is undertaken to establish site occupancy. Only one hen harrier was observed during the first hen harrier survey, and this was flying in a south-westerly direction c. 80m northwest of the Site. The second hen harrier survey found no evidence of hen harrier on the Site. Furthermore, no incidental sightings of hen harriers were identified during the four breeding bird surveys, or any other surveys conducted on the Site. Therefore, it was reasonably concluded that breeding hen harrier are not present on the site and the need for additional surveys was not necessary.
- 5.44 No wintering hen harrier surveys were conducted on the Site as no potential for wintering hen harriers was identified on the Site during the PEA in January 2024. Given the absence of breeding hen harrier on the Site, as well as the lack of typical prey species such as meadow pipit *Anthus pratensis* and skylark *Alauda arvensis* it is considered unlikely that the Site would be used by this species during winter.

Roosting bats

- 5.45 The PRA identified two trees with moderate roosting potential, which underwent two additional presence/absence bat emergence surveys following the current BCT guidance (Collins, 2023). This involved two surveyors standing in view of identified PRFs, recording any emerging bats for evidence of the presence of a bat roost using Batlogger M bat detectors and surveys were conducted in suitable weather conditions (i.e., little to no rain and wind, and temperatures >10°C).

Commuting and foraging bats

- 5.46 The Site underwent one bat activity survey following the current BCT guidelines (Collins, 2023). Two surveyors walked a pre-determined transect route around the

Site, with regular stopping points (refer to **Figure 5-7**). All bats seen and heard were recorded, noting species, flight lines and approximate heights using a Batlogger M bat detector. The survey was conducted in suitable weather conditions (i.e., little to no rain and wind, and temperatures >10°C).

- 5.47 In addition, two Anabat Swift bat static bat detectors were deployed on the Site close to suitable foraging and commuting habitats (refer to **Figure 5-7**), for a period of seven consecutive nights in suitable weather conditions (i.e., little to no rain and wind, and temperatures >10°C).

Small mammal monitoring

- 5.48 Suitable habitats that were identified for their potential to support rare and protected mammals such as pine marten and red squirrel were monitored using a trail camera for two periods of seven consecutive nights. These were deployed within the woodland and baited (refer to **Figure 5-9** for the deployment locations).

Aquatic Ecology

- 5.49 Aquatic ecology surveys were conducted by Triturus (2024) on 8th July 2024. This involved six riverine survey sites in the vicinity of the proposed works. The location of these six survey sites are detailed in **Table 5-4** and presented in **Figure 2.1** of the Aquatic Ecology Report (included in **0**). Each survey site was assessed for the following:

- Fisheries assessment (via electro-fishing and fisheries habitat appraisal);
- White-clawed crayfish *Austropotamobius pallipes* survey;
- Macrophytes survey;
- Aquatic bryophytes survey;
- Water quality sampling (Q-sampling);

Table 5-4: Location of the n=6 aquatic sites in the vicinity of Mounthall S&G Pit (extracted from Table 2.1 of the Aquatic Ecology Report)

Site no.	Watercourse	EPA code	Location	X (ITM)	Y (ITM)
A1	Unnamed Stream (not mapped by EPA)	N/A	Mounthall	626712	697982
A2	Unnamed Stream (not mapped by EPA)	N/A	Mounthall	626948	697996
A3	Unnamed Stream (not mapped by EPA)	N/A	Cummer	627091	697989
B1	Killeen River	15K01	Cummer	626849	698499
B2	Killeen River	15K01	Cardtown Bridge	627115	697978
B3	Killeen River	15K01	Killeen	627352	697720

- 5.50 In addition to the ecological characteristics of the site, a broad aquatic and riparian habitat assessment was conducted utilising elements of the methodology given in the Environment Agency's 'River Habitat Survey in Britain and Ireland Field Survey Guidance Manual 2003' (EA, 2003) and the Irish Heritage Council's 'A Guide to Habitats in Ireland' (Fossitt, 2000). This broad characterisation helped define the

watercourses' conformity or departure from naturalness. All sites were assessed in terms of:

- Physical watercourse/waterbody characteristics (i.e. width, depth, channel form) including associated evidence of historical drainage;
- Substrate type and relative condition, listing substrate fractions in order of dominance (i.e. bedrock, boulder, cobble, gravel, sand, silt etc.);
- Substrate condition included surface deposition and infiltration levels via visual observation;
- Flow type by proportion of riffle, glide and pool in the sampling area;
- An appraisal of the macrophyte and aquatic bryophyte community at each site; and
- Riparian vegetation composition and bordering land use practices.

5.51 Full details of the electro-fishing methodology is provided in the Aquatic Ecology Report (included in 0).

Limitations

Desk study

- 5.52 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 carried out 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.
- 5.53 Population assessments are based on the best data available and often county-level population data is not available. County populations have, therefore, been based on averages of the national populations. Given Co. Laois is a small county (c. 1720 km²) when compared to other such as Co. Cork or Co. Galway, it is likely that the true figure is less than an average determined as a national average. Additionally, certain counties will support greater or fewer numbers of various species or habitats than others depending on their geographical location. This has been considered within the assessment.

Field surveys

- 5.54 All areas of the Site were accessible and no limitations were experienced.

Assessment Approach

- 5.55 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).
- 5.56 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://cieem.net/resource/guidelines-for-ecological-impact-assessment-ecia/>. 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

5.57 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

5.58 The importance of an ecological feature should be considered within a defined geographical context following guidance set out in *Guidelines for ecological impact assessment in the UK and Ireland* (CIEEM, 2018). 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 (Laois)
- Local; and
- Negligible

5.59 The above frame of reference is applied to the IEFs identified during the desk study and surveys to inform this report.

5.60 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.

5.61 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

- 5.62 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.
- 5.63 When describing impacts, reference has been made to the following characteristics, as appropriate:
- Positive or negative;
 - Extent;
 - Magnitude;
 - Duration;
 - Timing;
 - Frequency; and
 - Reversibility.
- 5.64 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.
- 5.65 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; and
 - **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.
- 5.66 The threshold of importance is based at 1% of the existing background population / area (CIEEM, 2018).

Significant Effects

- 5.67 The CIEEM (2018) EclA 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.

- 5.68 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.
- 5.69 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

- 5.70 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.
- 5.71 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

- 5.72 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.
- 5.73 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.

5.74 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

5.75 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.

Nature Conservation Sites

5.76 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, Wildfowl Sanctuaries and Ramsar Sites.

5.77 An AA screening and NIS report has been provided alongside this EIAR (SLR, 2024) detailing the European sites considered within the assessment. A summary of these is provided below.

5.78 The proposed development area is not within any site designated for nature conservation or subject to any nature conservation designations (**Figure 5-2**). It is adjacent to the Slieve Bloom Mountains SPA, which borders the northeast of the Site.

European Designated Sites

5.79 An Appropriate Assessment (AA) screening report and Natura Impact Assessment (NIS) report has been provided alongside this report (SLR, 2024). **Table 5-5** lists the European sites identified within 15 km of the Site. 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.

Table 5-5: European sites identified within 15 km of the Site

Site reference code	European designated site	Approximate distance from the red line application boundary	Qualifying Interest (QI)
004160	Slieve Bloom Mountains SPA	0 km (north) – bounds existing pit	Birds • A082 Hen Harrier <i>Circus cyaneus</i>

Site reference code	European designated site	Approximate distance from the red line application boundary	Qualifying Interest (QI)
000412	Slieve Bloom Mountains SAC	1.5 km (north)	Habitats 4010 Northern Atlantic wet heaths with <i>Erica tetralix</i> 7130 Blanket bogs (* if active bog) 91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>)*
002162	River Barrow and River Nore SAC	2.4km (east)	Species <i>Vertigo moulinsiana</i> (Desmoulin's Whorl Snail) [1016] <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] <i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092] <i>Petromyzon marinus</i> (Sea Lamprey) [1095] <i>Lampetra planeri</i> (Brook Lamprey) [1096] <i>Lampetra fluviatilis</i> (River Lamprey) [1099] <i>Alosa fallax fallax</i> (Twaite Shad) [1103] <i>Salmo salar</i> (Salmon) [1106] Habitats - Estuaries [1130] - Mudflats and sandflats not covered by seawater at low tide [1140] - Reefs [1170] <i>Salicornia</i> and other annuals colonising mud and sand [1310] - Atlantic salt meadows (<i>Glaucopuccinellietalia maritima</i>) [1330] <i>Lutra lutra</i> (Otter) [1355] - Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] <i>Trichomanes speciosum</i> (Killarney Fern) [1421] <i>Margaritifera durrovensis</i> (Nore Pearl Mussel) [1990] - Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]

Site reference code	European designated site	Approximate distance from the red line application boundary	Qualifying Interest (QI)
			- European dry heaths [4030] - Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] - Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220] - Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] 91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>)
002332	Coolrain Bog SAC	5.8 km (south)	Habitats 7110 Active raised bogs* 7120 Degraded raised bogs still capable of natural regeneration 7150 Depressions on peat substrates of the Rhynchosporion
000677	River Nore SPA	6 km (southeast)	Birds A229 Kingfisher <i>Alcedo atthis</i>
002333	Knockacoller Bog SAC	7.3 km (southeast)	Habitats 7110 Active raised bogs* 7120 Degraded raised bogs still capable of natural regeneration 7150 Depressions on peat substrates of the Rhynchosporion
000859	Clonaslee Eskers and Derry Bog SAC	12.5 km (north)	Habitats 7220 Petrifying springs with tufa formation (<i>Cratoneurion</i>)* 7230 Alkaline fens - Species 1013 Geyer's Whorl Snail <i>Vertigo geyeri</i>
002236	Island Fen SAC	14.4 km (northwest)	Habitats <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] - Alkaline fens [7230]

5.80 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:

- Slieve Bloom Mountains SPA;
- River Barrow and River Nore SAC;
- River Nore SPA.

5.81 All other European sites have been scoped out from potential impacts in the AA Screening and NIS report (SLR, 2024) and have, therefore, not been assessed further in this chapter.

Natural Heritage Areas

5.82 **Table 5-6** details the Natural Heritage Areas (NHA) and proposed Natural Heritage Areas (pNHA) within 15 km of the proposed development. In summary, there are nine pNHA within 15 km of the proposed development (see 0).

Table 5-6: Natural Heritage Areas identified within 15 km of the Site

Site reference code	Site name	Approximate distance from the red line application boundary	Details ¹⁰
000412	Slieve Bloom Mountains pNHA	1.5 km (north)	No information found. Anticipated that it is designated for hen harrier similar to the SPA and SAC designations.
000864	Delour river near Lacca Manor pNHA	2 km (east)	Oak/birch woodland, river, wet grassland.
000415	Coolrain Bog pNHA	5.8 km (south)	Midland raised bog (with Knockacoller Bog, these two bogs are the most southerly intact examples of true Midland Raised Bogs in the country).
000889	Camcor Wood pNHA	6.9 km (northwest)	No information found.
000419	Knockacoller Bog pNHA	7.3 km (southeast)	Midland raised bog, birch and alder woodland. One of the few intact bogs south of the Slieve Blooms.
000868	Mannin Wetland pNHA	10.1 km (south)	Species-rich fen
000874	Forest House Wood pNHA	10.4 km (southeast)	No information found.
000579	Kinnitty (Domestic Dwelling, Occupied) pNHA	11 km (northwest)	No information found.
000652	Monaincha Bog/Ballaghmore Bog NHA	12 km (southwest)	Raised bog that includes both areas of high bog and cutaway

¹⁰ Information extracted from the Laois County Development Plan 2021 – 2027 Vol. 1 – Written Statement. Available online: <https://laois.ie/departments/planning/review-of-laois-county-development-plan-2017-2023-2/>. Accessed May 2024.

Site reference code	Site name	Approximate distance from the red line application boundary	Details ¹⁰
000897	Derrykeel Meadows pNHA	12.4 (northwest)	No information found.
000583	Roscrea Bog pNHA	12.5 (southwest)	Bog and fen habitats that support two rare species of snail <i>Vertigo genesii</i> and <i>Agriolimax laevis</i> have been recorded on the site. Also, wetland birds such as reed bunting, snipe and curlew have been seen.
000859	Clonaslee Eskers & Derry Bog pNHA	12.5 (north)	Esker, raised bog.
000656	St. Anne's (Sean Ross Abbey), Roscrea pNHA	14.9 km (southwest)	The site contains almost 100 Leisler's bats during the summer months.

Slieve Bloom Mountains pNHA

- 5.83 Slieve Bloom Mountains pNHA 000412 is ca. 1.5 km to the north of the Site measured in a straight line from the closest point.
- 5.84 There is no detailed site synopsis available for this pNHA and it is anticipated that this area is valued for similar reasons to the Slieve Bloom Mountains SAC and SPA designations (refer to **Table 5-5**).
- 5.85 The area of this pNHA overlaps with the Slieve Bloom Mountains SAC 000412. Potential impacts on European sites have already been addressed in the AA screening and NIS report. This pNHA is evaluated as important on a **county level**.

Delour River Near Lacca Manor pNHA

- 5.86 Delour River Near Lacca Manor pNHA 000864 is ca. 2 km east of the Site when measured in a straight line from the closest point. This pNHA is proposed for its oak/birch woodland, river, and wet grassland habitats.
- 5.87 The area of this pNHA overlaps with the River Barrow and River Nore SAC 002162 and Slieve Bloom Mountains SPA 004160. Potential impacts on European sites have already been addressed in the AA screening and NIS report. Therefore this pNHA has been **scoped out** of this report.

Coolrain Bog pNHA

- 5.88 Coolrain Bog pNHA 000415 is ca. 5.8 km south of the Site when measured in a straight line from the closest point.
- 5.89 There is no detailed site synopsis available for this pNHA. The area of this pNHA overlaps with Coolrain Bog SAC 000415. Potential impacts on European sites have already been addressed in this report. Therefore Coolrain Bog pNHA 000415 has been **scoped out** from further consideration in this report.

Camcor Wood pNHA

- 5.90 Camcor Wood pNHA 000889 is ca. 6.9 km northwest of the Site when measured in a straight line from the closest point.
- 5.91 *“Camcor Wood occupies level ground both sides of the Camcor River valley which cuts through Upper Silurian rocks about 15km east of Birr, Co. Offaly. Glinsk Grove is included in the proposed Natural Heritage Area. Along the Camcor valley bottom, the woodland has developed over level ground. Here the stream braids to form several 'islands', and there are a number of rather wet marshy areas. The main tree species are the wet woodland species: Alder (*Alnus glutinosa*), willow (*Salix* spp.) and birch (*Betula* spp.) with oak (*Quercus* spp.), Ash (*Fraxinus excelsior*), Hazel (*Corylus avellana*), Holly (*Ilex aquifolium*) and Hawthorn (*Crateagus monogyna*) colonising drier areas. The ground flora is diverse with areas of Bluebell (*Hyacinthoides non-scripta*), and species such as Enchanter's-nightshade (*Circea lutetiana*), Wood-sorrel (*Oxalis acetosella*) and Bugle (*Ajuga reptans*). Marsh-marigold (*Caltha palustris*) and Meadowsweet (*Filipendula ulmaria*) typify the wetter areas. This is a particularly fine example of woodland in a fairly natural condition, although unfortunately the Glinsk gully has suffered to a serious degree from conifer plantation. The native woodland has an impressive age structure with much regeneration, and an equally impressive ground layer, notably species-rich, with 42 mosses, 12 ferns, 15 grasses, and 90 other higher plant species recorded.”*
- 5.92 Camcor Wood pNHA is considered to be sufficiently distant from the project such that it is not likely to be affected by the project. Therefore, Camcor Wood pNHA has been **scoped out** from further consideration in this report.

Knockacoller Bog pNHA

- 5.93 Knockacoller Bog pNHA 000419 is ca. 7.3 km southeast of the Site when measured in a straight line from the closest point.
- 5.94 There is no detailed site synopsis available for this pNHA. The area of this pNHA overlaps with Knockacoller Bog SAC 000419.
- 5.95 Knockacoller Bog pNHA is considered to be sufficiently distant from the project such that it is not likely to be affected by the project. Therefore, Knockacoller Bog pNHA has been **scoped out** from further consideration in this report.

Mannin Wetland pNHA

- 5.96 Mannin Wetland pNHA 000868 is ca. 10.1 km south of the Site when measured in a straight line from the closest point.
- 5.97 *“The Mannin Wetland proposed Natural Heritage Area (NHA) comprises two small blocks, one to either side of the Durrow road at Mannin crossroads, about 4km west of Borris in Ossory. These blocks are boggy fields developed over poor draining areas of glacial drift deposited over Lower Limestone. It can be speculated that this area was once a lowland raised bog which is now cutaway, but research has not been undertaken to confirm this. The site now resembles a young, peat-forming fen. The vegetation consists largely of Purple Moor-grass (*Molinia caerulea*) and Bog-myrtle (*Myrica gale*) with areas of Black Bog-rush (*Schoenus nigricans*) suggesting a high calcium content. The area is wet enough for there to be occasional pools, where Great Fen-sedge (*Cladium mariscus*), Bogbean (*Menyanthes trifoliata*) and Water Mint (*Mentha aquatica*) can be found. The area, although small, is fairly species-rich. Gorse (*Ulex europaeus*) bushes and small birch (*Betula* spp.) trees are scattered throughout the site. Although much of the former fen area has now been reclaimed*

and a section planted with conifers, the two small blocks that remain, support vegetation that is now becoming rare in this area.”

- 5.98 Mannin Wetland pNHA is considered to be sufficiently distant from the project and has no landscape or ecological connectivity with the Site such that it is not likely to be affected by the project. Therefore, Mannin Wetland pNHA has been **scoped out** from further consideration in this report.

Forest House Wood pNHA

- 5.99 Forest House Wood pNHA 000874 is ca. 10.4 km southeast of the Site when measured in a straight line from the closest point.
- 5.100 There is no detailed site synopsis available for this pNHA. The area of this pNHA overlaps with River Barrow and River Nore SAC 002162.
- 5.101 Forest House Wood pNHA is considered to be sufficiently distant from the project that it is not likely to be affected by the project. Therefore, Forest House Wood pNHA has been **scoped out** from further consideration in this report.

Kinnitty (Domestic Dwelling, Occupied) pNHA

- 5.102 Kinnitty (Domestic Dwelling, Occupied) pNHA 000579 is ca. 11 km northwest of the Site when measured in a straight line from the closest point.
- 5.103 *“This is a summer roost for Leisler's Bat (Nyctalus leisleri) which roost in the fascia boards of an old domestic dwelling. The bats have been recorded at the house since 1987 and although the number of bats has never exceeded 100 animals, it is of national importance. The present owners are well disposed towards the bats which is an important consideration when trying to protect roosts of this species, the largest and possibly the noisiest of the seven Irish bat species. Although the Leisler's Bat is considered common in Ireland, the number of safe nursery roosts is small.”*
- 5.104 Kinnitty (Domestic Dwelling, Occupied) pNHA is considered to be sufficiently distant from the project and has no landscape or ecological connectivity with the Site such that it is not likely to be affected by the project. Therefore, Kinnitty (Domestic Dwelling, Occupied) pNHA is **scoped out** of further consideration in this report.

Monaincha Bog/Ballaghmore Bog NHA

- 5.105 Monaincha Bog/Ballaghmore Bog NHA 000652 is ca. 12 km southwest of the Site when measured in a straight line from the closest point.
- 5.106 *“Monaincha Bog/Ballaghmore Bog NHA is situated about 6 km east of Roscrea in the townlands of Monaincha, Co. Tipperary, and Ballaghmore and Kilmartin, Co. Laois. The site comprises a large, raised bog that includes both areas of high bog and cutaway. The site margins are bounded by agricultural land apart from in the south where commercial forestry occurs. The site lies directly north of the Nore Valley Bogs NHA (1853).*
- 5.107 *The high bog consists of a large dome with two lobes separated by forestry, a small lake and cutover. The site supports a series of small lakes, Butlers Lough, Black Lough and Forked Lough. Commercial afforestation occupies much of the adjacent areas of cutover. An area of mixed woodland occurs to the north. A strip of old deciduous woodland occurs along the southwestern boundary. Much of the high bog has vegetation typical of the true Midland Raised Bog type, consisting of Ling Heather (*Calluna vulgaris*), cottongrass (*Eriophorum* spp.) and Carnation Sedge (*Carex panicea*). Other species present include Bog-rosemary (*Andromeda polifolia*) and Cranberry (*Vaccinium oxycoccos*). In places, on the southern lobe Deergrass*

(*Scirpus cespitosus*) and Hare's-tail Cottongrass (*Eriophorum vaginatum*) are locally dominant. The northern lobe is relatively intact, and there are very wet areas between a cluster of Scot's Pine (*Pinus sylvestris*) in the central area and Butlers Lough. The remainder of the bog supports a well-developed hummock/hollow system.

- 5.108 Drainage has occurred on the southern lobe and there are few hummocks or hollows and *Sphagnum* growth is poor. The undrained southern section is slightly quaking and there is good bog moss cover, with *Sphagnum magellanicum*, *S. cuspidatum* and *S. imbricatum* forming wet spongy lawns. A soak with Scot's Pine and young Downy Birch (*Betula pubescens*) occurs on this southern lobe. The vegetation is characteristic of soaks, with lawns of *Sphagnum magellanicum*, carpeted with Cranberry and Crowberry (*Empetrum nigrum*) and locally frequent White Beak-sedge (*Rhynchospora alba*). The terrain is wet and quaking. There is also hummock vegetation covered by the mosses *Pleurozium schreberi* and *Dicranium scoparium*, and tall Ling Heather.
- 5.109 Old cutover surrounding much of the dome is dominated by commercial forestry. Two large, reclaimed fields are present on cutover to the north-east. Some Gorse (*Ulex europaeus*) and Downy Birch scrub has encroached upon abandoned cutover towards the centre of the site. Pockets of birch woodland have developed in places. Common Reed (*Phragmites australis*) also occurs on cutover along with some marsh/poor fen vegetation and Purple Moor-grass (*Molinia purpurea*), Common Knapweed (*Centaurea nigra*), Cock's-foot (*Dactylis glomerata*) and Soft Rush (*Juncus effusus*). Current landuse on the site consists of peat-cutting along much of the margins of the southern lobe. Afforestation has occurred on cutaway particularly in the central area. Areas of old cutaway to the north-east have been reclaimed for agricultural purposes. Damaging activities associated with these landuses include drainage and burning.
- 5.110 Fire damage has been recorded in the 1980s and there is evidence of more recent burning on the high bog. These are all activities that have resulted in loss of habitat and damage to the hydrological status of the site and pose a continuing threat to its viability. Monaincha Bog/Ballaghmore Bog NHA is a site of considerable conservation significance, comprising as it does, a raised bog, a rare habitat in the E.U. and one that is becoming increasingly scarce and under threat in Ireland. The site supports a good diversity of raised bog microhabitats including hummock/hollow complexes, and a large soak system. Ireland has a high proportion of the total E.U. resource of raised bog (over 50%) and so has a special responsibility for its conservation at an international level."
- 5.111 Monaincha Bog/Ballaghmore Bog pNHA is considered to be sufficiently distant from the project and has no landscape or ecological connectivity with the Site such that it is not likely to be affected by the project. Therefore, Monaincha Bog/Ballaghmore Bog pNHA is **scoped out** of further consideration in this report.

Derrykeel Meadows pNHA

- 5.112 Derrykeel Meadows pNHA 000897 is ca. 12.4 km northwest of the Site when measured in a straight line from the closest point.
- 5.113 "Several very wet meadows are located at Derrykeel beside the Clareen to Kinnitty road in Co. Offaly. The stream running through the area reveals the gravel base with a crust of calcium carbonate (lime) on the top. Tufts of Black Bog-rush (*Schoenus nigricans*) dominate the meadow and individual plants of Common Reed (*Phragmites australis*) are scattered throughout. Along with Purple Moor-grass (*Molinia caerulea*) other species include Purple-loosestrife (*Lythrum salicaria*), Soft Rush (*Juncus*

effusus), *Hard Rush* (*Juncus inflexus*) and *Selfheal* (*Prunella vulgaris*). In the hollows between the tufts the *Common Butterwort* (*Pinguicula vulgaris*) is abundant. The *Wandering Snail* (*Lymnaea peregra*) flourishes in this habitat. *Blunt-flowered Rush* (*Juncus subnodulosus*) is also common in certain areas. The calcium-rich substratum of the meadows gives rise to an interesting ecological habitat. Very few areas of this nature exist in the county and although this is only a small area, it is of particular botanical note.”

- 5.114 Derrykeel Meadows pNHA is considered to be sufficiently distant from the project and has no landscape or ecological connectivity with the Site such that it is not likely to be affected by the project. Therefore, Derrykeel Meadows pNHA is **scoped out** of further consideration in this report.

Roscrea Bog pNHA

- 5.115 Roscrea Bog pNHA 000583 is ca. 12.5 km southwest of the Site when measured in a straight line from the closest point.
- 5.116 This pNHA is considered to be sufficiently distant from the project and has no landscape or ecological connectivity with the Site such that it is not likely to be affected by the project. Therefore, Roscrea Bog pNHA is **scoped out** of further consideration in this report.

Clonaslee Eskers and Derry Bog pNHA

- 5.117 Clonaslee Eskers and Derry Bog pNHA 000859 is ca. 12.5 km north of the Site when measured in a straight line from the closest point.
- 5.118 There is no detailed site synopsis available for this pNHA. The area of this pNHA overlaps with Clonaslee Eskers and Derry Bog SAC 000859. Potential impacts on European sites have already been addressed in this report. Therefore Clonaslee Eskers and Derry Bog pNHA 000859 is **scoped out** of further consideration in this report.

St. Anne's (Sean Ross Abbey), Roscrea pNHA

- 5.119 St. Anne's (Sean Ross Abbey), Roscrea pNHA 000656 is ca. 14.9 km southwest of the Site when measured in a straight line from the closest point.
- 5.120 *“Information on this site has been duplicated, probably because the site is close to the Tipperary/Offaly border. This site is located in a modern school building at St Anne's Convent School in Roscrea, Co Tipperary and is the same site as described for Roscrea Convent, Co Offaly. The site contains almost 100 Leisler's Bats (Nyctalus leisleri) during the summer months. The bats roost in the roof of a prefabricated classroom. The present owners are tolerant of the bats but the building may be sold in the future which could place the bats in jeopardy. The numbers of bats using this site is increasing each year so it should be considered a site of international importance.”*
- 5.121 St. Anne's (Sean Ross Abbey), Roscrea pNHA is considered to be sufficiently distant from the project and has no landscape or ecological connectivity with the Site such that it is not likely to be affected by the project. Therefore, St. Anne's (Sean Ross Abbey), Roscrea pNHA is **scoped out** of further consideration in this report.

Statutory Nature Reserves

- 5.122 The County Development Plan lists three statutory nature reserves within the county. **Table 5-7** provides further details of these including their location relative to the Site

(refer to 0). Statutory nature reserves are areas of importance to wildlife, which are protected under Ministerial order.

- 5.123 These sites have no legal protection but are afforded local policy protections under Local Policies DM RL 3 and BNH 4.

Table 5-7: Statutory nature reserves within Co. Laois and within 15 km of the Site

Site name	Approximate distance from the red line application boundary	Details ¹¹
Slieve Bloom Mountains Nature Reserve	1.5 km north	This high mountain blanket bog, unlike many other bogs in Ireland, has been spared severe burning and grazing. It formed about six thousand years ago when the climate became wetter, and bog began to blanket the mountain slopes. Animals and plants of interest include ling heather, deer grass and sphagnum moss. The mountains are important for populations of red grouse and hen harrier.
Grantstown Wood and Grantstown Lough Nature Reserve	20 km south-south-east	These reserves are situated about 8km north-west of Durrow, County Laois and provide rare examples of wet woodland on base-rich soils, while Grantstown Lough is a classic example of a lake which has gradually infilled through fen to alder carr. Animals and plants of interest include kingfishers, cormorants, and otter. The wood is composed of native tree and shrub species, especially oak, ash, and birch, along with hawthorn, guelder rose, and spindle.
Timahoe Esker Nature Reserve	28 km south-east	This is one of the few esker ridges left in the country which still carry native woodland. It is planned to expand the native woodland using appropriate management techniques.

Slieve Bloom Mountains Nature Reserve

- 5.124 The Slieve Bloom Mountains Nature Reserve overlaps with the Slieve Bloom Mountains SPA and SAC designations and is located approximately 1.5 km from the site.
- 5.125 This Statutory Nature Reserve is protected under local policies DM RL 3 and BNH 4 (see 0). It is therefore, assessed as important on a **county level** and has been considered as part of the Slieve Bloom Mountains SPA.
- 5.126 A separate AA screening and NIS report has been produced alongside this report which details the potential impacts to the SPA.

Grantstown Wood and Grantstown Lough Nature reserve

- 5.127 This nature reserve is located approximately 20 km from the site. Therefore, it is considered sufficiently distant from the site to not be affected by the proposed development and has been **scoped out** from further assessment.

¹¹ Information extracted from the Laois County Development Plan 2021 – 2027 Vol. 1 – Written Statemen. Available online: <https://laois.ie/departments/planning/review-of-laois-county-development-plan-2017-2023-2/>. Accessed May 2024.

Timahoe Esker Nature Reserve

- 5.128 This nature reserve is located approximately 28 km from the site. Therefore, it is considered sufficiently distant from the site to not be affected by the proposed development and has been **scoped out** from further assessment.

Habitats

- 5.129 Habitats present within the Site, as recorded during the walkover survey, are described in this section. Habitat classification follows that of Fossitt (2000) '*A Guide to Habitats in Ireland*'. A habitat map for the site is provided in **Figure 5-3**.

Desk study

- 5.130 Consultation with Biodiversity Maps¹² revealed that no recognised National Survey of Native Woodlands (NSNW) identified by Perrin et al. (2008) or ancient and long-established woodland within or adjacent to the Site. No recognised Fossitt habitats were returned in the data search relating to the Site.
- 5.131 Consultation with NPWS Article 17 GIS and Metadata – interactive map viewer for 2019 spatial data¹³ returned no Annex I habitat within the Site or immediately adjacent to the Site.

Field survey

Exposed sand, gravel or till (ED1)

- 5.132 A 0.82 ha area of exposed sand, gravel or till comprised an area of existing sand and gravel pit, located in the northern section of the proposed development (**Photograph 5-1**). This habitat consists of bare ground in the gravel pit which is surrounded by scrub on the banks of the pit, species here comprised mostly gorse, bramble and goat willow. Northeast of the pit the scrub succeeds to mixed broadleaved woodland (detailed **below**).

¹² <https://maps.biodiversityireland.ie/Map>. Accessed May 2024.

¹³ <https://storymaps.arcgis.com/collections/1a721520030d404f899d658d5b6e159a?item=1>. Accessed May 2024.



Photograph 5-1: Exposed sand, gravel or till comprising the existing pit to the north of the site.

- 5.133 Exposed sand, gravel or till is identified in the Mountrath Biodiversity Action Plan as having 'low' local biodiversity value. Therefore, this habitat assessed to be of **negligible value** for biodiversity and has been reasonably discounted from further assessment.

Mixed broadleaved woodland (WD1)

- 5.134 A 0.35 ha parcel of mixed broadleaved woodland (**Photograph 5-2**) is located to the north of the Site, adjacent to the farm track at the entrance of the Site at approximate ITM coordinates 626709 698402. This is separated by a farm road/track into the Site from a larger 2.9 ha parcel of mixed broadleaved woodland that is also located offsite and bordering the active quarries and mines habitat, located at ITM coordinates 626613 698521. The offsite woodland is included in the Slieve Bloom Mountains SPA 004160.



Photograph 5-2: Broadleaved woodland located within the SPA and bordering the site at ITM 626709 698402

- 5.135 There is a mixture of semi-mature and young trees, including saplings, showing that the woodland is self-seeding and regenerating. Species composition comprised a mixture of semi-mature and mature trees of mostly beech *Fagus sylvatica* and goat willow. Understorey and ground flora layers were made up of bramble *Rubus fruticosus* agg., horsetail, wild strawberry *Fragaria vesca*, herb Robert *Geranium robertianum*, coltsfoot *Tussilago farfara*, cinquefoil *Potentilla simplex*, gorse *Ulex europaeus*, hogweed *Heracleum sphondylium*, rushes, silverweed *Potentilla anserina*, selfheal *Prunella vulgaris*, ragwort *Jacobaea vulgaris*, sow thistle *Sonchus oleraceus*, Yorkshire fog grass *Holcus lanatus*, and oxeye daisy *Leucanthemum vulgare*.
- 5.136 This woodland is located outside the planning application boundary and, has therefore, been discounted from further assessment.
- 5.137 A 0.33 ha parcel of mixed broadleaved woodland (**Photograph 5-3**) is located approximate 15 – 20 m south-east of the SPA woodland; however, this woodland was outside the SPA designation and within the site boundary. It comprised similarly aged trees, with a mixture of semi-mature and mature trees, with a dense understorey and ground flora layers. Species included sycamore *Acer pseudoplatanus*, beech, holly *Ilex aquifolium*, elder *Sambucus nigra*, and blackthorn *Prunus Spinosa*, with understorey and ground flora layers comprised of hogweed, foxglove *Digitalis purpurea*, male fern *Dryopteris filix-mas*, bramble, herb Robert, wild strawberry, vetch *Vicia sativa*, nettle *Urtica dioica*, dandelion *Taraxacum officinale* agg., and creeping buttercup *Ranunculus repens*.



Photograph 5-3: Broadleaved woodland located at ITM 626704 698403

- 5.138 A 0.4 ha parcel of mixed broadleaved woodland is located centrally within the Site and growing on a raised mound that was accessible to cattle (**Photograph 5-4**). This is adjacent to 1.1 ha area of gorse scrub, located to the east/southeast. The trees within this woodland are dominated by mostly previously coppiced hazel, with hawthorn *Crataegus monogyna* also present, with the occasional oak *Quercus petraea* and ash *Fraxinus excelsior*. The understorey and ground flora are sparse, with mostly bare ground present with few forbs. This is likely due to grazing from cattle. The understorey and ground flora is most dense along the fence line and woodland edge. Species included spear thistle *Cirsium vulgare*, bramble, male fern, holly, ivy *Hedera helix*, herb Robert, rushes, wild strawberry, creeping buttercup, yellow pimpernel *Lysimachia nemorum*, goat willow, common wood sorrel *Oxalis acetosella*, vetch, blackthorn, hawthorn, gorse, and lesser celandine *Ficaria verna*.



Photograph 5-4: Coppiced broadleaved woodland located at ITM 626630 698118

- 5.139 None of the woodland parcels meet any Annex I habitat descriptions under the Habitats Directive and the areas are relatively small in size. However, native woodland is considered a nationally scarce habitat nationally, with only 85,000 ha (i.e., 1.25%) of Ireland covered in it (Cross, 2012). Woodlands are identified within the local County Development Plan and Biodiversity for their importance.
- 5.140 The 0.73 ha of woodland covering the site is negligible on a national level. Therefore, this habitat has been assessed as important a **county level**.

Riparian Woodland (WN5)

- 5.141 Ca. 0.2 ha of riparian woodland / scrub mosaic was located at approximate ITM coordinates 626758 698004 comprised of mostly willow and hawthorn (**Photograph 5-5**). This habitat borders the drainage channel that runs from west to east along the southern boundary of the site (detailed **below**).



Photograph 5-5: Riparian woodland / scrub located at ITM 626758 698004

- 5.142 This habitat does not meet any Annex I habitat descriptions under the Habitats Directive and is located outside the planning application area. All woodlands are a nationally scarce habitat, and woodlands are identified within the local County Development Plan and Biodiversity for their importance.
- 5.143 However, native woodland is considered a nationally scarce habitat nationally, with only 85,000 ha (i.e., 1.25%) of Ireland covered in it (Cross, 2012). Woodlands are identified within the local County Development Plan and Biodiversity for their importance.
- 5.144 The 0.2 ha of riparian woodland covering the site is negligible on a national level. Therefore, this habitat has been assessed as important a **county level**.

Scrub (WS1)

- 5.145 Several parcels of scrub dominate central areas of the Site, interspersed between areas of grassland (**Photograph 5-6**); as well as to the east and south-eastern boundaries of the site. These areas are dominated by gorse with other species including bramble, ash saplings, blackthorn, hawthorn, ivy, sorrel, dandelion, wild strawberry, ragwort, nettle, spear thistle, creeping thistle, and rare occurrences of Irish bluebell *Hyacinthoides non-scripta*. Scrub is also present along the southern site boundary and contains more bramble in these areas. In total there is c. 3.09 ha of scrub on the site.



Photograph 5-6: Gorse scrub, which was abundant centrally in the site.

- 5.146 Scrub is locally valuable to a range of fauna; although it has no formal protection; but is listed in the Mountrath Biodiversity Action Plan as having 'high' local biodiversity value. It is a widespread and common habitat. Therefore, it has been evaluated as being important on a **local level**.

Other artificial lakes and ponds (FL8)

- 5.147 A c. 0.03 ha fenced-off pond is located to the southeast of the Site (**Photograph 5-7**), located at approximate ITM coordinate 626936 698083. Aquatic vegetation is abundant, comprising bulrush and water starwort. Other species were evident within the centre of the pond but could not be approached to identify. Bank species included primarily rushes, Yorkshire fog, red fescue *Festuca rubra*, blue meadowgrass *Poa pratensis*, and sweet vernal grass *Anthoxanthum odoratum*.



Photograph 5-7: Pond located at ITM 626936 698083.

- 5.148 A second minor pond (FL8) (**Photograph 5-8**), approximately 1x2m in size, is located near the entrance to the existing sand and gravel pit at approximate ITM coordinates 626670 698418. This is target noted on **Figure 5-2** as **TN1**. Species here included bull rush *Typha latifolia* and rushes *Juncus spp.*, horsetail *Equisetum arvense*, and goat willow *Salix caprea*.



Photograph 5-8: Artificial pond located at ITM 626670 698418.

- 5.149 This habitat does not meet any Annex I habitat descriptions under the Habitats Directive and is not afforded any local policy protection. However, all aquatic habitats

are considered valuable to local fauna as drinking water and/or foraging habitat (e.g., foraging bats). Therefore, this pond is evaluated as being important on a **local value**.

Improved Agricultural Grassland (GA1)

- 5.150 Much of the proposed extraction area is located within improved agricultural grassland divided by hedgerows, scrub, woodland and treelines (**Photograph 5-9**). These are used as grazing pasture for cattle. This habitat totals approximately 6.26 ha. Two minor areas of wet grassland are located within the improved agricultural grassland and target noted as **TN5** on **Figure 5-2**.



Photograph 5-9: Short sward of improved agricultural grassland making up most of the proposed extraction area.



Photograph 5-10: A longer sward comprising the grasslands to the south of the site.

- 5.151 The grassland fields to the north of the proposed extraction area comprised a short sward (see **Photograph 5-9**), whereas the southern grasslands vary and a longer sward with less grazing pressure was recorded (**Photograph 5-10**).
- 5.152 Species composition varied between grasses and forbs, with species including white clover *Trifolium repens*, Yorkshire fog, perennial ryegrass *Lolium perenne*, creeping buttercup, broad-leaved dock *Rumex obtusifolius*, ragwort, rough dog's-tail grass *Cynosurus echinatus*, soft rush *Juncus effusus*, creeping thistle *Cirsium arvense*, blue meadowgrass, selfheal, dandelion, red clover *Trifolium pratense*, ribwort plantain *Plantago lanceolata*, meadow buttercup *Ranunculus acris*, speedwell *Veronica spp.*, greater plantain *Plantago major*, and common daisy *Bellis perennis*. Bird's-foot trefoil *Lotus corniculatus*, lesser trefoil *Trifolium dubium*, and mouse-eared chickweed *Cerastium fontanum* was limited to the southern field, located around the pond.
- 5.153 This is a widespread and common habitat throughout Ireland, although it does provide some foraging value to local fauna. Therefore, it is evaluated as being important at a **local level**.

Hedgerow (WL1)

- 5.154 Within the proposed development area there are four sections of hedgerows which are part of the larger field. The total extent of hedgerow within the Site is ca. 1.06 km. Hedgerows vary between those that are more well-managed (e.g., hedgerow 1 and 2), likely through regular flailing management and those that were less intensely managed or unmanaged (e.g., hedgerow 3 and 4). A full hedgerow assessment is included in **0**, which provides further details of each hedgerow (refer also to **Figure 5-3**).

Hedgerow 1

- 5.155 Hedgerow 1 (**Photograph 5-11**) forms an internal field boundary between two agricultural grassland fields and has an approximate length of 170m. It has an approximate average height of 2 m and width of 1.5 m and appears to be managed through regular flailing. No gaps are located within the hedgerow.
- 5.156 Species included a canopy of mostly hazel, with hawthorn, blackthorn, elder, holly, and a locally abundant and tall stand of willowherb at one point also present. The ground flora comprises mostly tall herbs and ruderals, as well as grasses of similar composition to the adjacent grasslands. These included nettle, creeping buttercup, wild strawberry, Yorkshire fog, creeping thistle, herb Robert, male fern, broad-leaved dock, foxglove, ivy, sorrel, germander speedwell, cleavers, and ragwort.



Photograph 5-11: Hedgerow 1

- 5.157 The hedgerow appraisal (included in **0**) evaluates this hedgerow as not comprising a heritage hedgerow and is assessed as being in unfavourable condition.

Hedgerow 2

- 5.158 Hedgerow 2 (**Photograph 5-12**) borders the farm track entry point to the site, with an approximate length of 425 m. It has an average height and width of 2 m. This hedgerow borders an agricultural grassland to the south and the farm track to the north and possessed several mature trees positioned throughout its length. It is anticipated that this hedgerow is managed by flailing.
- 5.159 Hedgerow species included gorse, bramble, hazel, blackthorn, buttercup and hogweed. There are fewer forbs and grasses on the ground layer on the farm track aspect. The southern aspect possesses similar ground flora as those listed in Hedgerow 1.



Photograph 5-12: Hedgerow 2

- 5.160 The hedgerow appraisal (included in **0**) evaluates this hedgerow as not comprising a heritage hedgerow and is assessed as being in unfavourable condition.

Hedgerow 3

- 5.161 Hedgerow 3 (**Photograph 5-13**) comprises an internal field boundary between two agricultural grassland fields before continuing on as the southern boundary. It comprises a length of approximately 225 m. The hedgerow has an approximate height of 3 – 4 m and a width of 2 m. A basal gap is forming as the canopy layer is less dense at ground level in several areas of the hedgerow. It is anticipated that this hedgerow is managed by flailing, although less so than Hedgerows 1 and 2, and to a greater height and width.
- 5.162 Species composition include a canopy of hazel and hawthorn. The ground flora included mostly bramble and ivy, with nettle, thistle, and foxglove also present.



Photograph 5-13: Hedgerow 3

- 5.163 The hedgerow appraisal (included in **0**) evaluates this hedgerow as not comprising a heritage hedgerow and is assessed as being in unfavourable condition.

Hedgerow 4

- 5.164 Hedgerow 4 (**Photograph 5-14**) is located on the northern boundary to the east of the site and comprises a length of approximately 240m. It has an average height of 2.5 – 3 m and a canopy width of 3 m. Basal gaps are forming where the canopy is less dense and too high. It is anticipated that this hedgerow is managed by flailing although less intensively than Hedgerows 1 and 2.
- 5.165 The canopy layer is made up of hazel, blackthorn, hawthorn, oak, and gorse. Ground flora is sparser in this hedgerow compared to others as the canopy provides significant shading. Species that are present included bramble, ivy, sorrel, dandelion, wild strawberry, ragwort, and nettle.



Photograph 5-14: Hedgerow 4

- 5.166 The hedgerow appraisal (included in **0**) evaluates this hedgerow as not comprising a heritage hedgerow and is assessed as being in unfavourable condition.

Summary

- 5.167 Hedgerows do not comprise Annex I habitat under the Habitats Directive. However, they are identified in the Mountrath Biodiversity Action Plans as having 'high' local biodiversity value and are afforded local policy protection under local policy DM BNH 5, which aims to retain good quality hedgerows and avoid the unnecessary removal of hedgerows. They also provide ecological connectivity throughout the site and the surrounding landscape, potentially supporting nesting birds, commuting and foraging bats, and a range of other fauna
- 5.168 According to the *County Laois Hedgerow Survey Report* (Foulkes & Murray, 2005), which surveyed approximately 1% of the total area of the county, there are 12,427 km of hedgerow habitat within Co. Laois. The 1,060 m of hedgerows recorded on the site, therefore, represent 0.01% of the total hedgerows in the county. Therefore, this habitat has been evaluated as being important on a **local level**.

Treelines (WL2)

- 5.169 There are four distinct, but short treelines between the agricultural fields (**Figure 5-2**) and along sections of the Site boundary. The total extent of treelines on-site is ca. 210 m.



Photograph 4-15: Beech treeline

- 5.170 Treelines comprise mature trees. One consists of five mature spruce trees, located to the north of the proposed extraction area. One located on the eastern site boundary is a mixture of hawthorn, sycamore, and ash, and two located to the south-east of the proposed extraction area are exclusively mature beech (**Photograph 4-15**).
- 5.171 Overall, treelines do not comprise Annex I habitat but are listed in the Mountrath Biodiversity Action Plan as having 'high' local biodiversity value. They also offer potential linear and connective ecological features within the site and the surrounding landscape; potentially supporting a range of fauna including nesting birds and commuting and foraging bats. Therefore, treelines are evaluated as important at a **local level**.

Wet grassland (GS4)

- 5.172 0.04 ha area of wet grassland (**Photograph 5-16**) is located to the south of the site, adjacent to the river habitat detailed **below**. This habitat comprises a long sward grassland that is heavily saturated with water. Evidence of previous grazing was noted.
- 5.173 Species composition was dominated by rushes and grasses including Yorkshire fog and meadowgrass. Forb species are less abundant than grasses and consisting of locally abundant common spotted orchid *Dactylorhiza fuchsii*, tormentil *Potentilla erecta*, water mint, and red clover.



Photograph 5-16: Wet grassland which supported common spotted orchids

- 5.174 *A Guide to Habitats in Ireland* (Fossitt, 2000) states that wet grassland can comprise Annex I habitat Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinia caerulea*) (6410).
- 5.175 This habitat is distributed mostly to the north-west of Ireland. However, consultation with NPWS Article 17 data¹⁴, found that c. 6.94 ha of this Annex I habitat is present within County Laois, including cell S29 (refer to **0**), in which the site is located.
- 5.176 Typical species of the habitat, besides purple moor-grass *Molinia caerulea* and meadow thistle, include sneezewort *Achillea ptarmica*, small sedges (e.g. *Carex echinata*, *Carex nigra*, *Carex. Pulicaris* marsh hawk's-beard *Crepis paludosa*, meadowsweet *Filipendula ulmaria*, bedstraws *Galium palustre*, *Galium uliginosum*, a number of rush species *Juncus acutiflorus*, *Juncus articulatus*, *Juncus conglomeratus*, adder's-tongue *Ophioglossum vulgatum*, greater bird's-foot-trefoil *Lotus pedunculatus*, heath wood-rush *Luzula multiflora*, water mint, tormentils, *Potentilla anglica*, devil's-bit scabious *Succisa pratensis*, marsh violet *Viola palustris*, fen violet *Viola persicifolia* and, rarely, whorled caraway *Carum verticillatum* (NPWS, 2019).
- 5.177 The field surveys recorded indicator species such as rushes, tormentil, and water mint. However, many of the other key indicator species listed **above**, including purple-moor grass were not recorded. Therefore, this habitat is not considered to comprise Annex I habitat and the wet grassland habitat is evaluated as important on a **local level**.

¹⁴ Found on the NPWS website: <https://www.npws.ie/maps-and-data/habitat-and-species-data/article-17/2019/habitats/grasslands> (accessed 15/07/2024).

Eroding/Upland Rivers (FW2)

- 5.178 An unnamed shallow stream (**Photograph 5-17**) is located along the southern boundary of the Site. This stream (which also formed survey site A1 in the Aquatic Ecology Survey (refer to **0**) is approximately 0.2 m deep and 1.5 m wide and has a semi-natural meandering profile. The channel flows from west to east, before joining the Killeen (Delour) River approximately 150 m from the site. The total extent of this habitat is located offsite.



Photograph 5-17: Channel along the southern site boundary

- 5.179 The channel has a medium and steady flow, shallow banks, a silty/sandy substrate mixed with some gravel, high levels of riffle and run, and leaky dams created from fallen deadwood. There is evidence of poaching from cattle and little to no aquatic vegetation present. Shaded by overhanging trees and riparian vegetation, which include predominantly grey willow *Salix cinerea*, alder, and hazel. The stream also supports occasional fool's watercress *Apium nodiflorum*, brooklime *Veronica beccabuna*, and water mint.
- 5.180 Rivers and stream channels form important aquatically connected habitat and support a range of flora and fauna including protected species such as otter *Lutra lutra*. This stream channel leads into the Killeen River, which received a classification of 'High Ecological Status' for the period spanning 2010 – 2015 and declined to 'Good Ecological Status' in the period of 2013 – 2018 for both its biological and chemical quality (refer to **Chapter 7 – Water**, for further information). The Aquatic Ecology Report assessed the river at survey site A1 to be of moderate water quality based on Q-sampling (**0**).
- 5.181 As this stream enters an ecologically important river within the county, is considered of good ecological status, and supports a range of flora and fauna, this habitat are evaluated as important at a **county level**.

Earthbank (BL2)

- 5.182 An approximately 200 m earth bank borders the farm track that provided entry to the site, located north of the proposed extraction area at ITM coordinates 626515 698300 (**Photograph 5-18**). This was covered with tall herbs and ruderals, with species including creeping thistle, creeping buttercup, Yorkshire fog, blue meadowgrass, broad-leaved dock, common hogweed, gorse, bracken *Pteridium aquilinum*, foxglove, rosebay willowherb *Chamaenerion angustifolium*, hawkbit *Leontodon hispidus*, wild strawberry, selfheal, vetch, red clover, and slender St. John's wort *Hypericum mutilum*.
- 5.183 This habitat is originally man-made and supports common and widespread flora. It is likely of limited importance to small mammals and common passerine birds. Therefore, it is evaluated as being of negligible importance and has been **scoped out** from further assessment.



Photograph 5-18: Earth bank covered with tall herbs and ruderals.

Habitats summary

- 5.184 No Annex I habitats were located within the Site.
- 5.185 **Table 5-8** provides a summary of the habitats identified on the Site. The following sections detail each habitat in further detail, and they are shown in **Figure 5-2**.

Table 5-8: Summary of the habitats identified on the Site

Habitat	Fossitt code	Total area (ha) / length (m)	Corresponding Annex I habitat	Importance
Exposed sand, gravel or till	ED1	0.82 ha	None	Negligible
Mixed broadleaved woodland	WD1	0.73 ha	None	County

Habitat	Fossitt code	Total area (ha) / length (m)	Corresponding Annex I habitat	Importance
Riparian woodland	WN5	0.2 ha	None	County
Scrub	WS1	3.09 ha	None	Local
Other artificial lakes and ponds	FL8	0.03 ha	None	Local
Improved agricultural grassland	GA1	6.26 ha	None	Local
Hedgerow	WL1	Hedgerow 1: 170 m Hedgerow 2: 425 m Hedgerow 3: 225 m Hedgerow 4: 240 m Total: 1,060 m	None	local
Line of trees	WL2	210 m	None	Local
Wet grassland	GS4	0.04 ha	None	Local
Eroding/upland rivers	FW1	N/A - offsite	None	County
Earth bank	BL2	200 m	None	Negligible

Rare or Protected Flora

- 5.186 The NBDC database was searched for records of rare and/or protected floral species from the two 2 km grid squares S29T and S29U, within which the Site is located.
- 5.187 No records of rare and/or protected floral species have been recorded within these grid squares over the past 10 years. There are two records of invasive floral species within the 2km grid square S29U. These are Giant Rhubarb (*Gunnera tinctoria*) recorded 26/05/2020 and Himalayan Honeysuckle (*Leycesteria formosa*) recorded 18/06/2021. No invasive flora was identified on the site and therefore, invasive flora have been **scoped out** from further assessment.
- 5.188 No rare or protected flora (as listed in Nelson et al., 2019) was identified on the Site during the field survey, with much of the Site comprising common and widespread habitats, as described above. As such protected flora is assessed as likely absent on the site and have been scoped out from further assessment.

Rare or Protected Fauna

- 5.189 The following sections detail the results of the desk study and the field surveys for various fauna assessed within the site.

Amphibians

Common Frog

- 5.190 The desk study returned no records of smooth newt or common frog *Rana temporaria* within the two 2 km grid squares S29T and S29U.
- 5.191 One pond located on-site at ITM coordinates 626936 698083 (Pond A) and another located at ITM coordinates 626670 698418 (Pond B) were considered suitable for

smooth newts and common frogs. The presence of both of these species was confirmed in Pond A, with smooth newts and common frog tadpoles both identified within the water. Neither species were identified in Pond B. In addition to this, the surrounding terrestrial habitat surrounding the pond was considered suitable for amphibians, comprising mostly agricultural grassland, with patches of scrub.

- 5.192 There were no other ponds identified within the site or the surrounding area and therefore, it is anticipated that the site supports an isolated and breeding population of both common frog and smooth newt.
- 5.193 Common frogs are listed on Schedule V of the Habitats Directive and the Wildlife Acts. They are considered least concern on the Red List (King et al., 2011). They are identified in the Co. Laois County Development Plan¹⁵ and the Local Biodiversity Action Plan¹⁶. The population of common frogs is unknown on the site; however, they are considered widespread across Ireland (Reid et al., 2013), with approximately 165,000,000 likely to be present nationally, distributed across 612 known cells, 21 of which are located within or partially within County Laois (NPWS, 2019b – refer to 0). Therefore it is estimated that there are approximately 5,661,765 common frogs in County Laois¹⁷.
- 5.194 The number of common frogs located on the site is unknown. However, one percent of the estimated county population is calculated to be c. 56,618. Reid et al. (2013) estimated that frog density in farmland ponds is 0.58 frogs/m². Pond A is 0.03 ha (i.e., 300m²). Therefore, the estimated frog density is calculated to be 174.
- 5.195 Therefore, the population present within one isolated breeding pond across the county is unlikely to be important at a national or county level. As such, the common frog population on the site has been evaluated as important on a **local level**.

Smooth Newt

- 5.196 Smooth newts are listed on the Wildlife Acts and are considered least concern on the Red List (King et al., 2011). Smooth newts are well distributed and widespread across Ireland, although gaps in distribution do exist (Meehan, 2013; NBDC, 2024; IWT, 2013).
- 5.197 The population of smooth newts within the site is unknown. However, the confirmed population likely represents an isolated and locally important population within the county. Given the widespread nature of this species, it is considered unlikely that the breeding population on the site represents an important population nationally or at the county-level.
- 5.198 Smooth newt presence was confirmed in the on-site pond. However, the population present is unknown, and no data was found to estimate populations at a national or county level.
- 5.199 Due to the lack of records of smooth newts within the county, this population may comprise an isolated and important population of smooth newts for County Laois. Therefore, smooth newts have been evaluated as important on a **county level**.

¹⁵ <https://laois.ie/wp-content/uploads/Volume-1-Written-Statement-of-Adopted-LCDP-2021-2027-including-Ministerial-Direction-amendments.pdf>

¹⁶ <https://www.laois.ie/wp-content/uploads/Local-Biodiversity-Action-Plan-for-Mountrath.pdf>

¹⁷ 165,000,000 divided by 612 & multiplied by 21.

Reptiles

- 5.200 Common lizards are protected under the Wildlife Acts and subsequent amendments.
- 5.201 The data search returned no records for common lizards in either of the two grid squares S29T or S29U. Furthermore, no records for this species exist within the 10 km² S29 cell. However, lizards are recorded in five of the eight adjacent cells (i.e., in S18, S39, N10, N20, and N30). *The Irish wildlife Trust (IWT) National Survey of the Common Lizard *Lancerta vivipara* in Ireland 2007* (IWT, 2007) reported that Co. Laois was just one of two counties (the other being Westmeath) not to report a lizard record in the 2004, 2005, or 2007 surveys. Note that the record detailed above in cell S39 has subsequently rectified this (NBDC, 2024).
- 5.202 No incidental sightings of common lizard were recorded on the site throughout any of the various surveys conducted on the Site.
- 5.203 The most common habitat that lizard are commonly found is bogland (15% of total sightings), followed by grasslands (14% of total sightings). Although agricultural grassland specifically returned only 2% of sightings (IWT, 2007). Other suitable habitats listed by IWT (2007) include woodland and scrub, both of which are present on the site. Therefore, the habitats within the site are considered suitable for this species, although the site lacks the more optimal habitats of heathland, bogland, and drystone walls (Gandola, 2019).
- 5.204 No data regarding the national population of lizards or the county population data for Co. Laois could be found for this species; and the population of common lizards on the site is unknown.
- 5.205 The habitats on the site could support this species. However, the lack of records particularly for Co. Laois and the lack of incidental sightings during surveys would suggest that, if they are present on the site, it is likely a small population. This is likely due to the suboptimal land management for this species (i.e., grazed agricultural grassland).
- 5.206 As such, common lizards have been evaluated as being important on a **local level**.

Birds

- 5.207 **Table 5-9** details the bird records returned in the data search. The following sections breaks down the field survey results for various bird species. Bird species have been grouped into assemblages, where appropriate (e.g., common and widespread garden birds, farmland birds, and ground-nesting birds).

Table 5-9: Bird records returned in the data search for the two 2 km grid squares S29T and S29U.

Species	Designation	Latest date recorded
Barn Swallow <i>Hirundo rustica</i>	Amber list	31/12/2011
Magpie <i>Pica pica</i>	Green list	31/12/2011
Blackcap <i>Sylvia atricapilla</i>	Green list	31/12/2011
Blue Tit <i>Cyanistes caeruleus</i>	Green list	31/12/2011
Brambling <i>Fringilla montifringilla</i>	Amber list	31/12/2011
Buzzard <i>Buteo buteo</i>	Green list	26/05/2020
Chiffchaff <i>Phylloscopus collybita</i>	Green list	26/05/2020

Species	Designation	Latest date recorded
Common Crossbill <i>Loxia curvirostra</i>	Green list	26/05/2020
Common Cuckoo <i>Cuculus canorus</i>	Green list	26/05/2020
Pheasant <i>Phasianus colchicus</i>	Green list	31/12/2011
Chaffinch <i>Fringilla coelebs</i>	Green list	31/12/2011
Coal Tit <i>Periparus ater</i>	Green list	31/12/2011
Blackbird <i>Turdus merula</i>	Green list	31/07/1991
Bullfinch <i>Pyrrhula pyrrhula</i>	Green list	31/07/1991
Starling <i>Sturnus vulgaris</i>	Amber list	31/12/2011
Common Whitethroat <i>Sylvia communis</i>	Green list	31/12/2011
Wood Pigeon <i>Columba palumbus</i>	Green list	31/12/2011
Jackdaw <i>Corvus monedula</i>	Green list	31/12/2011
Greenfinch <i>Carduelis chloris</i>	Amber list	31/12/2011
Siskin <i>Carduelis spinus</i>	Green list	26/05/2020
Goldfinch <i>Carduelis carduelis</i>	Green list	31/12/2011
Robin <i>Erithacus rubecula</i>	Green list	31/12/2011
Goldcrest <i>Regulus regulus</i>	Amber list	31/12/2011
Great Tit <i>Parus major</i>	Green list	31/12/2011
Grey Wagtail <i>Motacilla cinerea</i>	Red list	31/12/2011
Dunnock <i>Prunella modularis</i>	Green list	31/12/2011
Hooded Crow <i>Corvus cornix</i>	Green list	31/12/2011
House Martin <i>Delichon urbicum</i>	Amber list	31/07/1991
House Sparrow <i>Passer domesticus</i>	Amber list	31/12/2011
Meadow Pipit <i>Anthus pratensis</i>	Red list	31/12/2011
Mistle Thrush <i>Turdus viscivorus</i>	Green list	31/12/2011
Redwing <i>Turdus iliacus</i>	Red list	31/12/2011
Spotted Flycatcher <i>Muscicapa striata</i>	Amber list	31/12/2011
Sand Martin <i>Riparia riparia</i>	Amber list	31/12/2011
Song Thrush <i>Turdus philomelos</i>	Green list	31/12/2011
Dipper <i>Cinclus cinclus</i>	Green list	31/12/2011
White Wagtail <i>Motacilla alba</i>	Green list	31/12/2011
Willow Warbler <i>Phylloscopus trochilus</i>	Amber list	26/05/2020
Wren <i>Troglodytes troglodytes</i>	Green list	31/12/2011
Yellowhammer <i>Emberiza citrinella</i>	Red list	31/07/1991

Hen Harrier

- 5.208 Hen harrier are present within the Slieve Bloom Mountains SPA and are a qualifying interest for this SPA. In addition, they are listed on Annex I of the Bird's Directive.
- 5.209 The site is situated adjacent to the Slieve Bloom Mountains SPA, which is designated for its importance to hen harrier *Circus cyaneus*. As a result, the site was assessed for its importance to this species, in terms of whether it provides suitable breeding and foraging habitat.
- 5.210 The data search returned no records of hen harrier within the two 2km grid squares S29T and S29U. However, consultation with the Hen Harrier Programme – Hen Harrier Monitoring 2021 (Ruddock, 2021) states that 11 territorial pairs of hen harrier were recorded within the Slieve Bloom Mountains SPA in 2021, a decline from a peak of 14 territorial pairs in 2017.
- 5.211 Habitats favoured by hen harrier are detailed in **Table 5-10** (Ruddock et al., 2016). The most frequent habitat that hen harrier were recorded was second rotation forest, followed by heather. Neither of these habitats, as well as failed forest, were present on the Site. Fewer records of nesting hen harrier are present in scrub, which is present on the Site. These habitats are much more prevalent within the SPA. Therefore, it is reasonable to conclude that the habitats of highest value for nesting hen harrier are located mostly offsite, and within the SPA (refer to the Hen Harrier SPA Habitat Map¹⁸).

Table 5-10: Nest habitat type and habitat specific breeding success of confirmed hen harrier breeding territories (extracted from Ruddock et al., 2016).

Habitat type	Number (n)	Percentage (%)	Breeding success (n)	Breeding success (%)
First rotation forest	6	5.5	2	33.3
Second rotation forest	64	59.3	26	40.4
Failed forest	1	0.9	1	100.0
Heather	28	25.9	15	53.6
Scrub	9	8.3	4	44.4
TOTAL	108	100.0	48	-

- 5.212 Two hen harrier surveys were conducted on 4 April 2024 and 16 May 2024 by SLR Ecologist Hugo Brooks (refer to **Table 5-1**). period of seven consecutive days within suitable commuting and foraging habitat. The results of the hen harrier activity survey are provided in full in **0**. In summary, one hen harrier was observed during the first hen harrier survey, flying past the site (refer to **Figure 5-4**). No hen harrier were observed during the second hen harrier survey and no evidence of breeding behaviours or use of the site for potential breeding purposes was identified across the two surveys. Therefore, it is assessed that hen harrier do not use the site for breeding, rather they are limited to the habitats within the Slieve Bloom SPA, for which known breeding pairs are routinely recorded.
- 5.213 Hen harrier forage on small birds and mammals, with a key part of their diet being species that prefer open habitats such as meadow pipit and skylarks (The Hen Harrier

¹⁸ Available from: <https://www.npws.ie/maps-and-data/habitat-and-species-data/hen-harrier>

Project, 2024; BirdWatch Ireland, 2016); although another study in Scotland demonstrated that hen harrier diet can be more varied and included a greater variety of small birds including dunnock (10.7%), wren (10.7%), field vole (7.4%), reed bunting (7.4%), red wing (6.6%), amongst others (Marquiss, 1980). Neither meadow pipits nor skylark were recorded during breeding bird surveys. Although a range of other small birds were present within the Site's bird assemblage. Winter diet composition is more heavily reliant on mammals with Marquiss (1980) finding rabbit/hare comprising (53.8%) of hen harrier diet, with red grouse (15.4%) and other gamebirds (7.7%) making up another significant portion.

- 5.214 No foraging behaviours were identified by hen harrier on the site throughout any of the site surveys. Furthermore, the breeding bird surveys (detailed **below**) found no evidence of meadow pipit or skylark, both common food prey of hen harrier (BirdWatch Ireland, 2016). Despite this, the use of the site for foraging purposes by hen harrier cannot be fully discounted, as small birds and mammals (i.e., potential prey items for this species) are present within the site, and breeding hen harrier are known to be present within the Slieve Bloom Mountains SPA. Despite the lack of key prey species meadow pipit and skylark, there is likely enough other prey species to provide foraging value to hen harrier on the site.
- 5.215 Based on the findings of the 2022 national survey of breeding hen harrier in Ireland (Ruddock et al., 2024), the national population of hen harriers in Ireland is estimated to be 100 pairs (Ruddock et al., 2024). Six SPAs across Ireland held 41% of the national population of hen harrier.
- 5.216 The Slieve Bloom Mountains SPA has generally maintained a stable or slightly increased population since the first national surveys (1998/00, 2005) (8-11 pairs). It peaked during the 2015 national survey (12-13 pairs) but has by 2022, apparently declined to around 2010 levels (8-9 pairs). Annual monitoring for the SPA (HHP, 2021) recorded a peak in 2017 (10-14 pairs; HHP, 2018) and the population declined thereafter to around 10-11 territorial pairs annually, between 2018 and 2021.
- 5.217 Hen harrier associated with the Slieve Bloom Mountains SPA make up 8-9 territorial pairs. This represent 8-9% of the estimated 100 pairs nationally. The site was not used regularly by hen harrier (during the surveys conducted). However, it is anticipated that the site likely supports a number of the 8-9 pairs within the SPA for foraging. Therefore, hen harrier are considered as being important on a **national level**.

Breeding bird surveys

- 5.218 **Table 5-11 - Table 5-14** details the breeding bird survey results from the four breeding bird surveys conducted on the site and a summary is provided in **Table 5-15**.

Table 5-11: Breeding bird raw survey data **Survey 1 - 5 March 2024.**

Species	BTO code	Number recorded	Breeding behaviour recorded ¹⁹	Information	Designated status
Blackbird	B.	1	Calling	Alarm calling	-
Blackbird	B.	1	-	Perched on overhead line	-

¹⁹ Note, no behaviour is recorded where 'non-breeding behaviours' were observed (e.g., perched or flying over).

Species	BTO code	Number recorded	Breeding behaviour recorded ¹⁹	Information	Designated status
Blackbird	B.	1	Singing	-	-
Blackbird	B.	1	-	-	-
Blackbird	B.	1	Calling	Alarm calling	-
Blackbird	B.	1	Singing	-	-
Blackbird	B.	1	-	-	-
Blackbird	B.	1	-	-	-
Blackbird	B.	1	Calling	Alarm calling	-
Blackbird	B.	1	Calling	Alarm calling	-
Blackbird	B.	2	-	-	-
Blackbird	B.	1	-	-	-
Blackbird	B.	1	-	-	-
Blue tit	BT	1	Foraging	-	-
Blue tit	BT	1	-	-	-
Blue tit	BT	2	Calling; Foraging	-	-
Blue tit	BT	2	Foraging	-	-
Bullfinch	BF	1	-	-	-
Chaffinch	CH	1	Calling	-	-
Chaffinch	CH	1	Singing	-	-
Chaffinch	CH	1	Calling	-	-
Chaffinch	CH	1	Calling	-	-
Chaffinch	CH	1	Calling	-	-
Chaffinch	CH	1	Calling	-	-
Coal tit	CT	1	Foraging	-	-
Goldcrest	GC	2	Foraging	-	Amber list
Goldcrest	GC	1	Foraging	-	-
Great tit	GT	1	-	-	-
Great tit	GT	1	Singing	-	-
Great tit	GT	2	-	-	-
Great tit	GT	1	-	-	-
Great tit	GT	1	Calling	-	-
Hooded crow	HC	1	-	-	-
Hooded crow	HC	2	Calling	Pair	-
Mistle thrush	MT	1	Calling	-	-

Species	BTO code	Number recorded	Breeding behaviour recorded ¹⁹	Information	Designated status
Mistle thrush	MT	4	Calling	Flushed then flew NW	
Pheasant	PH	1	-	Flushed	-
Raven	RN	1	-	-	-
Raven	RN	1	Calling	-	-
Robin	R.	1	-	-	-
Robin	R.	1	Singing	-	-
Robin	R.	1	Singing	-	-
Robin	R.	1	Singing	-	-
Robin	R.	1	Singing	-	-
Robin	R.	1	Singing	-	-
Robin	R.	1	-	-	-
Robin	R.	1	Singing	-	-
Robin	R.	1	Singing	-	-
Song thrush	ST	1	Singing	-	-
Starling	SG	2	-	Perched on overhead line	-
Woodpigeon	WP	1	-	-	-
Woodpigeon	WP	1	-	-	-
Woodpigeon	WP	1	-	-	-
Woodpigeon	WP	1	-	-	-
Woodpigeon	WP	1	-	-	-
Woodpigeon	WP	1	-	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	Calling	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	Calling	-	-
Wren	WR	1	Singing	-	-

Table 5-12: Breeding bird raw survey data **Survey 2** - 11 April 2024.

Species	BTO code	Number recorded	Breeding behaviour recorded	Information	Designated status
Blackbird	B.	1	-	-	-
Blackbird	B.	1	Singing	-	-
Blackbird	B.	1	-	-	-
Blackbird	B.	1	-	-	-
Blackbird	B.	2	-	Territorial aggression	
Blackbird	B.	1	-	-	-
Blackbird	B.	1	-	-	-
Blackbird	B.	1	-	-	-
Blackcap	BC	1	Singing	-	-
Blackcap	BC	1	Singing	-	-
Blackcap	BC	2	Calling; Singing	Alarm calling	
Blackcap	BC	2	Singing	-	-
Blue tit	BT	1	Calling; Foraging	-	-
Blue tit	BT	1	-	-	-
Blue tit	BT	1	Calling	-	-
Blue tit	BT	1	Singing	-	-
Bullfinch	BF	2	Family	Pair	
Chaffinch	CH	1	Singing	-	-
Chaffinch	CH	1	Calling	-	-
Chaffinch	CH	1	Singing	-	-
Chiff chaff	CC	1	Singing	-	-
Chiffchaff	CC	1	Singing	-	-
Coal tit	CT	1	Calling	-	-
Coal tit	CT	1	Singing	-	-
Coal tit	CT	1	Singing	-	-
Dunnock	D.	2	Mating	Courtship behaviour	-
Goldcrest	GC	2	Foraging	-	Amber list
Goldfinch	GF	2	Foraging	-	-
Great tit	GT	1	Singing	-	-
Great tit	GT	1	Singing	-	-
Hooded crow	HC	1	-	-	-
Hooded crow	HC	1	Calling	-	-
Mistle thrush	MT	1	-	Flew from one tree to another	

Species	BTO code	Number recorded	Breeding behaviour recorded	Information	Designated status
Raven	RN	2	-	-	-
Robin	R.	1	-	-	-
Robin	R.	1	Singing	-	-
Robin	R.	1	Singing	-	-
Robin	R.	1	Singing	-	-
Robin	R.	1	Singing	-	-
Robin	R.	1	Singing	-	-
Song thrush	ST	1	Singing	-	-
Starling	SG	3	-	Perched on cable	Amber list
starling	SG	12	-	-	Amber list
Starling	SG	c.50	-	-	Amber list
Swallow	SL	1	-	-	Amber list
Willow warbler	WW	1	Singing	-	Amber list
Willow warbler	WW	1	Singing	-	Amber list
Willow warbler	WW	1	Singing	-	Amber list
Willow warbler	WW	1	Singing	-	Amber list
Woodpigeon	WP	1	-	-	-
Woodpigeon	WP	1	-	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	Singing; Roosting	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	Singing	-	-

Table 5-13: Breeding bird raw survey data **Survey 3** - 18 April 2024.

Species	BTO code	Number recorded	Breeding behaviour recorded	Information	Designated status
Blackbird	B.	1	-	-	-
Blackbird	B.	1	-	-	-

Species	BTO code	Number recorded	Breeding behaviour recorded	Information	Designated status
Blackbird	B.	1	-	-	-
Blackbird	B.	1	Singing	-	-
Blackbird	B.	2	-	-	-
Blackbird	B.	1	Singing	-	-
Blackcap	BC	1	Singing	-	-
Blackcap	BC	1	Singing	-	-
Blackcap	BC	1	Singing	-	-
Blackcap	BC	1	Singing	-	-
Blackcap	BC	1	Singing	-	-
Blackcap	BC	1	Singing	-	-
Blue tit	BT	1	Foraging	-	-
Bullfinch	BF	2	Family	Pair	-
Chaffinch	CH	1	Singing	-	-
Chaffinch	CH	1	Singing	-	-
Chaffinch	CH	1	-	-	-
Chaffinch	CH	1	Singing	-	-
Chaffinch	CH	1	Singing	-	-
Chaffinch	CH	2	Calling	-	-
Chiffchaff	CC	1	Singing	-	-
Chiffchaff	CC	1	Singing	-	-
Chiffchaff	CC	1	Singing	-	-
Coal tit	CT	1	Singing	-	-
Dunnock	D.	1	Singing	-	-
Dunnock	D.	2	-	-	-
Goldcrest	GC	1	Singing	-	-
Goldcrest	GC	1	Calling	-	-
Goldfinch	GF	3	-	-	-
Goldfinch	GF	2	Foraging	-	-
Goldfinch	GF	2	-	-	-
Great tit	GT	3	Family	-	-
Great tit	GT	1	Singing	-	-
Great tit	GT	1	Foraging	-	-
Great tit	GT	1	Singing	-	-
Great tit	GT	1	-	Fledgling	-

Species	BTO code	Number recorded	Breeding behaviour recorded	Information	Designated status
Jay	J.	1	-	-	-
Long-tailed tit	LT	2	Foraging	-	-
Magpie	MG	1	Nest	-	-
Magpie	MG	1	Foraging	-	-
Pheasant	PH	1	Calling	-	-
Pied wagtail	PW	1	Foraging	-	-
Robin	R.	1	-	-	-
Robin	R.	1	Singing	-	-
Robin	R.	1	-	-	-
Robin	R.	1	-	-	-
Robin	R.	1	-	-	-
Song thrush	ST	1	Singing	-	-
Song thrush	ST	1	Singing	-	-
Starling	SG	2	-	-	-
Willow warbler	WW	1	-	-	-
Willow warbler	WW	1	Singing	-	-
Willow warbler	WW	1	Singing	-	-
Willow warbler	WW	1	Singing	-	-
Willow warbler	WW	1	Singing	-	-
Willow warbler	WW	1	Singing	-	-
Willow warbler	WW	1	Singing	-	-
Willow warbler	WW	1	Singing	-	-
Woodpigeon	WP	1	-	-	-
Woodpigeon	WP	1	-	-	-
Woodpigeon	WP	1	Calling	-	-
Woodpigeon	WP	1	Calling	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	-	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	Singing	-	-

Species	BTO code	Number recorded	Breeding behaviour recorded	Information	Designated status
Wren	WR	1	Singing	-	-

Table 5-14: Breeding bird raw survey data **Survey 4** – 2 May 2024.

Species	BTO code	Number recorded	Breeding behaviour recorded	Information	Designated status
Blackbird	B.	1	Singing	-	-
Blackbird	B.	1	-	-	-
Blackbird	B.	1	-	on overhead cables	-
Blackbird	B.	1	Singing	-	-
Blackbird	B.	1	Singing	-	-
Blackbird	B.	1	-	-	-
Blackbird	B.	1	Singing	-	-
Blackbird	B.	2	Foraging	-	-
Blackbird	B.	1	Singing	-	-
Blackcap	BC	1	Singing	-	-
Blackcap	BC	1	Singing	-	-
Blackcap	BC	1	Singing	-	-
Blackcap	BC	2	Singing	-	-
Blue tit	BT	1	Singing	-	-
Chaffinch	CH	1	Singing	-	-
Chaffinch	CH	1	Singing	-	-
Chaffinch	CH	1	Singing	-	-
Chaffinch	CH	1	Singing	-	-
Chaffinch	Ch	1	Singing	-	-
Chiffchaff	CC	1	Singing	-	-
Chiffchaff	CC	1	Singing	-	-
Coal tit	CT	1	Foraging	-	-
Dunnock	D.	1	-	-	-
Goldcrest	GC	1	Singing	-	Amber list
Great tit	GT	1	Singing	-	-
Great tit	GT	2	-	-	-
Great tit	GT	1	Singing	-	-

Species	BTO code	Number recorded	Breeding behaviour recorded	Information	Designated status
Long-tailed tit	LT	1	-	-	-
Robin	R.	1	Singing	-	-
Robin	R.	1	Foraging	-	-
Robin	R.	1	Singing; Nest; Food	-	-
Robin	R.	1	-	-	-
Robin	R.	1	Singing	-	-
Robin	R.	1	Singing	-	-
Robin	R.	1	Singing	-	-
Robin	R.	1	Singing	-	-
Robin	R.	1	-	-	-
Robin	R.	1	Singing	-	-
Swallow	SL	2	Foraging	-	Amber list
Treecreeper	TC	1	Foraging	-	-
Willow warbler	WW	1	Singing	-	Amber list
Willow warbler	WW	1	Singing	-	Amber list
Willow warbler	WW	1	Singing	-	Amber list
Willow warbler	WW	1	Singing	-	Amber list
Willow warbler	WW	1	Singing	-	Amber list
Woodpigeon	WP	1	Calling	-	-
Woodpigeon	WP	2	Calling	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	Singing	-	-
Wren	WR	1	Singing	-	-

5.219 Across the four breeding bird surveys, a total of 27 different species were recorded on the site. Of these:

- No red listed birds were recorded;
- Four amber listed birds were recorded comprising:
 - o Willow warbler *Phylloscopus sibilatrix*;
 - o Goldcrest *Regulus regulus*;

- o Starling *Sturnus vulgaris*; and
- o Swallow *Hirundo rustica*.
- Various common and widespread green listed birds were recorded on the site (refer to **Table 5-15**):

5.220 **Table 5-15** provides a summary of the breeding status for each bird on the site identified during the breeding bird surveys, following the BTO criteria laid out in **Table 5-3**.

Table 5-15: Breeding bird summary.

Species	No. of territories identified ²⁰	Breeding status on or close to the site	Justification ²¹
Blackbird	7	Possible	Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat.
Blackcap	2	Probable	Agitated behaviour or anxiety calls from adults, suggesting probable presence of nest or young nearby.
Bullfinch	0	Probable	Pair observed within suitable breeding habitat.
Blue tit	1	Possible	Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat.
Chiffchaff	2	Possible	Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat.
Chaffinch	5	Possible	Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat.
Coal tit	0	Possible	Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat.
Dunnock	1	Probable	Courtship behaviour observed near potential breeding habitat.
Goldcrest	0	Possible	Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat.
Goldfinch	0	Possible	Species observed in breeding season in suitable nesting habitat.
Great tit	4	Confirmed breeding	Recently fledged young recorded with parents.
Hooded crow	0	Possible	Species observed in breeding season in suitable nesting habitat.

²⁰ Refer to **Figure 5-6**.

²¹ Evidence supporting the highest breeding status has been detailed.

Species	No. of territories identified ²⁰	Breeding status on or close to the site	Justification ²¹
Jay	0	Non-breeding	Flyover offsite. Anticipated to be using offsite woodland for nesting rather than the site.
Long-tailed tit	0	Possible	Species observed in breeding season in suitable nesting habitat.
Magpie	0	Confirmed	Nest site identified with birds present.
Mistle thrush	0	Possible	Species observed in breeding season in suitable nesting habitat.
Pheasant	0	Possible	Species observed in breeding season in suitable nesting habitat.
Pied wagtail	0	Non-breeding	Only foraging behaviour recorded, and no territories recorded.
Robin	7	Probable	Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat.
Raven	0	Non-breeding	Only overpassing raven recorded.
Starling	0	Non-breeding	Only foraging behaviour recorded and anticipated that starling's likely nest within forestry located offsite.
Swallow	0	Non-breeding	Only foraging behaviour recorded and anticipated that swallow likely nest within farm buildings located offsite.
Song thrush	0	Probable	Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat.
Tree creeper	0	Possible	Species observed in breeding season in suitable nesting habitat.
Woodpigeon	0	Possible	Species observed in breeding season in suitable nesting habitat.
Wren	10	Probable	Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat.
Willow warbler	6	Probable	Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat.

- 5.221 Of the amber listed birds, willow warbler were assessed as probable breeding territories, and males heard singing within suitable breeding habitat; and goldcrest were evaluated as possible breeding as they were observed within suitable breeding habitat.
- 5.222 Additional bird species were anecdotally recorded on or near the site during other species surveys that were not recorded during the breeding bird surveys. These included hen harrier (refer to the hen harrier section **above**), kestrel *Falco tinnunculus* and greater spotted woodpecker *Dendrocopos major*. These are considered non-breeding on the site as they were unrecorded during the breeding bird surveys.

Farmland, green-listed and other passerine birds

- 5.223 Birds recorded during the two site surveys included common bird species such as wood pigeon *Columba palumbus*, hooded crow *Corvus cornix*, magpie *Pica pica*, robin *Erithacus rubecula*, blackbird *Turdus merula*, song thrush *Turdus philomelos*, jackdaw *Corvus monedula*, chaffinch *Fringilla coelebs*, wren *Troglodytes troglodytes* and starling *Sturnus vulgaris*.
- 5.224 No notable migratory or over-wintering bird species were noted within or around the Site during the initial survey in January 2024. Therefore, wintering bird surveys were scoped out.
- 5.225 **Table 5-16** details the total confirmed territories of passerine and farmland birds within the proposed application area and the estimated national and county populations.

Table 5-16: Confirmed territories identified for of passerine and farmland birds and estimated populations on a national and county level.

Species	Scientific name	Status	No. of territories ²²	Ireland population ²³	County population ²⁴
Blackbird	<i>Turdus merula</i>	Green-listed	7	4,613,945	144,186
Blackcap	<i>Sylvia atricapilla</i>	Green-listed	2	586,216	18,319
Blue tit	<i>Cyanistes caeruleus</i>	Green-listed	1	1,942,762	60,711
Bullfinch	<i>Pyrrhula pyrrhula</i>	Green-listed	0	648,630	20,270
Chiffchaff	<i>Phylloscopus collybita</i>	Green-listed	2	345,748	10,805
Chaffinch	<i>Fringilla coelebs</i>	Green-listed	5	3,690,474	115,327
Coal tit	<i>Periparus ater</i>	Green-listed	0	836,424	26,138
Dunnock	<i>Prunella modularis</i>	Green-listed	1	1,630,331	50,948
Goldfinch	<i>Carduelis carduelis</i>	Green-listed	0	1,107,425	34,607
Great tit	<i>Parus major</i>	Green-listed	4	1,288,058	40,252
Hooded crow	<i>Corvus cornix</i>	Green-listed	0	523,293	16,353
Jay	<i>Garrulus glandarius</i>	Green-listed	0	5000 – 14,999 (pairs)	156 – 469 (pairs)
Long-tailed tit	<i>Aegithalos caudatus</i>	Green-listed	0	101,834	3,182

²² No. of territories within the proposed application area (i.e., potential losses expected).

²³ Individuals (unless specified otherwise). Data obtained from Lewis et al. (2019).

²⁴ When total population is divided by the number of counties (i.e., 32).

Species	Scientific name	Status	No. of territories ²²	Ireland population ²³	County population ²⁴
Magpie	<i>Pica pica</i>	Green-listed	0	563,536	17,611
Pheasant	<i>Phasianus colchicus</i>	Green-listed	0	309,248	9,664
Pied wagtail	<i>Motacilla alba</i>	Green-listed	0	501,741	15,679
Raven	<i>Corvus corax</i>	Green-listed	0	55,878	1,746
Robin	<i>Erithacus rubecula</i>	Green-listed	7	4,517,711	141,178
Song thrush	<i>Turdus philomelos</i>	Green-listed	0	853,569	26,674
Treecreeper	<i>Certhia familiaris</i>	Green-listed	0	77,344	2,417
Woodpigeon	<i>Columba palumbus</i>	Green-listed	0	2,573,909	80,435
Wren	<i>Troglodytes troglodytes</i>	Green-listed	10	5,552,467	173,515

BoCCI Species Summary

Red-listed Birds

- 5.226 No red-listed birds were identified during the breeding bird surveys, with only one sighting of hen harrier passing north of the site, towards the Slieve Bloom Mountains SPA. Hen harrier were considered non-breeding on the site. However, they are known to be breeding in the Slieve Bloom Mountains SPA, with 10 - 11 confirmed pairs between 2018 and 2021 (The Hen Harrier Project (HHP), 2021; Ruddock et al., 2024). Hen harrier have been considered separately (**above**).
- 5.227 As such, breeding red-listed birds are absent from the site and can be reasonably discounted from this assessment.

Amber-listed Birds

- 5.228 Four BoCCI amber-listed birds were recorded across the four breeding bird surveys, including willow warbler, goldcrest, swallow and starling.

Willow warbler

- 5.229 Willow warbler were evaluated as being probably breeding on the site as they were observed singing in suitable breeding habitat.
- 5.230 Willow warbler are estimated to have a population of ca. 1.7 million within Ireland (Lewis et al., 2019). The population at county-level²⁵ is estimated to be ca. 53,125.
- 5.231 The breeding bird surveys identified a total of six territories for willow warbler within the site, suggesting that 6 breeding pairs are present on the site (i.e., 12 birds in total). This represents a negligible proportion of the national and the county

²⁵ Obtained by dividing the total population by the number of counties in Ireland (i.e., 32).

populations. Therefore, this species has been evaluated as being important at a **local level**.

Goldcrest

- 5.232 Goldcrest were evaluated as being possible breeding on the site as they were observed singing in suitable breeding habitat, but no territories were recorded. Therefore, it is anticipated that only very low numbers (e.g., two pairs) were likely present on the site, with a peak count of two individuals recorded during any one survey.
- 5.233 Goldcrest are estimated to have a population of ca. 601,806 within Ireland (Lewis et al., 2019). The population at county-level (obtained by dividing the total population by the number of counties in Ireland (i.e., 32)) is ca. 18,806.
- 5.234 The breeding bird surveys identified a potential total of two pairs for goldcrest within the site. This represents a negligible proportion of both the national and the county populations. Therefore, this species has been evaluated as being important at a **local level**.

Swallow

- 5.235 Swallow were evaluated as non-breeding on the site, as only foraging birds were observed, and there was a lack of buildings and other artificial structures in which swallows regularly make their nests.
- 5.236 It is predicted that the various other farm buildings located off-site and in the surrounding landscape are likely used by nesting swallow, and the site is only used for foraging purposes.
- 5.237 Swallow are estimated to have a population of ca. 4,056,663 individuals within Ireland (Lewis et al., 2019). The population at county-level (obtained by dividing the total population by the number of counties in Ireland (i.e., 32)) is ca. 126,771.
- 5.238 The peak count of swallow across the breeding bird surveys was ca. 2 individuals. This represents a negligible proportion of the national and county populations. Therefore, this species has been evaluated as being important at a **local level**.

Starling

- 5.239 Starling were evaluated as being non-breeding on the site as they were only observed foraging and flying over the site and no territories were identified for this species. However, they are present in the local area and may use the site for breeding purposes in future within the woodland and scrub habitats.
- 5.240 Starling are estimated to have a population of ca. 2,066,904 individuals within Ireland (Lewis et al., 2019). The population at county-level (obtained by dividing the total population by the number of counties in Ireland (i.e., 32)) is ca. 64,591.
- 5.241 The peak count of starling across the breeding bird surveys was ca. 50 individuals. This represents a negligible proportion of the national population and 0.08% of the county population. Therefore, this species has been evaluated as being important at a **local level**.

Green-listed Birds

- 5.242 Green-listed birds comprised of common bird species, which are assessed as being able to find nesting value within the scrub and hedgerow/treeline habitats within the Site and the surrounding habitats.

- 5.243 The breeding bird surveys identified various common and widespread green listed birds, including blackbird, blackcap, bullfinch, blue tit, chiffchaff, chaffinch, coal tit, dunnock, goldfinch, great tit, hooded crow, jay, long-tailed tit, magpie, pheasant, pied wagtail, robin, raven, song thrush, treecreeper, woodpigeon, and wren (summarised in **Table 5-16**).
- 5.244 Relative to the county and national populations, the numbers of each bird recorded on the site and listed in **Table 5-16** is considered negligible and these species are considered common and widespread across Ireland. Therefore, they have been evaluated as being important on a **local level**.

Other birds of prey

- 5.245 Two birds of prey were identified on the site during the various field surveys including buzzard *Buteo buteo* and kestrel, observed foraging close to the site during hen harrier surveys.
- 5.246 No breeding birds of prey were identified during the breeding bird surveys. Therefore, the site is evaluated as supporting only foraging birds of prey, and limited to buzzard, kestrel, and hen harrier (hen harrier are detailed separately **above**).
- 5.247 Buzzards are green-listed birds and have a population of 1938 pairs in Ireland (i.e., 3876 individuals); and an estimated 61 pairs (i.e., 122 individuals) per county. The various site surveys recorded a peak count of two buzzards on or near the site. This represents a negligible proportion of the national population and 1.6% of the county-level population.
- 5.248 Therefore buzzards are evaluated as important on a **county level**.
- 5.249 Kestrel are red-listed birds and have a population of 13,500 individuals in Ireland; and an estimated 422 individuals per county. The various site surveys recorded a peak count of two kestrels on or near the site. This represents a negligible proportion of the national population and 0.47% of the county-level population.
- 5.250 Therefore kestrel are evaluated as important on a **local level**.

Bats

- 5.251 All bats are protected under the Wildlife Acts and their subsequent amendments. In addition, all bats are listed under Annex IV of the Habitats Directive, with lesser horseshoe bats being afforded further protection as they are also listed under Annex II of the Habitats Directive.
- 5.252 The data search returned one record of common pipistrelle *Pipistrellus pipistrellus* and one record of soprano pipistrelle *Pipistrellus pygmaeus* in 2019 (National database of Ireland), located in the S29T 2 km grid square. One record of Natterer's bat *Myotis nattereri* was returned in the S29U 2 km grid square from 2007 (National database of Ireland). No other records of bats were returned from the two 2 km grid squares.

Bat landscapes

- 5.253 Biodiversity Maps²⁶ was accessed to assess the bat landscape suitability of the Site and surrounding landscape for bats. **Table 5-17** details the results provided for the 2 km grid square S29T, in which the Site is located. Bat landscape suitability was constructed using records for each bat species from the National Bat Database from

²⁶ Biodiversity Maps <https://maps.biodiversityireland.ie/Map>. Accessed May 2024.

2000 – 2009. The results can be used to explain patterns of species' occurrence and predict where species might occur (Bat Conservation Ireland, 2011). Higher index scores predict higher suitability for the relevant species across the local landscape, with 100 being the highest and 0 being the lowest.

Table 5-17: Bat landscape suitability for the 2 km grid square S29T in which the Site is located

Species	Scientific name	Index score
All bats	N/A	24
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	43
Natterer's bat	<i>Myotis nattereri</i>	42
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	38
Leisler's bat	<i>Nyctalus leisleri</i>	35
Daubenton's bat	<i>Myotis daubentonii</i>	21
Whiskered bat	<i>Myotis mystacinus</i>	19
Brown long-eared bat	<i>Plecotus auritus</i>	14
Lesser horseshoe bat	<i>Rhinolophus hipposideros</i>	4
Nathusius' pipistrelle	<i>Pipistrellus nathusii</i>	0

5.254 Based on the bat landscape suitability (see **Table 5-17**), the Site is most suitable for more common and widespread species common pipistrelle (43) and soprano pipistrelle (38) and Leisler's bat (35), with one rarer species: Natterer's bat (42) also being included high in the list. However, all of these species were scored below 50 (out of 100), which would indicate the middling suitability. The Site was considered unsuitable for rare species such as lesser horseshoe bat (4) and Nathusius' pipistrelle (0). Daubenton's bat (21), whiskered bat (19) and brown long-eared bat (14) all scored fairly poorly.

Roosting Bats

5.255 The results of the PRA are fully detailed in **0**. In summary the PRA found the following:

- Two trees (**TN2** and **TN3** – see **Figure 5-3**) were found to have moderate potential for roosting bats; and
- Seven trees were found to have low potential for roosting bats (these are detailed on **Figure 5-3**).

5.256 A presence/likely absence emergence survey was conducted on the trees with moderate potential (i.e., TN2 and TN3) and found no evidence of roosting bats. Only low numbers of common pipistrelle, soprano pipistrelle and Leisler's bat were recorded. These were assessed to be foraging and passing along the treeline and the nearby stream.

5.257 Therefore no bat roosts are located on the site and impacts to roosting bats have been **scoped out** from further assessment.

Commuting and Foraging Bats

- 5.258 The Site was assessed as having high potential for commuting bats due to the Site containing high value linear habitats such as woodland, hedgerows, treelines, and river. These habitats link the Site with the wider surrounding habitat, providing suitable commuting corridors through the landscape and promoting connectivity for bat species. In addition, other habitats within the Site provide suitable foraging bats including grasslands and a pond.
- 5.259 One bat activity survey was conducted on the Site, comprising a walked transect and supplemented with two static bat detector deployment for a period of seven consecutive days within suitable commuting and foraging habitat. The results of the bat activity survey are provided in full in **0** and summarised in **Table 5-18** (refer to **Figure 5-8** for the transect route and the recorded flight lines for the bat activity survey. **Figure 5-8** also details the locations for each static bat detector).

Transect Survey

- 5.260 **Table 5-18** details the bat passes recorded during the bat activity survey. **Figure 5-7** shows the flight lines recorded. In total the transect survey recorded four bat species, including (in order of most abundant to least) common pipistrelle (107), soprano pipistrelle (44), whiskered bat (6), Leisler's bat, and Daubenton's bat (2). Note that not all bats recorded audibly were recorded on **Figure 5-8** due to the low light levels and poor visibility throughout part of the survey.

Table 5-18: Summary of the bat transect survey results

Species	Scientific name	Passes recorded during transect
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	107
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	44
Whiskered bat	<i>Myotis mystacinus</i>	6
Leisler's bat	<i>Nyctalus leisleri</i>	5
Daubenton's bat	<i>Myotis daubentonii</i>	2

- 5.261 Common pipistrelle and soprano pipistrelle were distributed throughout the site, commuting and foraging along linear hedgerows and treelines. *Myotis* spp. Daubenton's bat and whiskered bat were recorded (i.e., at points 19 and 23), both located to the north of the site, which included areas located outside the proposed extraction area. Leisler's bats were recorded early into the survey and throughout various areas of the site (i.e., at points B, D, H, and I).
- 5.262 The limited distribution of *Myotis* spp. may be due to their later emergence times relative to other species such as common and soprano pipistrelle. As such Daubenton's bat and whiskered bat were only recorded at the latter end of the survey, and areas nearest to water, where Daubenton's bats are most associated with, were surveyed early in the survey. Static data (detailed **below**), demonstrates that *Myotis* spp. also use other areas of the site, such as near the pond and the central woodland.

Static Detector Survey

- 5.263 The results of the deployment of two static bat detectors situated at ITM coordinates 626668 698154 and 626957 698089 are detailed in **Table 5-19**, **Plate 5-1**, and **Plate**

5-2. Common pipistrelle was the most abundantly recorded bat (2042 & 2735), followed by soprano pipistrelle (302 & 418), Leisler's bat (27 & 257), Daubenton's bat (126 & 33), brown long-eared bat (23 & 5), and whiskered bat (6 & 4). Detector 1 also recorded one *Myotis* spp. that could not be identified to species level.

Table 5-19: Summary of the static bat detector surveys

Species	Scientific name	Passes recorded by Static detector 1	Passes recorded by Static detector 2
<i>Myotis</i> spp.	<i>Myotis</i> spp.	1	0
Daubenton's bat	<i>Myotis daubentonii</i>	126	33
Whiskered bat	<i>Myotis mystacinus</i>	6	4
Leisler's bat	<i>Nyctalus leisleri</i>	27	357
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	2042	2735
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	302	418
Brown long-eared bat	<i>Plecotus auritus</i>	23	5

- 5.264 Common pipistrelle and soprano pipistrelle are generalist species (Collins, 2023) that can use a variety of habitats including hedgerows, woodland and grassland edge. Therefore, they can make use of most of the habitats on the site, which is demonstrated through the high numbers recorded. Furthermore, common pipistrelle is the most common and widespread bat species in Ireland, which was represented in the data recorded.
- 5.265 Brown long-eared bats are typically woodland species that prefer cover. Low numbers of this species were recorded as the detectors were situated within scrub (for detector 1) and on the woodland edge (for detector 2).

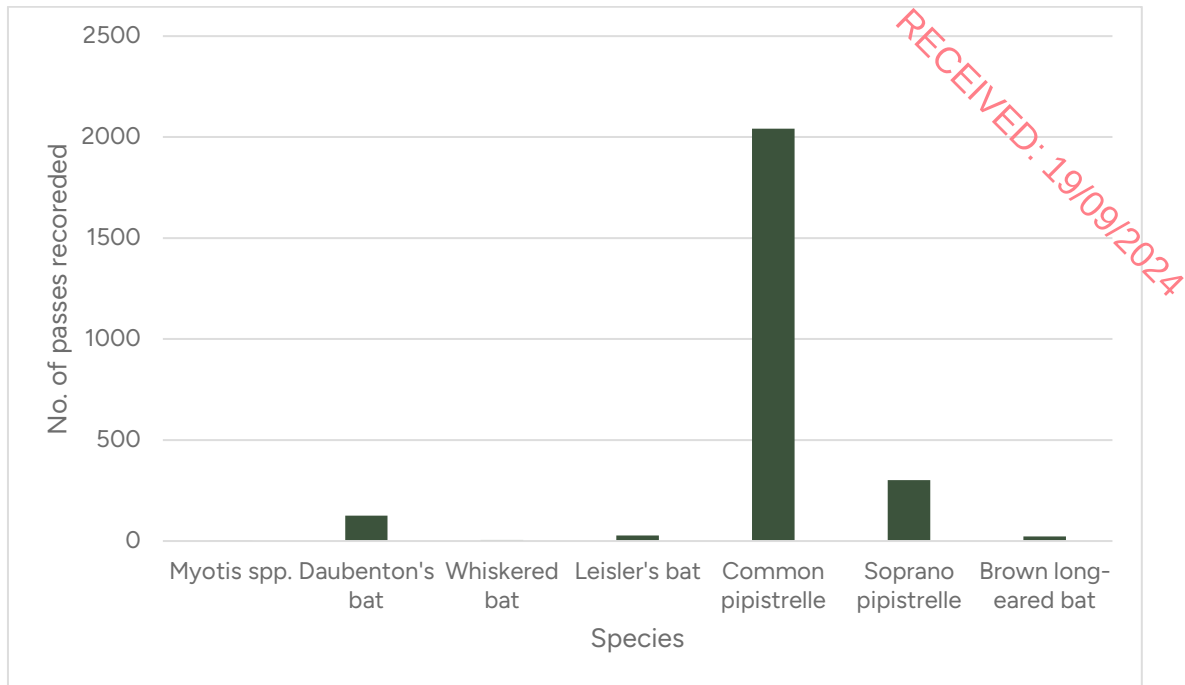


Plate 5-1: Number of bat passes recorded from static detector 1 at ITM coordinates 626668 698154

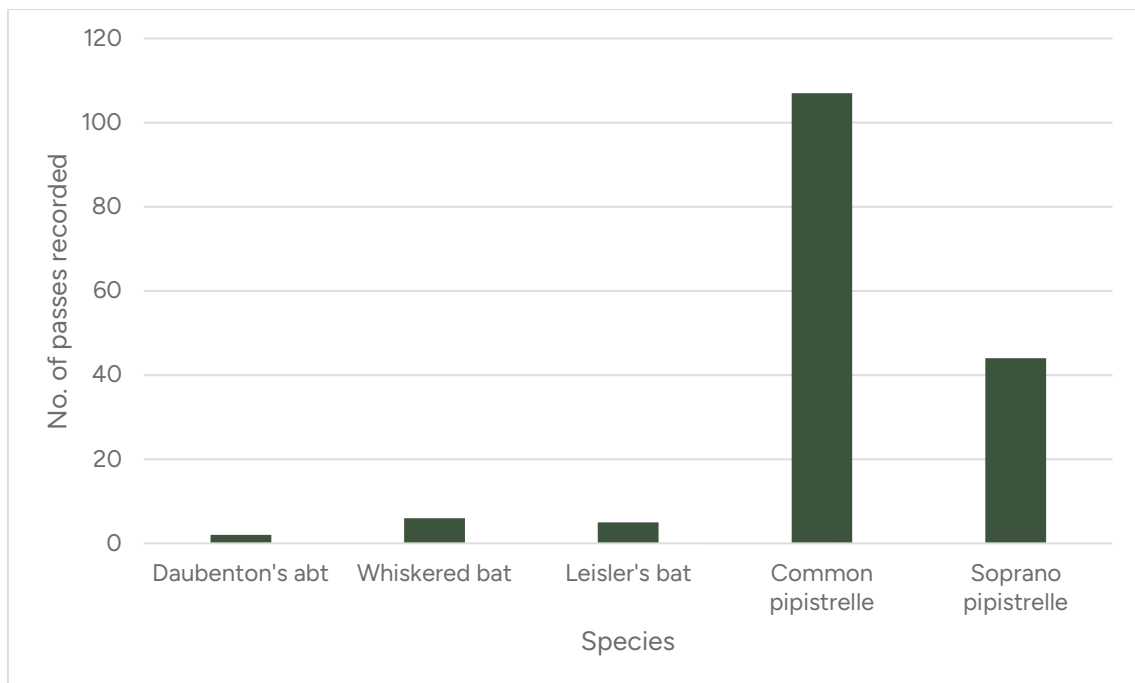


Plate 5-2: Number of bat passes recorded from static detector 2 at ITM coordinates 626957 698089

Summary of bats using the site

- 5.266 All bats not recorded over the emergence survey, the transect survey or the two static detector deployments are considered likely absent from the site and can be reasonably discounted from further assessment. This includes Natterer's bat, Nathusius' pipistrelle, and lesser horseshoe bat.

Common pipistrelle

- 5.267 The national common pipistrelle population is estimated to be between 1,070,000 - 2,400,000 (NPWS, 2019b) across 679 cells across the country, including cell S29 in which the site is located (refer to 0). Therefore, the county population is estimated to be between 45,700 – 102,504²⁷.
- 5.268 The peak count of common pipistrelle passes was recorded by detector 2²⁸ with 2,735 passes. This represents 2.7 - 5.9% of the county population and a negligible proportion (0.26%) of the national population. Therefore, common pipistrelle are evaluated as being important on a **county level**.

Soprano pipistrelle

- 5.269 The national soprano pipistrelle population is estimated to be between 500,000 - 1,200,000 (NPWS, 2019b) across 720 cells across the country, including cell S29 in which the site is located (refer to 0). Therefore, the county population is estimated to be between 20,139 - 48,333²⁹.
- 5.270 The peak count of soprano pipistrelle passes was recorded by detector 2 with 418 passes. This represents 0.9 - 2% of the county population and a negligible proportion (0.08%) of the national population. Therefore, soprano pipistrelle are evaluated as being important on a **county level**.

Daubenton's bat

- 5.271 The national Daubenton's bat population is estimated to be between 57,000 and 79,000 (NPWS, 2019b) across 604 cells across the country, including cell S29 in which the site is located (refer to 0). Therefore, the county population is estimated to be between 900 - 3,531³⁰.
- 5.272 The peak count of Daubenton's bat passes was recorded by detector 1 with 126 passes. This represents 3.6 - 14% of the county population and a negligible proportion (0.22%) of the national population. Therefore, soprano pipistrelle are evaluated as being important on a **county level**.

Whiskered bat

- 5.273 No individual figure is available for the national population of whiskered bat (NPWS, 2019b). It is distributed across 125 cells across the country, and its range is across 270 cells (0). It has not previously been recorded in cell S29, in which the site is located, and it has only been recorded in five other cells across the county. Therefore, this species is either under-represented in the data available, or the calls are mistakenly identified from other *Myotis* species, such as Daubenton's bat.

²⁷ 1,070,000 – 2,400,000 [national common pipistrelle population] divided by 679 (total no. of cells recorded), multiplied by 29 [total number of cells this species is recorded in Co. Laois].

²⁸ Peak count used rather than combining total from detectors 1 and 2 to avoid repeat recordings.

²⁹ 500,000 – 1,200,000 [national soprano pipistrelle population] divided by 720 (total no. of cells recorded), multiplied by 29 [total number of cells this species is recorded in Co. Laois].

³⁰ 20,139 and 48,333 [national Daubenton's bat population] divided by 604 (total no. of cells recorded), multiplied by 27 [total number of cells this species is recorded in Co. Laois].

- 5.274 Based on the assumption that whiskered bat has been correctly identified, the best figure available is one cell from its total upper range of 270 (271 including S29) and five cells (six including S29) across the county. Therefore, the whiskered bats on the site represent 0.79% of the national population³¹, and 16.7% of the county population³². As such, whiskered bat is evaluated as being important on a **county level**.

Leisler's bat

- 5.275 The national population of Leisler's bat is estimated to be between 63,000 and 113,000 (NPWS, 2019b) across 629 cells across the country, including cell S29 in which the site is located (refer to **0**). Therefore, the county population is estimated to be between 900 - 3,531³³.
- 5.276 The peak count of Leisler's bat passes was recorded by detector 2 with 357 passes. This represents 10 - 39.7% of the county population and a negligible proportion (0.56%) of the national population. Therefore, Leisler's bat is evaluated as being important on a **county level**.

Brown long-eared bat

- 5.277 The national brown long-eared bat population is estimated to be between 62,000 - 97,000 (NPWS, 2019b) across 343 cells across the country. This does not include cell S29 in which the site is located; however, cell S29 is within the predicted range for this species (refer to **0**). Therefore, the county population is estimated to be between 3,253 – 5,090³⁴.
- 5.278 The peak count of brown long-eared bat passes was recorded by detector 1 with 23 passes. This represents 0.5 - 0.7% of the county population and a negligible proportion of the national population. Therefore, soprano pipistrelle are evaluated as being important on a **local level**.

Otter

- 5.279 Otters are listed on Annex II and IV of the Habitats Directive and afforded protection under the Wildlife Acts and subsequent amendments.
- 5.280 The data search returned no records of otter within the S29T or S29U grid squares. However, this species is widely distributed across Ireland (i.e., 718 cells), including the S29 cell in which the site is located (see **0** – NPWS, 2019b).
- 5.281 The Site itself was of negligible value for otters. However, the stream/channel located on the southern boundary of the site leads into the Killeen River, providing hydrological connectivity between the catchment and the site for this species and otters may cut across the Site when commuting across the local landscape.
- 5.282 No otter-specific surveys were conducted on the Site. However, the Site was assessed along the stream for the presence of holts during the initial PEA; and potential evidence of otter was recorded on the site throughout the various surveys. The aquatic ecology surveys recorded the confirmed presence of salmonids within the stream. These species will provide otters with suitable prey. Moreover, the

³¹ 1 [the cell S29] divided by 126 [the total number of cells making up its current distribution, including cell S29].

³² 1 [the cell S29] divided by 6 [the total number of cells making up its current distribution within the county, including cell S29].

³³ 57,000 - 79,000 [national Leisler's bat population] divided by 629 (total no. of cells recorded), multiplied by 28 [total number of cells this species is recorded in Co. Laois].

³⁴ 62,000 - 97,000 [national brown long-eared bat population] divided by 343 (total no. of cells recorded), multiplied by 18 [total number of cells this species is recorded in Co. Laois].

aquatic ecology surveys recorded otter spraint near Cardtown Bridge, confirming the presence of this species within the stream.

- 5.283 Therefore, otters are confirmed to be present within this river and have access to the site. Although much of the site provides little motivation for this species to use it. It is possible that the banks of the stream may support otter holts, although none are present at the time of writing.
- 5.284 NPWS (2019b) data suggests that there are approximately 7,218 – 10,186 breeding female otters nationally within Ireland, which is supported by Reid et al. (2013), which reported an estimate of 7,800 between 2010/11. 28 of the 718 cells in which otter are distributed relate to otter distribution within Co. Laois. Therefore, there is an estimated 304 otter within County Laois³⁵.
- 5.285 The number of otters likely to use the adjacent stream and therefore potentially the site is unknown. However, the territory of a female otter is approximately 7.5 ± 1.5 km; and a male's territory is estimated to be approximately 13.2 ± 5.3 km. Therefore, it is highly likely that the extent of the stream in relation to the site comprises the territory of one male and one female. This represents just 0.03% of the national population and 0.66% of the county population.
- 5.286 As such, otter are evaluated as being important on a **local level**.

Badger

- 5.287 Badgers are protected under the Wildlife Acts and subsequent amendments.
- 5.288 The data search returned one record of badger (2017 - Mammals of Ireland 2016-2025) within the S29U 2 km grid square and four records of badger (2004 – Badger setts of Ireland database) within the S29T 2 km grid square.
- 5.289 One potential, disused outlier badger sett (**Photograph 5-19**) was identified within woodland on the site (**TN4**). This sett comprised a single entrance and was considered disused at the time of the survey due to the build-up of detritus within the sett entrance, lack of spoil and lack of other evidence of badger activity (i.e., latrines, mammal pathways, footprints, foraging signs, etc.). No other badger setts or evidence of badgers was identified on the site throughout any of the surveys.

³⁵ 7,800 [otter population] divided by 718 [no. of cells otter are distributed], multiplied by 28 [no. of cells relating to otter distribution in Co. Laois].



Photograph 5-19: Disused outlier sett located on the site.

- 5.290 The habitats comprising the Site provide optimal habitat for this species for both foraging and sett creation, with hedgerows, scrub, woodland, and grasslands all providing suitable foraging and sett creating habitat for badgers.
- 5.291 It is assessed that no active badger setts are present on the Site. However, the potential uptake of the site and the creation of a sett on the site by badgers in the future, as well as the presence of foraging badger within the site cannot be discounted, as suitable habitat exists.
- 5.292 There are approximately 200,450 badgers in Ireland (excluding Northern Ireland) (Smal, 1995), which averages out at 7,710 per county. The mean density of badger social groups in Ireland is estimated at one group per 2 km². However, Smal (1995) also found regional variation in the density of badgers, with County Laois estimated to have a badger social group density of 0.47 per km². The site is approximate 12.2 ha (i.e., 0.122 km²). Therefore the number of badger social groups is anticipated to be 0.06³⁶ on the site, and 808 social groups within the county. Therefore, the site likely supports <0.5% of the badger population within County Laois.
- 5.293 Given the lack of active setts identified on the site, it is anticipated that there is no permanent presence of breeding badgers on the site, and the site is likely only comprise part of the territory of one badger social group. The site is likely mainly to be used by foraging badgers representing <1% of the county population. As such, badgers are evaluated as important on a **local level**.

Hedgehog

- 5.294 The data search returned no records for hedgehog within the two 2 km grid squares in which the Site is located.

³⁶ 0.47 multiplied by 0.122.

- 5.295 No incidental sightings of hedgehog was identified on the Site during the various surveys conducted; and no evidence of hedgehog was identified on the Site. However, the scrub, grassland, woodland, treelines and hedgerows within the Site all provide suitable habitat for this species, and their presence cannot be discounted.
- 5.296 Hedgehog are evaluated as important at a **local level**.

Pine Marten

- 5.297 Pine marten are protected under the Wildlife Acts, and subsequent amendments and are listed on Annex V of the Habitats Directive.
- 5.298 Consultation with NPWS Article 19 GIS data³⁷ revealed that the Site is located within an area recognised for pine marten presence. However, the data search returned no records of pine marten within the two grid squares (S29T and S29U).
- 5.299 Suitable habitats for this species exist within and surrounding the site through mixed broadleaved woodland although no evidence or incidental sightings of pine marten was identified during the various surveys of the site. A camera trap was positioned in woodland, located at ITM coordinates 626728 626728 from 05/06/2024 to 03/07/2024 (**Figure 5-10**), and baited with jam. However, no footage of pine marten was recorded.
- 5.300 The pine marten population in Ireland is estimated to be approximately 2,700 – 3,852 individuals (O'Mahony et al., 2016; NPWS, 2019b), with broad distribution across Ireland (see **0**). This includes cell S29, in which the site is located. Moreover, Lawton et al. (2020) recorded 35 records of pine marten within County Laois.
- 5.301 0.37 ha of mixed broadleaved woodland habitat and 0.2 ha of riparian woodland exists on the site, totalling 0.57 ha of woodland on the site (i.e., 0.0057 km²). The habitats on the Site are not extensive enough to support a viable population of pine marten, although their presence within the larger landscape cannot be discounted and they may occasionally use the Site for foraging purposes.
- 5.302 The estimated site-specific densities for pine marten ranged from 0 to 2.60 individuals per km² of forest habitat in randomly selected sites, however, the majority of study sites had density estimates of less than 1 pine marten per km² of forested habitat. Therefore the population density of pine marten on the site is considered to be 0.57³⁸ (i.e., 1). This represents a negligible proportion of the national population potentially 2.9% of the county population.
- 5.303 As such, pine marten have been evaluated as being important on a **county level**.

Irish hare

- 5.304 Irish hare *Lepus timidus* are protected under the Wildlife Acts, and subsequent amendments and are listed on Annex V of the Habitats Directive.
- 5.305 The data search returned no records of Irish hare within the two grid squares (S29T and S29U). However, the grassland habitats on the site are suitable for this species. They are widely distributed across Ireland, although they are not recorded in the S29 cell in which the site is located (**0** – NPWS, 2019b).
- 5.306 One Irish hare was observed on the site during the hen harrier surveys using grassland fields.

³⁷ <https://storymaps.arcgis.com/collections/1a721520030d404f899d658d5b6e159a?item=2>. Accessed May 2024.

³⁸ 0.57 [ha of woodland] multiplied by 1 [1 pine marten per km²]

- 5.307 The mean estimated density of Irish hares in Ireland is 7.66 hares/km² (95% CI 4.83-14.29) with the total estimated abundance for Irish hare in the Republic of Ireland was 233,000 in 2018/19 (111,000 – 449,000) (McGowan et al., 2019), which averages out to 8,577 per county.
- 5.308 The estimated population size of Irish hare for the site is estimated to be 0.9³⁹ (i.e., 1). This represents a negligible population relative to the national and county levels. Therefore, Irish hare is evaluated as being important on a **local level**.

Red Squirrel

- 5.309 Red squirrel *Sciurus vulgaris* are protected under the Wildlife Acts and subsequent amendments.
- 5.310 The data search returned no records of red squirrel within the two grid squares (S29T and S29U).
- 5.311 Suitable habitats for this species exist within and surrounding the site through mixed broadleaved woodland although no evidence of red squirrel was identified during the various surveys of the site. A camera trap was positioned in woodland, located at ITM coordinates 626728 626728 from 05/06/2024 to 03/07/2024 (**Figure 5-9**), and baited with jam. However, no footage of red squirrel was recorded.
- 5.312 Nationally, it is estimated that there are approximately 40,000 red squirrels in Ireland (NPWS, 2008); and Lawton et al. (2020) recorded 60 records of red squirrel within County Laois. Therefore, the presence of red squirrels on the site and the surrounding landscape cannot be fully discounted. However, they are not considered likely to be present in great numbers. Population densities rarely exceed 1.5 squirrels per hectare (Lawson et al, 2020).
- 5.313 There is 0.57 ha of woodland located on the site. Therefore the population density of red squirrel on the site is estimated to be 0.86⁴⁰ (i.e., 1). This represents a negligible proportion of the national population; and 1.67% of the county population.
- 5.314 As such, red squirrels may be present on the site and are evaluated as being important on a **county level**.

Irish Stoat

- 5.315 Irish stoat *Mustela erminea subsp. hibernica* are protected under the Wildlife Acts and subsequent amendments.
- 5.316 The data search returned no records of Irish stoat within the two grid squares (S29T and S29U). However, they are distributed widely across Ireland, although gaps in their records do exist (Vincent Wildlife Trust (VWT), 2024).
- 5.317 No incidental sighting of Irish stoat were recorded on the site throughout the various surveys; nor was any other evidence of their presence, such as the camera trap deployment at ITM coordinates 626728 626728 from 05/06/2024 to 03/07/2024 (**Figure 5-9**).
- 5.318 There is no information on the overall status of the population, or its conservation available. However, extrapolation for data from Britain suggests that there is an estimated 160,000 Irish stoats in Ireland (VWT, 2024)

³⁹ 7.66 [hare population density] multiplied by 0.122 [the size of the site in km²]

⁴⁰ 0.57 [ha of woodland] multiplied by 1.5 [population density of red squirrel per ha]

- 5.319 As such, Irish stoat may be present on the site and are evaluated as being important on a **local level**.

Other mammals

- 5.320 Other mammals, such as red fox, rabbit, and other small mammals were both observed during the Site surveys. Both fox and rabbit were seen in the fields just to the south of the proposed expansion Site. A camera trap was positioned in woodland, located at ITM coordinates 626728 626728 from 05/06/2024 to 03/07/2024, and baited with jam. The footage only returned recordings of rats and mice.
- 5.321 None of these species are afforded any legal or local policy protections and are common and widespread across Ireland. Therefore, they are evaluated as being of **negligible** importance and have been **scoped out** from further assessment.
- 5.322 Although no fox dens or rabbit warrens were noted in the habitats on the site, it is possible that they may be built at any time. Any occupants would risk being harmed or killed through the loss of these habitats. Due to the lack of formal protection for these species, this would represent a minor-negative impact. Potential impacts to other mammals are assessed to be significant at a **local (lower) level**.

Invertebrates

- 5.323 The data search returned one record of rare and protected invertebrates from the 2km grid squares S29T and S29U, within which the Site is located comprising three small heath butterflies *Coenonympha pamphilus* in 2021. This is considered a near-threatened species.
- 5.324 Field surveys identified only common and widespread invertebrates on the site. Although a range of habitats including aquatic habitats, woodland, and grasslands, with a range of flowering flora, are anticipated to support a wide variety of invertebrates.
- 5.325 Given no rare and protected invertebrate species were recorded on the site throughout the various surveys they are evaluated as having **negligible importance** with only common and widespread species that are afforded no legal or local policy protections. Therefore, rare and protected invertebrates have been **scoped out** from further assessment in this chapter.

Invasive Species

- 5.326 The NBDC database was searched for records of rare and/or protected faunal species from the 2km grid squares S29T and S29U, within which the Site is located.
- 5.327 The records returned are presented in **Table 5-20** below.

Table 5-20: INNS returned within the 2km grid squares S29T and S29U

Species recorded	Grid square	Date of last record	No. of records	Source/dataset
Giant rhubarb <i>Gunnera tinctoria</i>	S29U	26/05/2020	1	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards
Himalayan honeysuckle	S29U	18/06/2021	2	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards

Species recorded	Grid square	Date of last record	No. of records	Source/dataset
<i>Leycesteria formosa</i>				

- 5.328 No INNS listed on the Third Schedule of the EC Birds and Natural Habitats Regulations were identified throughout the various field surveys undertaken on the Site and INNS are considered absent. Therefore, INNS can be reasonably discounted from the assessment.

Aquatic Ecology (including Fish, Macrophytes, Bryophytes, and Macro-invertebrates)

- 5.329 Atlantic salmon *Salmo salar* and lamprey *Lampetra* spp. are listed under Annex II and Annex V of the Habitats Directive. European eel are critically endangered according to the most recent IUCN red list (Pike et al., 2020) and listed as critically endangered in Ireland (King et al., 2011). Brown trout have no formal designation, but are of high biodiversity value (Triturus, 2024).
- 5.330 **Table 5-21**, **Table 5-22**, and **Table 5-23** summarises the results for each of the six survey sites.

Table 5-21: Fish species densities per m² recorded at sites in the vicinity of the proposed development, July 2024 (bold indicated the highest density recorded per species)
– Table extracted from Table 4.1 of the Aquatic Ecology Report

Site	Watercourse	CPUE (elapsed time)	Approx. area fished (m ²)	Atlantic salmon	Brown trout
A1	Unnamed stream	5	100	0.000	0.060
A2	Unnamed stream	5	100	0.000	0.110
A3	Unnamed stream	5	100	0.000	0.090
B1	Killeen River	10	200	0.095	0.010
B2	Killeen River	10	200	0.185	0.045
B3	Killeen River	10	200	0.170	0.030

Table 5-22: Relative abundance of fish species of higher conservation value recorded via electro-fishing in the study area, July 2024 – Table extracted from Table 4.2 of the Aquatic Ecology Report.

Site	Watercourse	Atlantic salmon	Brown trout	Other species
A1	Unnamed stream	Not recorded	Low	Not recorded
A2	Unnamed stream	Not recorded	Low	Not recorded
A3	Unnamed stream	Not recorded	Low	Not recorded
B1	Killeen River	Moderate	Low	Not recorded

Site	Watercourse	Atlantic salmon	Brown trout	Other species
B2	Killeen River	High	Low	Not recorded
B3	Killeen River	High	Low	Not recorded

Table 5-23: Summary of aquatic species and habitats of higher conservation value recorded in the study area, July 2024 – Table extracted from Table 4.3 of the Aquatic Ecology Report.

Site	Watercourse	Annex I habitats	Rare or protected macrophytes / aquatic bryophytes	Rare or protected macro-invertebrates	Site
A1	Unnamed stream	Not present	None recorded	None recorded	Brown trout
A2	Unnamed stream	Not present	None recorded	None recorded	Brown trout
A3	Unnamed stream	Not present	None recorded	None recorded	Brown trout
B1	Killeen River	Not present	None recorded	None recorded	Atlantic salmon & brown trout
B2	Killeen River	Not present	None recorded	None recorded	Atlantic salmon & brown trout
B3	Killeen River	Not present	None recorded	None recorded	Atlantic salmon & brown trout

Salmonids

- 5.331 The stream survey sites were found to support brown trout at all survey sites with a low relative abundance (see **Table 5-22**). Atlantic salmon at three survey sites associated with the Killeen River (i.e., B1 – B3), with a moderate relative abundance at B1 and a high relative abundance at B2 and B3 (see **Table 5-22**).
- 5.332 In addition, the survey sites were assessed to be of value as salmonid nurseries, despite the low trout densities recorded. Triturus (2024) suggested that the low trout densities may be a result of enrichment and siltation pressures as well as competition in high-energy tributaries (i.e., B1 – B3) by Atlantic salmon.
- 5.333 Therefore, the presence of salmonids is confirmed at the six survey sites and these species use the streams near the site for breeding purposes. Therefore, they are evaluated as being important on an **international level**.

Lamprey

- 5.334 No lamprey were recorded at any of the six survey sites, despite comprising QI species for the downstream River Barrow and River Nore SAC. It was anticipated by Triturus (2024) that the high-energy status of the six survey sites was the likely limiting factor for the absence of these species as the settlement of deeper, soft sediment that lamprey prefer is discouraged. As such, lamprey are considered likely absent from the survey sites.

- 5.335 As such, lamprey have been reasonably discounted and **scoped out** from further assessment.

European Eel

- 5.336 No European eel were recorded during the aquatic ecology surveys despite the habitats being suitable for this species. It was anticipated that downstream barriers in the Nore catchment may restrict migration of eels into the upper reaches of the Killeen river.
- 5.337 As such, European eel have been reasonably discounted and **scoped out** from further assessment.

Macro-invertebrates

- 5.338 The Aquatic Ecology Report found no evidence of rare or protected aquatic invertebrates such as white-clawed crayfish or fresh-water pearl mussel. As such, white-clawed crayfish and fresh-water pearl mussel have been reasonably discounted and **scoped out** from further assessment.
- 5.339 Q-sampling results are provided in Table 9.1 of the Aquatic Ecology Report (0). These results are summarised in **Table 5-24** and indicate that the water quality was 'moderate' for survey sites A1 – A3 and of 'good' quality for survey sites B1 – B3.

Table 5-24: Macro-invertebrates Q-sampling results summary, July 2024 – Table extracted from Table 9.1 of the Aquatic Ecology Report.

Site	Watercourse	Total abundance	Taxon richness	Q-rating	Water quality status
A1	Unnamed stream	89	17	Q3-4	Moderate
A2	Unnamed stream	51	15	Q3-4	Moderate
A3	Unnamed stream	56	19	Q3-4	Moderate
B1	Killeen River	75	15	Q4	Good
B2	Killeen River	139	23	Q4	Good
B3	Killeen River	97	14	Q4	Good

Summary of Important Ecological Features

- 5.340 **Table 5-25** summarises all important (Local (Higher) Level and above) 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 not carrying forward any features for detailed assessment.

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Table 5-25: Summary of Important Ecological Features Subject to Detailed Assessment

Ecological Feature			Scale of importance	Comments on Legal Status and/or Importance
Designated sites	European sites	Slieve Bloom Mountains SPA	International	• QI species: hen harrier • Afforded local policy protection under BNH 1 – BNH 16. • A requirement for AA screening and AA is set out in 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 (as amended).
		River Barrow and River Nore SAC	International	• QI habitats: ◦ Estuaries [1130] ◦ Mudflats and sandflats not covered by seawater at low tide [1140] ◦ Reefs [1170] ◦ Salicornia and other annuals colonising mud and sand [1310] ◦ Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330] ◦ Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] ◦ Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260] ◦ European dry heaths [4030] ◦ Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] ◦ Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220] ◦ Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] ◦ Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0] • QI species: ◦ <i>Vertigo moulinsiana</i> (Desmoulin's Whorl Snail) [1016] ◦ <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]



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Ecological Feature			Scale of importance	Comments on Legal Status and/or Importance
				- o <i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092] - o <i>Petromyzon marinus</i> (Sea Lamprey) [1095] - o <i>Lampetra planeri</i> (Brook Lamprey) [1096] - o <i>Lampetra fluviatilis</i> (River Lamprey) [1099] - o <i>Alosa fallax fallax</i> (Twaite Shad) [1103] - o <i>Salmo salar</i> (Salmon) [1106] - o <i>Lutra lutra</i> (Otter) [1355] - o <i>Trichomanes speciosum</i> (Killarney Fern) [1421] • Afforded local policy protection under BNH 1 – BNH 16. • A requirement for AA screening and AA is set out in 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 (as amended).
		River Nore SPA	International	• QI species: kingfisher • Afforded local policy protection under BNH 1 – BNH 16. • A requirement for AA screening and AA is set out in 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 (as amended).
	Natural Heritage Areas	Slieve Bloom Mountains pNHA	County level	• Afforded local policy protection under BNH 1 – BNH 16. • Considered as part of the Slieve Bloom Mountains SPA.



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Ecological Feature			Scale of importance	Comments on Legal Status and/or Importance
	Statutory Nature Reserves	Slieve Bloom Mountains Nature Reserve	County level	- Afforded local policy protection under DM RL 3 and BNH 4. - Considered as part of the Slieve Bloom Mountains SPA.
Habitats	Mixed broadleaved woodland (WD1)		County	- Does not comprise Annex I habitat. - Provides valuable semi-natural habitat for local fauna. - Woodlands are afforded local policy protection under BNH 25 – 30 of the Co. Laois County Development Plan.
	Riparian woodland (WN5)		County	- Does not comprise Annex I habitat. - Provides valuable semi-natural habitat for local fauna. - Woodlands are afforded local policy protection under BNH 25 – 30 of the Co. Laois County Development Plan.
	Other artificial lakes and ponds (FL8)		Local	Does not comprise Annex I habitat.
	Scrub (WS1)		Local	- Does not comprise Annex I habitat. - Provides valuable semi-natural habitat for local fauna.
	Improved agricultural grassland (GA1)		Local	- Does not comprise Annex I habitat. - Provides limited habitat for local fauna.
	Hedgerows (WL1)		Local	- Does not comprise Annex I habitat. - Provides valuable semi-natural habitat for local fauna. - Considered to be in unfavourable condition and do not comprise 'heritage hedgerows' (refer to 0) - Hedgerows are afforded local policy protection under BNH 25 – 30 of the Co. Laois County Development Plan. - Identified in the Ireland National Biodiversity Action Plan (NPWS, 2023).



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Ecological Feature			Scale of importance	Comments on Legal Status and/or Importance
	Treelines (WL2)		Local	- Does not comprise Annex I habitat. - Provides valuable semi-natural habitat for local fauna. - Trees are afforded local policy protection under BNH 25 – 30 of the Co. Laois County Development Plan.
	Eroding / upland river (FW2)		County	Waterways and wetlands are afforded local policy protection under BNH 31 – 29 of the Co. Laois County Development Plan. In addition, associated riparian habitats are identified under the County Development Plan.
Species	Amphibians	Common frog	Local	- Protected under the Schedule 5 Wildlife Act 1976 (and subsequent amendments). - Listed on Annex V of the Habitats Directive - Red List Status: 'Least Concern'
		Smooth newt	County	- Protected under the Schedule 5 Wildlife Act 1976 (and subsequent amendments). - Red List Status: 'Least Concern'
	Reptiles	Common lizard	Local	- Protected under the Schedule 5 Wildlife Act 1976 (and subsequent amendments). - Red List Status: 'Least Concern'
	Birds	Hen harrier	National	- Listed on Annex I of the EU Bird's Directive - Amber-listed on the BoCCI - Hen harrier are a QI species for the adjacent Slieve Bloom Mountains SPA. - The Site itself is unlikely to support nesting or wintering hen harrier, especially when compared to the adjacent SPA. - The Site may support limited foraging opportunities for hen harrier.
		Kestrel	County	- Red-listed on BoCCI - Kestrel are identified in the Mountrath Biodiversity Action Plan 2015.
		Kingfisher	Local	- Listed on Annex I of the EU Bird's Directive - Amber-listed on the BoCCI



Biodiversity 5

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Ecological Feature			Scale of importance	Comments on Legal Status and/or Importance
		Farmland bird assemblage	Local	- Red and amber-listed (BoCCI) species identified on the Site: - Starling; - Swallow; - Willow warbler; and - Goldcrest.
		Common and widespread passerines	Local	Green-listed (BoCCI) species identified on the Site.
	Bats	<i>Pipistrellus</i> spp. assemblage	County	- Listed on Annex IV of the Habitats Directive. - Protected under the Wildlife acts 1976 and subsequent amendments. - Red List Status: 'Least Concern'.
		<i>Myotis</i> spp.	County	- Listed on Annex IV of the Habitats Directive. - Protected under the Wildlife acts 1976 and subsequent amendments. - Red List Status: 'Least Concern'.
		Leisler's bat	County	- Listed on Annex IV of the Habitats Directive. - Protected under the Wildlife acts 1976 and subsequent amendments. - Red List Status: 'Least Concern'.
		Brown long-eared	Local	- Listed on Annex IV of the Habitats Directive. - Protected under the Wildlife acts 1976 and subsequent amendments. - Red List Status: 'Least Concern'.
	Hedgehog		Local	- Protected under the Wildlife acts 1976 and subsequent amendments. - Red List status: 'Least Concern'. - Unconfirmed but considered likely present on the Site.



Biodiversity 5

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Ecological Feature		Scale of importance	Comments on Legal Status and/or Importance
			Likely to find foraging value on the Site's grassland, hedgerows, woodland, and scrub.
	Badgers	Local	- Protected under the Wildlife acts 1976 and subsequent amendments - Red List status: 'Least Concern'. - No badger setts identified on the Site. The Site is suitable for foraging and sett creation.
	Pine marten	County	- Listed on Annex V of the Habitats Directive. - Protected under the Wildlife Act 1976 (and subsequent amendments). - Red List status: 'Least Concern'.
	Otter	Local	- Listed on Annex II and IV of the Habitats Directive. - Protected under the Wildlife Act 1976 (and subsequent amendments). - Red List status: 'Least Concern'.
	Irish hare	Local	- Listed on Annex V of the Habitats Directive. - Protected under the Wildlife Act 1976 (and subsequent amendments). - Red List status: 'Least Concern'.
	Irish stoat	Local	- Protected under the Wildlife Act 1976 (and subsequent amendments). - Red List status: 'Least Concern'.
	Red squirrel	County	- Protected under the Wildlife Act 1976 (and subsequent amendments). - Red List status: 'Least Concern'.
Aquatic ecology	Atlantic salmon	International	Listed on Annex II and Annex V of the Habitats Directive.



Assessment of Effects and Mitigation Measures

- 5.341 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 following design principles and “designed-in” mitigation have informed the assessment of impacts.
- Within the design of the proposal good practice environmental and pollution control measures are employed with regard to current best practice guidance such as, but not limited to, the following:
 - o EPA Environmental Management Guidelines (2006): Environmental Management in the Extractive Industry (Non-Scheduled Minerals); and
 - o DoEHLG (Department of the Environment, Heritage and Local Government) April 2004: Quarries and Ancillary Activities Guidelines for Planning Authorities.
 - Landscaping and restoration measures are proposed within the design of the development. These are listed in full in Chapter 2 of the EIAR (refer also to EIAR **Figure 2-5** and **Figure 2-6**) and include features to minimise loss of biodiversity on-site. Such measures include the following;
 - o Hedgerows will be retained where possible. Any hedgerows to be removed as part of the project will be replanted using appropriate species as part of the landscaping plan (refer to EIAR **Figure 2-5**). There will be no net loss of hedgerows, post restoration, as a result of the proposed development.
 - o Landscaping during and post operation will include aftercare management to encourage dense, well-structured hedgerows along the site boundaries.
- 5.342 Taking the above into account, the potential impacts of the proposed development are outlined in the following sections.

Scoped out from further assessment

- 5.343 The following ecological features were assessed as having negligible importance in respect of the proposed development and were scoped out from further assessment:
- Coolrain Bog SAC;
 - Knockacoller Bog SAC;
 - Clonaslee Eskers and Derry Bog SAC;
 - Island Fen SAC;
 - Slieve Bloom Mountains pNHA;
 - Delour river near Lacca Manor pNHA;
 - Coolrain Bog pNHA;
 - Knockacoller Bog pNHA;
 - Mannin Wetland pNHA;
 - Forest House Wood pNHA;
 - Derrykeel Meadows pNHA;
 - Roscrea Bog pNHA;



- Clonaslee Eskers & Derry Bog pNHA;
- Grantstown Wood and Grantstown Lough Nature reserve;
- Timahoe Esker Nature Reserve;
- Active quarries and mines (ED3);
- Earthbank (BL2);
- Wintering birds;
- Unrecorded bats including lesser horseshoe, Natterer's bat and Nathusius' pipistrelle;
- Other mammals (e.g., foxes, rabbits, rats, etc.);
- Rare and protected invertebrates; and
- Invasive flora and fauna.

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Predicted Future Baseline

- 5.344 The predicted future baseline is the baseline that is predicted at the point when the proposed development begins. It takes into account any changes which may occur between the time when the surveys were completed and the start of the development, which in this case is the commencement of the extraction works.
- 5.345 Within the Site, conditions are not expected to significantly change from how they are now up to the point of the commencement of the extraction works. Existing woodland, scrub and treelines will mature. However, current grazing land use on the Site will prevent the spread and establishment of additional scrub and woodland and will maintain grasslands at their current state. Hedgerows are anticipated to be managed in their current state. Whilst species populations are expected to naturally fluctuate, overall, they are expected to remain consistent between now and the commencement of the extraction works.
- 5.346 Outside the project site ongoing planning applications may commence and habitats located outside the project development zone may experience habitat losses representative of the footprint of their respective proposed development footprints. This will reduce the extent of habitats located within the local area (but outside the proposed development zone) and may have a detrimental impact to the baseline species populations.

Embedded mitigation

- 5.347 The Slieve Bloom Mountains SPA that borders the Site to the north/northeast, will not experience any habitat loss due to the proposed development. All works will be limited up to the red line application boundary, which borders the SPA (refer to EIAR **Figure 2-3**). In addition, no further extraction will occur near the SPA, with the existing sand and gravel pit habitat being used for the proposed office and weighbridge and settlement lagoon locations (as shown on **Figure 2-3**).
- 5.348 Habitats have been retained, where possible, under the current proposals (refer to **Figure 2-7**):
- Hedgerows will be retained where possible, and losses will be minimised to 310 m. **Figure 2-8** shows the full extent of the proposed hedgerows to be lost and retained. Embedded hedgerow mitigation is summarised as follows:
 - o None of Hedgerow 1 will be retained;



- o c. 400 m of Hedgerow 2 will be retained, with only c. 25 m to be lost;
 - o c. 110 m of Hedgerow 3 will be retained, with c. 115 m to be lost; and
 - o The full extent of hedgerow 4 will be retained.
 - The proposed extraction boundary has been amended to retain additional mature trees. **Figure 2-8** shows the extent of trees to be lost and retained under the current proposals.
- 5.349 The proposed extraction area (as shown on **Figure 2-3**) has been amended in order to retain trees with moderate bat roosting potential (**TN2** and **TN3**). While it has been assessed that these trees do not currently support any bat roosts, they have the potential to do so in the future and their retention will partially mitigate for the trees lost with low bat roosting potential.
- 5.350 A buffer area of 50 m will be implemented around the pond, located at approximate ITM coordinates 626936 698083. This will retain suitable breeding habitat for common frog and smooth newt; as well as suitable terrestrial habitat within the buffer area to the proposed extraction. In addition, the proposed phased extraction work will begin in the west, with extraction located closest to the pond reserved for Phase 2 (refer to **Figure 2-2**). This will allow any potential amphibians using terrestrial habitat beyond the buffer zone, to naturally migrate away from the noise and vibration disturbance over time to the protected buffer zone; thus minimising casualties of amphibians caused from the proposed works.
- 5.351 Proposed planting, including 315m of hedgerow and 0.17ha of woodland blocks (as shown on **Figure 2-5**) will provide compensation for lost woodland, scrub, hedgerow, and grassland habitats. The proposed planting will occur in year 1, to allow the maximum time for the vegetation to become established. The vegetation will be retained indefinitely following the completion of sand and gravel extraction operations at the site.
- 5.352 Proposed native planting is detailed in **Figure 2-5**, and includes the following:
- 75 silver birch *Betula pendula*;
 - 150 hazel;
 - 75 hawthorn;
 - 150 holly;
 - 75 blackthorn;
 - 75 pedunculate oak *Quercus robur*;
 - 75 sally willow *Salix cinerea*; and
 - 75 elder.
- 5.353 Trees and hedges to be planted will comprise native species including seed-producing or fruit producing species to provide foraging opportunities for local fauna. In addition, species that are attractive to pollinating invertebrates will be included. Proposed planting will also compensate for habitat loss for nesting passerine and farmland birds.
- 5.354 **Figure 2-6** provides the restoration plan for the site and demonstrates that in addition to the above c. 370 m of new hedgerow will be planted during this phase and will be made up of the following native species:
- 140 hazel;



- 190 hawthorn;
- 190 holly;
- 140 blackthorn;
- 90 pedunculate oak;
- 90 sally willow; and
- 90 elder.

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- 5.355 Wheel wash facilities will be implemented within the Site (as shown on **Figure 2-3**). This will minimise the risk of incidental introduction or spreading of INNS within the Site from offsite.
- 5.356 As per **Chapter 2** of this EIAR, the proposed extraction area will comprise c. 8 ha requiring the losses of habitats within its extent (see **Figure 2-8**). Extraction works will be phased, beginning to the west and working east and then north (refer to **Figure 2-2**). Therefore, necessary vegetation clearance will be limited to each phase at a time.

Potential Impacts

- 5.357 **Table 5-26** details the likely impacts identified as having the potential to result in the greatest effects on an identified ecological receptor.

Table 5-26: Potential impacts to be assessed

Development phase	Description of potential impact
Construction and operation phases	Impact 1: Permanent and temporary loss or damage of habitats
	Impact 2: Habitat degradation as a result of hydrological impacts including surface water quality
	Impact 3: Habitat degradation as a result of air quality impacts
	Impact 4: Impacts on rare and protected species or upon their resting or breeding sites. Includes impacts caused by artificial lighting, noise and vibrations causing disturbance or displacement.
Decommissioning phase	Impacts are predicted to be similar but to a smaller extent than the construction phase.
Restoration phase	No impacts are predicted.

Impacts, Proposed Mitigation, and Residual Effects to Important Ecological Features

Impacts, Proposed Mitigation, and Residual Effects to Important Ecological Features of the Project 'Alone'

- 5.358 **Table 5-27** details the predicted impacts, proposed mitigation and the significance of the residual effects for each IEF identified **above**. The overall significance of the impact following mitigation is also provided.



Table 5-27: Classification of significance of impacts

Important ecological feature	Impact	Potential effects to IEF	Proposed mitigation	Significance of residual effects	Significance
Designated sites					
Slieve Bloom Mountains SPA / SAC	Impact 3: Habitat degradation as a result of air quality impacts	Dust creation caused during the construction and operation phases may deposit within the SPA due to its close proximity. Dust can have harmful effects on vegetation and may affect photosynthesis, respiration, transpiration and allow the penetration of phytotoxic gaseous pollutants (Farmer, 1991). This could lead to minor habitat degradation of Qualifying Interest habitats and may indirectly impact hen harrier by reducing the quality of their breeding and foraging habitat within the SPA. This impact would potentially exist for the duration of the proposed works. Although, degraded habitats would recover following the completion of the extraction works.	Relevant mitigation relating to air quality have been provided in the AA Screening and NIS Report. These mitigation measures are also provided in Chapter 8 – Air Quality and includes: A wide range of dust mitigation and management measures are recommended for implementation at the application site. These include the measures listed as follows: • Minimise drop heights when handling materials. Maximise use of excavated soil in construction of vegetated screening berms or in pit restoration works. Dampen materials using mist cannon, sprinklers, or water bowser • Minimise drop heights when handling material. Protect from wind where possible. • Minimise length of on-site haul routes. • Use of mist cannon / sprinklers / water bowser to dampen haul routes during dry weather periods. • Restrict vehicle speeds to less than 20kph. Install signage and undertake staff training. • Routing of traffic and away from any surrounding sensitive receptors. • Use of road sweeper to reduce the amount of material available for re-suspension. • Travel over paved surfaces / access road. • Direct all HGVs through wheel wash facility • Seed / vegetate surfaces of completed perimeter mounds and stockpiles of restoration soils. • Locate stockpiles to take advantage of any available shelter from wind. • Use of mist cannon / sprinklers / bowser to moisten materials during periods of dry and windy weather • Limit mechanical disturbance of materials more likely to become airborne and/or time operations having regard to expected weather conditions • Hardstanding areas/site roads, stockpiles with the potential to give rise to dust will be regularly watered as appropriate during dry and/or windy conditions by dust cannon, sprinklers, or water bowser. • Retention of perimeter hedgerows • Provision of screening berms Track-out Measures • When adverse conditions apply (dry, windy weather), water from a bowser will be sprayed on dry unpaved road surfaces to minimize dust rise. Any paved surfaces around the site and/or along the access	With the existing and proposed mitigation to minimise the creation and spread of dust, the proposed development will not result in any likely significant effects on the Slieve Bloom Mountains SPA. Any impacts to vegetation will be temporary and minor and any dust deposition will be removed from foliage following any rain and wind	Not significant



Important ecological feature	Impact	Potential effects to IEF	Proposed mitigation	Significance of residual effects	Significance
			road leading in and out of the site will also be sprayed as required. - All heavy goods vehicles leaving the application site will be routed through the proposed new wheel wash facility to remove and / or dampen any particulate materials attaching to the undercarriage and to prevent transport of fine particulates off-site, onto the local public road network. Good Practice Measures - Effective site management practices are critical to demonstrate the willingness of the operator to control dust emissions. Monitoring of dust deposition and recording of any complaints shall be carried out to take appropriate measures to reduce emissions in a timely manner. - Training on dust mitigation measures shall be provided to site-based staff. Training will also cover an 'emergency preparedness plan' to react quickly in case of any failure of dust mitigation measures. - A water bowser will be made available at required times to dampen down stockpiled / particulate materials and/or unpaved surfaces when adverse (dry, windy) conditions apply.	RECEIVED: 19/09/2024	
	Impact 4: Impacts on rare and protected species or upon their resting or breeding sites. Includes impacts caused by pollution, artificial lighting, noise and vibrations causing disturbance or displacement.	Noise and vibrations caused during the construction and operation phases, which may impact nearby birds, including QI species hen harrier. Disturbance may adversely affect breeding hen harrier, for example, disturbance from forestry operations has resulted in the failure of at least two nests (O'Donoghue, 2010). Furthermore, noise may impact prey species for hen harrier, within 50m of the noise source (Currie and Elliot, 1997). This may reduce the populations of prey species for hen harrier as they disperse away from the noise source and potentially away from the SPA and hen harrier territories. Disturbance to prey species may lead to a reduction in their populations. This could have a knock-on effect on the hen harrier by reducing their population and result in the conservation objectives for this QI species being undermined and leading to LSE for the QI species hen harrier.	Relevant mitigation relating to noise and air quality have been provided in the AA Screening and NIS Report. These mitigation measures are also provided in EIAR Chapter 10 – Noise and includes: - Screening berms, vegetation planting and acoustic fencing will be constructed along the boundary of the extension area prior to commencement of extraction activities and will act as acoustic barriers. Screening berms will be inspected on a regular basis and maintained as necessary. Plant - All mobile plant used at the development will have noise emission levels that comply with the limiting levels defined in EC Directive 86/662/EEC and any subsequent amendments. - All plant items will be properly and regularly maintained and operated according to the manufacturers' recommendations, in such a manner as to avoid causing excessive noise (i.e., all moving parts are kept well lubricated, all cutting edges are kept sharpened, the integrity of silencers and acoustic hoods are maintained) - All plant will be fitted with effective exhaust silencers which are maintained in good working order to meet manufacturers' noise rating levels. Any defective silencers will be replaced immediately. Traffic - Any deliveries to the site will be programmed to arrive during daytime hours only;	With the existing and proposed mitigation to minimise noise, the proposed development will not result in any likely significant effects on the Slieve Bloom Mountains SPA. Hen harrier will habituate to increased levels of noise, which will be localised and will not significantly affect the SPA habitats where this species breeds and relies on for foraging.	Not significant



Important ecological feature	Impact	Potential effects to IEF	Proposed mitigation	Significance of residual effects	Significance
			- Care will be taken when unloading vehicles to reduce or minimise potential noise disturbance to residents; - Access / internal haul roads will be kept clean and maintained in a good state of repair, i.e., any potholes are filled, and large bumps removed, to avoid unwanted rattle and “body-slap” from heavy goods vehicles; - Vehicles waiting within the site will be prohibited from leaving their engines running and there will be no unnecessary revving of engines. - Experience from other sites has shown that by implementing these measures, ambient noise levels from site activities and operations can be reduced by up to 5 dB(A).		
The River Barrow & River Nore SAC	Impact 2: Habitat degradation as a result of hydrological impacts including surface water quality	The River Barrow and River Nore SAC is located ca. 2.4 km downstream from the Site with a hydrological link via the stream located immediately south of the site boundary and the Killeen and Delour rivers. Any pollution caused (for example, spillages or surface water runoff) entering the water of these surface waters has the potential to travel downstream and affect the habitats and species designated for this European site. This may affect the QI species by altering the chemical composition of the water and potentially reducing their population and/or range. Similarly, the QI habitats may also be affected by and change to the chemical composition of the water and may be harmed as a result. This impact would persist for the duration of the construction and operation phases, with water quality improving following the completion of these phases.	Mitigation relating to water and air quality have been provided in the AA Screening and NIS Report. These mitigation measures are also provided in EIAR Chapter 7 – Water and includes: The water used on the site will comprise a ‘closed system’ and there will be no discharge into the nearby streams that are hydrologically connected to the SAC. There will be no significant abstraction of water for the proposed works on the site throughout the lifetime of the development. The sand and gravel pit will establish an environmental management system (EMS). - Environmental water monitoring will be carried out on a regular basis to demonstrate that the sand and gravel pit is not having any significant adverse effects on the surrounding environment. - 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. - Rain falling across hardstanding areas will percolate downwards and recharge to the underlying sand and gravel. There will be little or no surface water run-off or overground flow across the site; - There will be no off-site discharge from proposed development to any surface watercourse in the locality; - Outside of impermeable surface areas at the site, all surface water percolates naturally to the ground; - No re-fuelling (or servicing) of excavation plant will occur at extraction areas. - Final floor levels at the proposed pit excavations will be maintained above the underlying (seasonal maximum) groundwater level any rain falling across the pit will percolate naturally through unsaturated ground to the underlying shallow groundwater in the superficial deposits;	With the existing and proposed mitigation to avoid pollution of surface water and groundwater, the proposed development will not result in any likely significant effects on the River Barrow & River Nore SAC. Any effects will be temporary and minor and any pollution that does enter the habitat will be quickly diluted and distributed to non-harmful levels due to the transient nature of the habitat.	Not significant



Important ecological feature	Impact	Potential effects to IEF	Proposed mitigation	Significance of residual effects	Significance
			• Mobile plant and machinery will not be serviced / maintained within the sand and gravel pit to minimise the risk of uncontrolled release of polluting liquids to groundwater; • A spill kit will be available on-site to stop the migration of any minor accidental leakages or spillages should they arise; • Breedon Ireland environmental team undertake quarterly environmental audits at the site to ensure that compliance with all planning consents, licences and site environmental management system, which is accredited to ISO 14 001 standard, is both maintained and enhanced. • Implementation of these measures at the application will further minimise / reduce the potential impacts identified above. Post – Operational Stage • As noted previously, the principal activity which will be undertaken at the application site is the extraction and processing of the in-situ sand and gravel with ultimate restoration of lands returned to an agricultural after-use and for the most part will merge back into the surrounding pastoral landscape. • The restoration phase will start when all the accessible sand and gravel deposits have been exhausted. All plant associated solely with extraction and processing activities will be removed from site. The remaining pit slopes and material used in the construction of the silt lagoon and screening berms will also be regraded and the general area returned to a beneficial agricultural use over the pit floor. • A layer of overburden/silt material will be spread over the worked-out pit floor as a sub-base in the progressive restoration area. On completion of the extraction works the sand and gravel pit will be restored to an agricultural use.		
	Impact 3: Habitat degradation as a result of air quality impacts	The River Barrow and River Nore SAC is located ca. 2.4 km downstream from the Site with a hydrological link via the stream located immediately south of the site boundary and the Killeen and Delour rivers. Any pollution caused by dust creation entering these surface waters has the potential to travel downstream and affect the habitats and species designated for this European site. Dust may affect vegetation and the habitats associated with this SAC. However, given the distance between the site and the SAC, it is anticipated that the dust will have dispersed sufficiently within the aquatic habitat before reaching the SAC. This may affect the QI species by altering the chemical composition of the water and potentially	Relevant mitigation relating to noise and air quality have been provided in the AA Screening and NIS Report. These mitigation measures are also provided in EIAR Chapter 8 – Air Quality and are detailed above.		Not significant



Important ecological feature	Impact	Potential effects to IEF	Proposed mitigation	Significance of residual effects	Significance
		reducing their population and/or range. Similarly, the QI habitats may also be affected by and change to the chemical composition of the water and may be harmed as a result. This impact would persist for the duration of the construction and operation phases, with water quality improving following the completion of these phases.			
River Nore SPA	Impact 2: Habitat degradation as a result of hydrological impacts including surface water quality	The River Nore SPA is located ca. 6 km downstream from the Site with a hydrological link via the stream located immediately south of the site boundary and the Killeen and Delour rivers. Any pollution caused (for example, spillages or surface water runoff) entering the water of these surface waters has the potential to travel downstream and affect the habitats and species designated for this European site. This may affect the QI species kingfisher indirectly by affecting their prey through chemical alterations to the water. Any reduction in prey would have a knock-on effect to the QI species. This impact would persist for the duration of the construction and operation phases, with water quality improving following the completion of these phases.	Relevant mitigation relating to noise and air quality have been provided in the AA Screening and NIS Report. These mitigation measures are also provided in EIAR Chapter 7 – Water and are detailed further above.	With the existing and proposed mitigation to avoid pollution of surface water and groundwater, the proposed development will not result in any likely significant effects on the River Nore SPA Any effects will be temporary and minor and any pollution that does enter the habitat will be quickly diluted and distributed to non-harmful levels due to the transient nature of the habitat.	Not significant
	Impact 3: Habitat degradation as a result of air quality impacts	The River Nore SPA is located ca. 6 km downstream from the Site with a hydrological link via the stream located immediately south of the site boundary and the Killeen and Delour rivers. Any pollution caused by dust creation entering the water of these surface waters has the potential to travel downstream and affect the habitats and species designated for this European site. This may affect the QI species kingfisher indirectly by affecting their prey through chemical alterations to the water. Any reduction in prey would have a knock-on effect to the QI species. This impact would persist for the duration of the construction and operation phases, with water quality improving following the completion of these phases.	Relevant mitigation relating to noise and air quality have been provided in the AA Screening and NIS Report. These mitigation measures are also provided in Chapter 8 – Air Quality and are detailed further above.		Not significant
Slieve Bloom Mountains pNHA	The potential impacts, effects to IEF, proposed mitigation and significance of residual effects for the Slieve Bloom Mountains pNHA are considered to be the same as for the Slieve Bloom Mountains SPA, which are detailed fully above.				Not significant
Habitats					
Mixed broadleaved woodland	Impact 1: Permanent and temporary loss or damage of habitats	Three mature beech trees will be removed from the woodland in the northeast of the site	All retained woodland will be protected from accidental damage or loss through the erection of suitable fencing (e.g., heras fencing) around their root protection area (RPA) (under BS5837) as per Figure 2.8. This will be applied during the construction and operation phases.	The loss of the 3 mature beech trees will be compensated for with 0.17 ha of native tree planting. Whilst this will not provide direct compensation for many years, in the long-term these trees will mature to form a net woodland gain at the site. The residual effect will be adverse only in the short- to medium- term, with proposed	Not significant



Important ecological feature	Impact	Potential effects to IEF	Proposed mitigation	Significance of residual effects	Significance
			Proposed native tree planting (c. 0.17 ha) (as shown on Figure 2-5) will compensate for the loss of woodland within the site.	compensation creating additional woodland and a positive long-term effect.	
	Impact 2: Habitat degradation as a result of hydrological impacts including surface water quality	No impact to this habitat is predicted as a result of hydrological impacts including surface water quality.	No mitigation is required.	There will be no residual effects relating to this impact.	N/A
	Impact 3: Habitat degradation as a result of air quality impacts	Dust that is created that may deposit onto sensitive habitats such as broadleaved woodland. This will cause an adverse impact for the duration of the proposed extraction works. Once works have been completed, the dust levels will return to baseline levels. Without mitigation, large dust particles (greater than 30 µm) will largely deposit within 100m of sources, with intermediate particles (10 – 30 µm) likely to travel up to 200 – 500m (IAQM, 2016). Dust deposition will create ecological stress for the affected vegetation and plant communities by inhibiting photosynthesis during dry spells in weather (Holman et al., 2014; Farmer, 1991). This impact will be long-term for the duration of the proposed works and will only return to baseline levels following the completion of the works.	General good practices (as detailed in Table 8-15 of EIAR Chapter 8 – Air Quality) will minimise dust creation caused from the proposed sand extraction works. These include the following: • Minimise drop heights when handling materials by excavators / HGV loading. • Minimise length of on-haul routes. • Use of mist cannon / sprinklers / water bowser to dampen haul routes and stockpiles. • Restrict vehicle speeds to less than 20kph. Install signage and undertake staff training. • Routing of traffic and away from any surrounding sensitive receptors. • Use of road sweeper to reduce the amount of material available for re-suspension. • Travel over paved surfaces / access road. • Direct all HGVs through wheel wash facility. • Locate stockpiles to take advantage of any available shelter from wind. • Limit mechanical disturbance of materials more likely to become airborne and/or time operations having regard to expected weather conditions. • Air quality will be regularly measured throughout the operational phase.	With the proposed mitigation, the residual effects caused from dust creation will be minimised to a point whereby the residual effects will last for the duration of the construction and operational phases but will be slight and highly localised. Furthermore, the habitat will return to baseline levels following the completion of the proposed works. Therefore, the residual effects will be not significant.	Not significant
Riparian woodland	Impact 1: Permanent and temporary loss or damage of habitats	No removal of riparian woodland will be required, and no impacts related to loss or damage of this habitat is predicted.	No mitigation required	There will be no residual effects relating to this impact.	N/A
	Impact 2: Habitat degradation as a result of hydrological impacts including surface water quality	No impact to this habitat is predicted as a result of hydrological impacts including surface water quality.	No mitigation is required.	There will be no residual effects relating to this impact.	N/A
	Impact 3: Habitat degradation as a result of air quality impacts	Dust that is created that may deposit onto sensitive habitats such as riparian woodland. This will cause an adverse impact for the duration of the proposed extraction works. Once works have been completed, the dust levels will return to baseline levels. Dust deposition will create ecological stress for the affected vegetation and plant communities by inhibiting photosynthesis during dry spells in weather (Holman et al., 2014; Farmer, 1991).	The general good practices (as detailed in Table 8-15 of the Chapter 8 – Air Quality) will minimise dust creation caused from the proposed sand extraction works and are detailed above.	With the proposed mitigation, the residual effects caused from dust creation will be minimised to a point whereby the residual effects will last for the duration of the construction and operational phases but will be slight and highly localised. Furthermore, the habitat will return to baseline levels following the completion of the proposed works. Therefore, the residual effects will be not significant.	Not significant



Important ecological feature	Impact	Potential effects to IEF	Proposed mitigation	Significance of residual effects	Significance
		This impact will be long-term for the duration of the proposed works and will only return to baseline levels following the completion of the works.			
Scrub	Impact 1: Permanent and temporary loss or damage of habitats	There will be a permanent loss of a c. 1.89 ha of scrub habitat located within the proposed extraction area. This impact will be adverse and permanent and is assessed to be significant on a local level.	The proposed extraction area boundary has been designed to retain existing scrub located along the north-east and southern boundary. Perimeter screening berms constructed along the eastern and southern boundaries of the proposed extraction area using the stripped topsoil and overburden soils and some of this area will naturally develop scrub habitat as it re-vegetates over time. Areas of the site will be left to naturally regenerate during and the restoration phase (see Figure 2-6), including the 0.82 ha comprising the previous extraction area that now comprises exposed sand, gravel or till.	There will be a net loss of 1.89 ha of scrub habitat. This is expected to cause a slight adverse ecological impact as scrub is an ecologically valuable habitat to a range of fauna. The design contains embedded mitigation through the retention of 1.2ha of scrub outside the extraction area and natural regeneration of the existing pit void to be facilitated at the restoration phase. Given this, and the fact that scrub is a common and widespread habitat, the impact is not considered to be significant.	Not significant
	Impact 2: Habitat degradation as a result of hydrological impacts including surface water quality	No impact to this habitat is predicted as a result of hydrological impacts including surface water quality.	No further mitigation is required.	There will be no residual effects relating to this impact.	N/A
	Impact 3: Habitat degradation as a result of air quality impacts	Dust that is created that may deposit onto sensitive habitats such as scrub. This will cause an adverse impact for the duration of the proposed extraction works. Once works have been completed, the dust levels will return to baseline levels. Dust deposition will create ecological stress for the affected vegetation and plant communities by inhibiting photosynthesis during dry spells in weather (Holman et al., 2014; Farmer, 1991). This impact will be long-term for the duration of the proposed works and will only return to baseline levels following the completion of the works.	The general good practices (as detailed in Table 8-15 of the Chapter 8 – Air Quality) will minimise dust creation caused from the proposed sand extraction works and are detailed above.	With the proposed mitigation, the residual effects caused from dust creation will be minimised to a point whereby the residual effects will last for the duration of the construction and operational phases but will be slight and highly localised. Furthermore, the habitat will return to baseline levels following the completion of the proposed works. Therefore, the residual effects will be not significant.	Not significant
Other artificial lakes and ponds	Impact 1: Permanent and temporary loss or damage of habitats	There will be no loss or damage to this habitat through the project design (see Embedded mitigation) retaining this habitat, including a c. 50m buffer zone.	No further mitigation is required.	There will be no residual effects relating to this impact.	Not significant
	Impact 2: Habitat degradation as a result of hydrological impacts including surface water quality	No impacts are predicted ng to the water quality due to the Embedded mitigation. Chapter 7 – Water details that there will be no extraction of water from this habitat. Nor will the proposed extraction extract below the ground water level.	EIAR Chapter 7 – Water details mitigation measures that apply to the hydrological impacts including surface water quality and is detailed further above. The Embedded mitigation provides a c. 50 m buffer between this habitat and the proposed extraction zone boundary. This is a sufficient distance to avoid potential pollution events.	There will be no residual effects relating to this impact.	Not significant
	Impact 3: Habitat degradation as a result of air quality impacts	Dust that is created that may deposit onto sensitive habitats such as pond. This will cause an adverse impact for the duration of the proposed extraction works. Once works have been completed, the dust levels will return to baseline levels. Dust deposition will create ecological stress for the affected vegetation and plant communities (i.e., bank and emergent vegetation) by inhibiting	The general good practices (as detailed in Table 8-15 of EIAR Chapter 8 – Air Quality) will minimise dust creation caused from the proposed sand extraction works and are detailed above.	With the proposed mitigation, the residual effects caused from dust creation will be minimised to a point whereby the residual effects will last for the duration of the construction and operational phases but will be slight and highly localised. Furthermore, the habitat will return to baseline levels following the completion of the proposed works.	Not significant



Important ecological feature	Impact	Potential effects to IEF	Proposed mitigation	Significance of residual effects	Significance
		photosynthesis during dry spells in weather (Holman et al., 2014; Farmer, 1991). In addition, the deposition of dust into this aquatic habitat may alter the pH and chemical composition of the water, causing further adverse effects to the flora and fauna it supports. This impact will be long-term for the duration of the proposed works and will only return to baseline levels following the completion of the works.		Therefore, the residual effects will be not significant.	
Improved agricultural grassland	Impact 1: Permanent and temporary loss or damage of habitats	The proposed development will require the long-term removal of c. 4.45 ha of the improved agricultural grassland. This habitat is of limited ecological value due to its active nature as grazed pasture for cattle. However, it does still provide value for foraging species including birds, bats and likely badgers. Therefore, the loss of this habitat will be adverse.	Approximately 1.2 ha of grassland will be retained, located to the east of the site., surrounding the pond. This habitat will be appropriately protected from accidental loss or damage during the construction/operation phase. During the restoration phase of the project, the extraction area is the be restored to agricultural land. This will restore this habitat to its baseline state.	The habitat will undergo medium-term loss until the restoration phase, at which point the habitat will be fully restored. The residual effects are, therefore, short-term adverse, but are not considered significant.	Not Significant
	Impact 2: Habitat degradation as a result of hydrological impacts including surface water quality	No impact to this habitat is predicted as a result of hydrological impacts including surface water quality.	No mitigation is required.	There will be no residual effects relating to this impact.	N/A
	Impact 3: Habitat degradation as a result of air quality impacts	Dust that is created that may deposit onto sensitive habitats such as grassland. This will cause an adverse impact for the duration of the proposed extraction works. Once works have been completed, the dust levels will return to baseline levels. Dust deposition will create ecological stress for the affected vegetation and plant communities by inhibiting photosynthesis during dry spells in weather (Holman et al., 2014; Farmer, 1991). This impact will be long-term for the duration of the proposed works and will only return to baseline levels following the completion of the works.	The general good practices (as detailed in Table 8-15 of the Chapter 8 – Air Quality) will minimise dust creation caused from the proposed sand extraction works and are detailed above.	With the proposed mitigation, the residual effects caused from dust creation will be minimised to a point whereby the residual effects will last for the duration of the construction and operational phases but will be slight and highly localised. Furthermore, the habitat will return to baseline levels following the completion of the proposed works. Therefore, the residual effects will be not significant.	Not significant
Hedgerows	Impact 1: Permanent and temporary loss or damage of habitats	In total 310 m of hedgerow habitat will be removed to facilitate the proposed works (i.e., 29% of the existing hedgerows). This impact will be permanent and adverse. In summary: 170 m (full extent) of Hedgerow 1 will be removed; 25 m of Hedgerow 2 will be removed; 115 m of Hedgerow 3 will be removed; - Hedgerow 4 will be retained; - In total 310 m of hedgerow will be removed. Hedgerows form important linear features across the landscape that can act as commuting corridors for bats, and nesting habitat for birds. They also provide potential foraging opportunities for a range of species. Hedgerow losses will cause a reduction of ecological connectivity across the site and the surrounding landscape.	Habitat losses will be limited to the phased extraction areas and will not occur outside the proposed extraction area as detailed on Figure 2-3. Where possible, hedgerows have been retained under the current proposals. As detailed in Embedded mitigation. C. 400 m of Hedgerow 2 will be retained; C. 110 m of the Hedgerow 3 will be retained; and - The full extent of Hedgerow 4 is to be retained. All retained hedgerows will be protected from accidental damage or loss through the erection of suitable fencing (e.g., heras fencing) around their root protection area (RPA). c. 315 m of new hedging will be planted on commencement and c. 370 m of new hedgerow will be planted under Restoration Phase 3 (see Figure 2-6). This will compensate for the 310 m to be lost. However, it will require several years to reach a level of maturity to fully	In the short- to medium-term there will be a loss of 310 m of hedgerow habitat and a reduction of ecological connectivity. In the long-term, following the restoration phase, there will be a net gain of 375 m of hedgerow habitat on the site., compensating the ecological corridors lost through the removal of the existing hedgerows. Therefore, the residual effects to hedgerows are not considered to be significant.	Not Significant



Important ecological feature	Impact	Potential effects to IEF	Proposed mitigation	Significance of residual effects	Significance
			compensate for the hedgerow loss and will only be implemented following the completion of the extraction works.		
	Impact 2: Habitat degradation as a result of hydrological impacts including surface water quality	No impact to this habitat is predicted as a result of hydrological impacts including surface water quality.	No mitigation is required.	There will be no residual effects relating to this impact.	N/A
	Impact 3: Habitat degradation as a result of air quality impacts	Dust that is created that may deposit onto sensitive habitats such as hedgerows. This will cause an adverse impact for the duration of the proposed extraction works. Once works have been completed, the dust levels will return to baseline levels. Dust deposition will create ecological stress for the affected vegetation and plant communities by inhibiting photosynthesis during dry spells in weather (Holman et al., 2014; Farmer, 1991). This impact will be long-term for the duration of the proposed works and will only return to baseline levels following the completion of the works.	The general good practices (as detailed in Table 8-15 of the Chapter 8 – Air Quality) will minimise dust creation caused from the proposed sand extraction works and are detailed above.	With the proposed mitigation, the residual effects caused from dust creation will be minimised to a point whereby the residual effects will last for the duration of the construction and operational phases but will be slight and highly localised. Furthermore, the habitat will return to baseline levels following the completion of the proposed works. Therefore, the residual effects will be not significant.	Not significant
Treelines	Impact 1: Permanent and temporary loss or damage of habitats	The proposed extraction works will require the loss of 3 mature beech trees (c. 45 m of the existing c. 210 m of treelines), which are located to the northeast of the site and within the proposed extraction area (refer to Figure 2-8). Treelines form important linear features across the landscape that can act as commuting corridors for bats, and nesting habitat for birds. They also provide potential foraging opportunities for a range of species. Treeline losses will cause a reduction of ecological connectivity across the site and the surrounding landscape.	The proposed extraction area boundary was revised in response to ecological advice during the EIA process to avoid trees with bat roosting potential (refer to Embedded mitigation). The proposed design retains the majority (c. 165 m) of existing treelines. All retained treelines will be protected from accidental damage or loss through the erection of suitable fencing (e.g., heras fencing) around their RPA (under BS5837). Moreover, 0.17ha of native tree planting will be planted as shown on Figure 2-5, although this will take several years to reach maturity and fully compensate for the treelines to be lost.	There will be loss of 45m of existing treeline in the short- and medium-term, however the compensatory 0.17ha tree planting will create a net gain in the long-term. Because it will take time for them to reach maturity, the predicted impacts to treelines and trees are expected to be slight and the loss of treelines will be limited to the short- and medium-term, until the compensation treelines mature. The planting of additional trees during the operational landscaping and the natural re-vegetating of the site during the restoration phase will have a long-term positive effect on native tree numbers on the Site.	Not significant
	Impact 2: Habitat degradation as a result of hydrological impacts including surface water quality	No impact to this habitat is predicted as a result of hydrological impacts including surface water quality.	No mitigation is required.	There will be no residual effects relating to this impact.	N/A
	Impact 3: Habitat degradation as a result of air quality impacts	Dust that is created that may deposit onto sensitive habitats such as treelines. This will cause an adverse impact for the duration of the proposed extraction works. Once works have been completed, the dust levels will return to baseline levels. Dust deposition will create ecological stress for the affected vegetation and plant communities by inhibiting photosynthesis during dry spells in weather (Holman et al., 2014; Farmer, 1991). This impact will be long-term for the duration of the proposed works and will only return to baseline levels following the completion of the works.	The general good practices (as detailed in Table 8-15 of the Chapter 8 – Air Quality) will minimise dust creation caused from the proposed sand extraction works and are detailed above.	With the proposed mitigation, the residual effects caused from dust creation will be minimised to a point whereby the residual effects will last for the duration of the construction and operational phases but will be slight and highly localised. Furthermore, the habitat will return to baseline levels following the completion of the proposed works. Therefore, the residual effects will be not significant.	Not significant
Wet grassland	Impact 1: Permanent and temporary loss or damage of habitats	This habitat is located outside the proposed extraction area. Therefore, there will be no loss of this habitat as a result of the proposed works.	No mitigation is required.	There will be no residual effects relating to this impact.	N/A



Important ecological feature	Impact	Potential effects to IEF	Proposed mitigation	Significance of residual effects	Significance
	Impact 2: Habitat degradation as a result of hydrological impacts including surface water quality	No impact to this habitat is predicted as a result of hydrological impacts including surface water quality.	No mitigation is required.	There will be no residual effects relating to this impact.	N/A
	Impact 3: Habitat degradation as a result of air quality impacts	Dust that is created that may deposit onto sensitive habitats such as grassland. This will cause an adverse impact for the duration of the proposed extraction works. Once works have been completed, the dust levels will return to baseline levels. Dust deposition will create ecological stress for the affected vegetation and plant communities by inhibiting photosynthesis during dry spells in weather (Holman et al., 2014; Farmer, 1991). This impact will be long-term for the duration of the proposed works and will only return to baseline levels following the completion of the works.	The general good practices (as detailed in Table 8-15 of EIAR Chapter 8 – Air Quality) will minimise dust creation caused from the proposed sand extraction works and are detailed above.	With the proposed mitigation, the residual effects caused from dust creation will be minimised to a point whereby the residual effects will last for the duration of the construction and operational phases but will be slight and highly localised. Furthermore, the habitat will return to baseline levels following the completion of the proposed works. Therefore, the residual effects will be not significant.	Not significant
Eroding/upland river	Impact 1: Permanent and temporary loss or damage of habitats	This habitat is located outside the proposed extraction area. Therefore, there will be no loss of this habitat as a result of the proposed works.	No mitigation is required.	There will be no residual effects relating to this impact.	N/A
	Impact 2: Habitat degradation as a result of hydrological impacts including surface water quality	EIAR Chapter 7 – Water details the following potential impacts that may occur to the river habitat and may lead into the Killeen River: - The stripping and storage of topsoil and subsoils, where present, could result in sediment being carried in recharge impacting the underlying shallow groundwater and locally important bedrock aquifer which, in turn, could potentially impact the Killeen River which is in hydraulic connection with it. Accidental leaking or spillage of fuel and/or other petroleum-based products could also impact on the Killeen River. - The stripping and storage of topsoil and subsoils, where present, could result in sediment being carried in recharge impacting the underlying shallow groundwater and locally important bedrock aquifer which, in turn, could potentially impact the Killeen River which is in hydraulic connection with it. Accidental leaking or spillage of fuel and/or other petroleum-based products could also impact on the Killeen River. These impacts may affect the water quality and impact fish, aquatic invertebrates and other fauna that rely on this habitat. The River Barrow & River Nore SAC is located downstream of the Killeen River and is located just past the confluence with the Delour River c2.88 km downstream to the southeast. Any indirect impact on Killeen River could impact on the River Barrow & River Nore SAC, located at distance downstream. This is therefore, hydrologically connected to the site and any pollution events to the stream will travel downstream and may affect the SAC. This is	The removal of livestock from the site will be required to facilitate the construction/operation phase of the development. Chapter 7 – Water details mitigation measures that apply to the hydrological impacts including surface water quality and is detailed further above.	The removal of the cattle from the land during the construction and operational phases will lead to a slight positive impact on the stream by improving the surface quality in stream by removing livestock entering stream and causing a direct contact with livestock waste. This is supported in the Aquatic Ecology Report, which attributed the lower Q-sampling results to likely cattle poaching. Any pollution that does enter the habitat will be quickly diluted and distributed to non-harmful levels due to the transient nature of the habitat. With the proposed mitigation, the risk of accidental pollution events entering the water is extremely low, with potential spillages being easily contained within the site and in low quantities. Any pollution that does enter the habitat will be quickly diluted and distributed to non-harmful levels due to the transient nature of the habitat. Therefore, the residual effects will not be significant.	Not significant



Important ecological feature	Impact	Potential effects to IEF	Proposed mitigation	Significance of residual effects	Significance
		detailed fully in the AA Screening and NIS, provided alongside this report, and summarised above.			
	Impact 3: Habitat degradation as a result of air quality impacts	Dust that is created that may deposit onto sensitive habitats such as the river. This will cause an adverse impact for the duration of the proposed extraction works. Once works have been completed, the dust levels will return to baseline levels. Dust deposition will create ecological stress for the affected vegetation and plant communities (i.e., bank and emergent vegetation) by inhibiting photosynthesis during dry spells in weather (Holman et al., 2014; Farmer, 1991). In addition, the deposition of dust into this aquatic habitat may alter the pH and chemical composition of the water, causing further adverse effects to the flora and fauna it supports. This impact will be long-term for the duration of the proposed works and will only return to baseline levels following the completion of the works.	The general good practices (as detailed in Table 8-15 of the Chapter 8 – Air Quality) will minimise dust creation caused from the proposed sand extraction works and are detailed above.	With the proposed mitigation, the residual effects caused from dust creation will be minimised to a point whereby the residual effects will last for the duration of the construction and operational phases but will be slight and highly localised. Furthermore, the habitat will return to baseline levels following the completion of the proposed works. Therefore, the residual effects will not be significant.	Not significant
Protected Flora and Fauna					
Common frog and smooth newt	Impact 4: Impacts on rare and protected species or upon their resting or breeding sites. Includes impacts caused by pollution, artificial lighting, noise and vibrations causing disturbance or displacement.	The losses of the habitats within the proposed extraction area will reduce the potential habitat for this species, including potential refugia and hibernation habitat through the removal of grassland, scrub, and woodland. Additionally, general operation activities risks directly harming individuals that may be present. Any impact to the pond habitat would significantly impact both species as this comprises an isolated breeding habitat for them, with no alternative identified in the site or the surrounding area. This is detailed further above.	As detailed in the Embedded mitigation, the breeding pond located to the east of the site will be retained in the current proposals. In addition a buffer zone of c. 50m of the surrounding habitat will be retained, which will provide continued suitable terrestrial habitat to these species. This buffer will also ensure that no potential pollution events can reach the breeding place for these species. This buffer will include habitats suitable for the terrestrial phases for newts and provide areas for refugia and hibernation. An Ecological Clerk of Works (ECoW), comprising a qualified ecologist, will be present on the site throughout the vegetation removal to ensure that no protected fauna are present. Any that are found will be moved to a similar retained habitat. Mitigation measured relating to the potential impacts to the breeding pond are detailed above. Relevant mitigation relating to noise have been provided in the are provided in Chapter 10 – Noise and are detailed further above.	With the proposed mitigation, common frog and smooth newt populations will be able to continue existing on the site throughout the duration of the proposed works. They may undergo a minor population decline during this time. However, the site's return to agricultural use following the completion of the proposed works will allow the population of both species to return to normal baseline levels. Therefore, the residual effect is considered minor and are considered to not be significant.	Not significant
Common lizard	Impact 4: Impacts on rare and protected species or upon their resting or breeding sites. Includes impacts caused by pollution, artificial lighting, noise and vibrations causing disturbance or displacement.	The losses of the habitats within the proposed extraction area will reduce the potential habitat for this species. Additionally, general operation activities risks directly harming individuals that may be present.	Habitats are to be retained and enhanced through Embedded mitigation, including natural regeneration of the pit, which will provide a mosaic of bare ground and exposed areas suitable for basking as well as more densely vegetated areas suitable for shelter and refugia that could be used by this species. In addition, the phased nature of the works will allow reptiles to naturally migrate away from sources of disturbance. An ECoW will be present on the site throughout the vegetation removal to ensure that no protected fauna are	There will also be a reduction of suitable habitat for reptiles limited to the proposed extraction area in the short- and medium-term. This may cause a reduction in the population of reptiles (if present). However, the site will be restored following the completion of the sand extraction operations. This will allow reptiles to recolonise and recover their population. Therefore, the residual effect is considered minor and are considered to not be significant.	Not significant



Important ecological feature	Impact	Potential effects to IEF	Proposed mitigation	Significance of residual effects	Significance
			present. Any that are found will be moved to a similar retained habitat. Following the completion of the operations, the site will be restored to its current agricultural land use allowing potential reptile populations in the surrounding area to naturally disperse and repopulate the site. Relevant mitigation relating to noise have been provided in the are provided in Chapter 10 – Noise and are detailed further above.		
Hen harrier	Impact 4: Impacts on rare and protected species or upon their resting or breeding sites. Includes impacts caused by pollution, artificial lighting, noise and vibrations causing disturbance or displacement.	It has been assessed that the Site is not used by nesting or wintering hen harrier but may be used by foraging hen harrier. Therefore there will be no impact to any hen harrier nest sites, which are located in the SPA due to habitat loss. The potential impacts to the Slieve Bloom Mountains SPA are detailed above. The losses of the habitats within the proposed extraction area will cause a reduction in suitable foraging habitat for hen harrier through the removal of woodland, scrub, hedgerows and grassland that support hen harrier prey such as small passerine birds and small mammals. This would affect a nationally important population of 11 hen harrier pairs recorded in the nearby Slieve Bloom Mountains SPA and this impact would last for the duration of the construction and operational phases. However, it is unlikely that the losses of habitats would lead to a reduction in the numbers of hen harrier within the Slieve Bloom Mountains SPA as the habitats within the site form only minor areas of foraging habitat for this hen harrier population; and it is anticipated that they rely more on the habitats within the SPA rather than the surrounding agricultural lands (Ruddock, 2021). Moreover, significant areas of suitable foraging habitat will remain unimpacted in the surrounding areas that will continue to support the SPA population of hen harriers. The noise created by the construction and operation phases may cause disturbance to hen harrier up to 1 km from the source (Goodship and Furness, 2022). The EIAR Chapter 10 – Noise, conducted assessments of noise on various receptors, including within and close to the SPA (see Figure 10-1). Noise creation has the potential to affect breeding hen harrier habitat within the SPA as well as foraging hen harriers using the Site. Noise may cause disturbance that may impact nesting and foraging behaviours of hen harrier and noise impacts caused by the proposed development may cause hen harrier to avoid foraging within areas immediately surrounding the Site. However, most of the SPA is located outside the 1 km area and noise levels will decrease with increased distance from the source. Therefore, hen harriers nesting within	No SPA-related habitats will be lost through the proposed development. Suitable habitat for prey species for hen harrier will be retained, enhanced and created in the long-term through native tree planting, hedgerow planting, and natural regeneration of areas (see Figure 2-6). The Site will be restored to its current agricultural land use following completion of operation phase. This will provide habitats for prey species of hen harrier and will allow the species to use the Site for foraging purposes. Relevant mitigation relating to noise have been provided in the are provided in EIAR Chapter 10 – Noise and are detailed further above. Such measures include: - The implementation of a construction noise and vibration management plan. This will: - Outline management processes and mitigation measures to be utilised to remove or reduce significant noise impacts from the construction works; - Define noise and vibration monitoring and reporting; - Include method statements for each phase of the works including associated specific measures to minimise noise and vibration in so far as is reasonably practicable for the specific works covered by each plan and a detailed appraisal of the resultant construction noise and vibration generated. - Screening berms, vegetation planting and acoustic fencing will be constructed along the boundary of the extension area prior to commencement of extraction activities and will act as acoustic barriers. Screening berms will be inspected on a regular basis and maintained as necessary. Plant - All mobile plant used at the development will have noise emission levels that comply with the limiting levels defined in EC Directive 86/662/EEC and any subsequent amendments. - All plant items will be properly and regularly maintained and operated according to the manufacturers' recommendations, in such a manner as to avoid causing excessive noise (i.e., all moving	The habitat losses during the duration of the operational phase of the development will increase foraging pressure on a nationally important hen harrier population for the duration of the construction and operation phases. However, with the implementation of the proposed mitigation, this effect will be minor to the SPA hen harrier population, that will be able to continue to use SPA habitats as well as habitats in the surrounded landscape that will be unaffected by the proposed development. Therefore, this impact is anticipated to have only a minor effect on hen harriers. Over the long-term the site will be restored to a similar land use as it is currently and there will be no significant change in the quantity or quality of foraging habitat for hen harriers associated with the SPA. Any minor effects to hen harrier population over the course of the works will be limited to the construction and operation phases and will be reversible in the long-term. Noise is not anticipated to be a significant effect on hen harrier as noise disturbance to birds generally causes disturbance when loud and acute. The noise disturbance may cause some initial disturbance to hen harrier. However, they will soon habituate to the regular ongoing noise especially during the operational phase and where visual stimuli is not present (Smit and Visser, 1993). Noise impacts will only be significant within the Site and the immediate surrounding area. Significant areas of the SPA and surrounding lands likely used by this species will not be affected, including the important breeding locations within the SPA. Breeding hen harrier are likely located beyond the 750m buffer zone recommended by Goodship and Furness (2022) and therefore noise impacts will not be significant to breeding hen harrier. The mitigation provided will further limit any possible minor effects to this species so that residual effects will be not significant. Dust impacts will not directly affect hen harrier, and the mitigation provided will further minimise the possible minor effects of dust deposition to habitats that support this species.	Not significant



Important ecological feature	Impact	Potential effects to IEF	Proposed mitigation	Significance of residual effects	Significance
		areas of the SPA beyond 1 km will be unimpacted. Breeding hen harrier are likely located beyond the 750m buffer zone recommended by Goodship and Furness (2022) and therefore noise impacts will not be significant to breeding hen harrier. Only peripheral areas of the SPA will be affected by noise and these areas are least likely to be used by nesting hen harrier due to existing disturbance from agricultural, forestry, and recreational land use that already affect them. As stated in the EIAR Chapter 10 – Noise, noise impacts will be limited to the proposed hours for operations (extraction, processing and haulage) at the site, which will be 07.00 hours to 18.00 hours Monday to Friday inclusive and 07.00 hours to 14.00 hours on Saturdays. No operations will be carried out on Sundays or Public Holidays. No mechanical plant or process will be run outside of normal operational hours. There will be no noise impacts during the evenings or night period. Noise impacts will last for the duration of the construction and operation phases. Dust created during the construction may impact habitats within the SPA, as dust deposition on vegetation inhibits photosynthesis. Dust deposition will create ecological stress for the affected vegetation and plant communities (i.e., bank and emergent vegetation) by inhibiting photosynthesis during dry spells in weather (Holman et al., 2014; Farmer, 1991). This will not directly impact hen harriers but may over time cause a degradation of habitats that support their prey and may even reduce prey over the long-term. However, dust creation will be localised and large dust particles (greater than 30 µm) will largely deposit within 100m of sources, with intermediate particles (10 – 30 µm) likely to travel up to 200 – 500m (IAQM, 2016). Therefore, the majority of the SPA will be unaffected, with only peripheral areas of the SPA (i.e., those least likely to be used by hen harriers) likely to be impacted. Moreover, the main effects from dust will quickly be dispersed by rain and wind from the vegetation and this impact is anticipated to be minor to the vegetation, and imperceptible to hen harriers.	parts are kept well lubricated, all cutting edges are kept sharpened, the integrity of silencers and acoustic hoods are maintained) • All plant will be fitted with effective exhaust silencers which are maintained in good working order to meet manufacturers' noise rating levels. Any defective silencers will be replaced immediately. Traffic • Any deliveries to the site will be programmed to arrive during daytime hours only; • Care will be taken when unloading vehicles to reduce or minimise potential noise disturbance to residents; • Access / internal haul roads will be kept clean and maintained in a good state of repair, i.e., any potholes are filled, and large bumps removed, to avoid unwanted rattle and “body-slap” from heavy goods vehicles; • Vehicles waiting within the site will be prohibited from leaving their engines running and there will be no unnecessary revving of engines. • Experience from other sites has shown that by implementing these measures, ambient noise levels from site activities and operations can be reduced by up to 5 dB(A). Hen harrier will use mainly heath habitat for breeding (Hardey et al., 2013). Heath spatial data was downloaded from the NPWS website (NPWS, 2019c), which was 200m at the closest point. However, this was located by a nearby active farm and is considered unlikely to be used by breeding hen harrier. Most of the heath habitat that is located in upland areas of the SPA, and more likely to be used by breeding hen harriers is located beyond 750 m from the site, and beyond the 300 – 750m buffer zones that is recommended by NatureScot (Goodship and Furness, 2022). Relevant mitigation relating to noise have been provided in the are provided in EIAR Chapter 8 – Air and are detailed as follows: • Minimise drop heights when handling materials by excavators / HGV loading. • Minimise length of on-haul routes. • Use of mist cannon / sprinklers / water bowser to dampen haul routes and stockpiles. • Restrict vehicle speeds to less than 20kph. Install signage and undertake staff training. • Routing of traffic and away from any surrounding sensitive receptors. • Use of road sweeper to reduce the amount of material available for re-suspension. • Travel over paved surfaces / access road. • Direct all HGVs through wheel wash facility.		



Important ecological feature	Impact	Potential effects to IEF	Proposed mitigation	Significance of residual effects	Significance
			- Locate stockpiles to take advantage of any available shelter from wind. - Limit mechanical disturbance of materials more likely to become airborne and/or time operations having regard to expected weather conditions. - Air quality will be regularly measured throughout the operational phase.		
Other birds of prey	Impact 4: Impacts on rare and protected species or upon their resting or breeding sites. Includes impacts caused by pollution, artificial lighting, noise and vibrations causing disturbance or displacement.	No other birds of prey were identified as breeding on the site. However, suitable habitat exists through woodland, and they may uptake the site before works commence. The 0.4 ha of woodland removal will reduce the suitable breeding habitat for birds of prey such as buzzards. Removal of this habitat as well as others such as grasslands will also cause a reduction in habitat for potential prey items such as small mammals. These may cause a reduction of the populations of birds of prey on the local level by increasing foraging pressure. All birds are protected under the Wildlife Acts during the nesting season. Vegetation removal during the nesting bird season (March to August inclusive) risks disturbing and/or harming nesting birds and causing an offence under the Wildlife Acts.	All vegetation removal will be undertaken outside the nesting bird season (i.e., vegetation removal will be limited to September to February) in order to avoid risking harm or disturbance to nesting birds. Any vegetation removal that must be undertaken within the nesting bird season must undergo a nesting bird check by a qualified ecologist. Any nesting birds will be protected by an appropriate buffer to be determined on the day by the ecologist. Relevant mitigation relating to noise have been provided in the are provided in Chapter 10 – Noise and are detailed further above.	There will be a reduction of suitable foraging and nesting habitat for birds of prey on the site over the short- and medium- term. However, the site will be restored to its current land use following the completion of the proposed works and birds of prey will be able to use the site again in the long-term.	Not significant
Amber listed breeding birds: willow warbler & goldcrest	Impact 4: Impacts on rare and protected species or upon their resting or breeding sites. Includes impacts caused by pollution, artificial lighting, noise and vibrations causing disturbance or displacement.	The removal of woodland and scrub habitats will cause a reduction of suitable breeding and foraging habitat for all birds recorded present on the site, including amber-listed willow warbler and goldcrest⁴¹. All birds are protected under the Wildlife Acts during the nesting season. Vegetation removal during the nesting bird season (March to August inclusive) risks disturbing and/or harming nesting birds and causing an offence under the Wildlife Acts.	Retained habitats detailed in the Embedded mitigation will provide habitats for this species to still exist on the site, however, in a reduced population. Native tree planting and natural regeneration detailed within the Embedded mitigation will compensate for the habitats lost over the long-term. The restoration of the site back to agricultural land use following the restoration phase (see Figure 2-6) will allow the site to support similar numbers of this species in the long-term. All vegetation removal will be undertaken outside the nesting bird season (i.e., vegetation removal will be limited to September to February) in order to avoid risking harm or disturbance to nesting birds. Any vegetation removal that must be undertaken within the nesting bird season must undergo a nesting bird check by the ECoW. Any nesting birds will be protected by an appropriate buffer to be determined on the day by the ECoW. Relevant mitigation relating to noise have been provided in the are provided in Chapter 10 – Noise and are detailed further above.	There will be a net loss of habitat over the operational phase of the development, adversely affecting the populations of the birds on a local level, including amber-listed species. This impact will be limited to the short- to medium-term. These species will be able to use the site in similar numbers following the restoration phase and the restoration of the site to agricultural land-use, allowing their populations to recover to baseline levels.	Not significant
General farmland and passerine bird assemblage					
<i>Pipistrellus</i> spp. <i>Myotis</i> spp.	Impact 4: Impacts on rare and protected species or upon their	No confirmed roosts were identified. However, seven trees with low bat roosting potential are	Four of the seven low-potential trees for roosting bats will be retained under the current proposals. All moderate	There will be a reduction of suitable commuting, foraging and low potential roosting trees on the site	Not significant

⁴¹ Note that other amber listed-birds starling and swallow were assessed as non-breeding and have been included in the general farmland and passerine bird assemblage.



Important ecological feature	Impact	Potential effects to IEF	Proposed mitigation	Significance of residual effects	Significance
Leisler's bat Brown long-eared	resting or breeding sites. Includes impacts caused by pollution, artificial lighting, noise and vibrations causing disturbance or displacement.	present within the site. Of these, three are located within the proposed extraction area and will require removal causing a reduction in potential roosting value within the site, which may lead to a reduction of bats recorded on the site. Impacts will affect mostly common pipistrelle, which were the most abundant species on the site, with impacts also to smaller numbers of soprano pipistrelle, Daubenton's bat, whiskered bat and Leisler's bat evaluated as being important on a county level; and brown long-eared bat, evaluated as being important on a local level. The removal of hedgerows and treelines will cause an overall reduction of suitable commuting habitat through the site for bats is disrupt existing linear commuting habitats that are used by the bat species recorded. Additional reductions of foraging habitat will be caused through the removal of woodland, scrub, grassland, hedgerows and treelines. The proposed works will cause an increase in noise, vibrations and artificial lighting. All of these would negatively affect bat populations existing on the site and would impact the commuting and foraging behaviour of bats currently using the site (ILP & BCT, 2023). The increase in noise levels will not affect any bat roosts as no confirmed roosts were identified. All of these impacts would affect natural behaviours of bats on the site and reduce or inhibit the current levels of foraging and commuting behaviours; thus causing a potential reduction in the populations of the bat species recorded.	potential trees will be retained in the current proposals as detailed in the Embedded mitigation, avoiding the loss of the trees with the most potential to support bat roosts in the future. Retained habitats around the boundary of the proposed extraction area (see Embedded mitigation) will allow bats to continue to commute around the site to other areas (offsite) and provide foraging opportunities for these species. Proposed native planting of trees and hedgerows (see Figure 2-6) will compensate for the habitats lost. The site will be restored to agricultural land use following the completion of the sand extraction works. Suitable habitats for badgers will be restored on the site at this point and badger populations in the local area will recover to their baseline levels. Proposed works will only be undertaken in the daylight, other than during winter when lighting may be required and when bats are inactive. Artificial lighting will only be implemented at limited areas (i.e., near machinery / buildings etc.). All necessary lighting will be angled downwards and away from any retained or created habitats of value to bats. Relevant mitigation relating to noise have been provided in the are provided in Chapter 10 – Noise and are detailed further above.	which will adversely affect bats through a reduction in their populations in the short- to medium-term. This would be a local-level effect for brown long-eared bats and a county level effect for the other species recorded. Proposed planting and the long-term restoration of the site will compensate for these losses in the long-term. Proposed mitigation will reduce habitat losses as detailed in Figure 2-5 and in the long term, the site will be restored to its previous agricultural use. As a result, the bat populations will be able to recover to their baseline levels. Therefore, the residual effects on this species will be adverse but limited to the short- to medium-term and are not significant. There will be no significant residual effect on commuting and foraging bats as a result of the proposed development. The planting of additional trees and hedgerows will act to maintain ecological corridors and connection to the surrounding environment and increase the overall biodiversity of the Site. The proposed restoration plan (Figure 2-6) will revert all lands within the Site for natural re-vegetation and ecological habitat use. This will represent a replacement (like for like) of potential commuting and foraging habitat for bats and represents a long-term positive residual effect.	
Otter	Impact 4: Impacts on rare and protected species or upon their resting or breeding sites. Includes impacts caused by pollution, artificial lighting, noise and vibrations causing disturbance or displacement.	Otters are considered absent from the site itself. However, they likely use the stream located to the south of the proposed extraction area. Sediment that enters this stream may cause pollution events that could impact otters indirectly, via a reduction in their prey. Moreover, the proposed works during the construction and operation phases will cause noise and vibrations as well as potential artificial light, and dust. However, given that otters are more active at night and outside normal working hours, this impact is anticipated to be minor to otters.	Chapter 7 – Water details mitigation measures that apply to the hydrological impacts are relevant to otters including surface water quality and is detailed further above. Other than some minor quantities of dust creation, the river will not be impacted directly by the proposed development proposals. The general good practices (as detailed in Table 8-15 of the Chapter 8 – Air Quality) will minimise dust creation caused from the proposed sand extraction works and are detailed above. The removal of livestock from the site will be required to facilitate the construction/operation phase of the development, which will cause a reduction in poaching and nitrogen deposition through reduced cattle faeces in the river habitat. The mitigation measures laid out in Chapter 10 – Noise will minimise noise and vibrations that may affect nearby otters. These have been detailed further above. Artificial lighting will not be prevalent throughout the site, and no artificial lighting will be directed towards the valuable aquatic habitats and associated riparian habitats. Proposed works will only be undertaken in the daylight, other than during winter when lighting may be	All effects are caused from dust creation and noise and vibrations will be appropriately mitigated for. Moreover, the residual effects of these impacts will be limited for the duration of the construction and operation phases of the proposed development and will cease beyond these phases. There may be a minor effect of reduced otter foraging activity near the site caused by noise and vibration disturbance. However, it is anticipated that this species will quickly habituate to the disturbance and resume baseline foraging activity near the site. Therefore, the proposed development will not have a significant effect on this species.	Not significant



Important ecological feature	Impact	Potential effects to IEF	Proposed mitigation	Significance of residual effects	Significance
			required. Artificial lighting will only be implemented at limited areas (i.e., near machinery / buildings etc.). All necessary lighting will be angled downwards and away from any retained or created habitats of value to otters. The site will be restored to agricultural land use following the completion of the sand extraction works. Suitable habitats for badgers will be restored on the site at this point and badger populations in the local area will recover to their baseline levels. Relevant mitigation relating to noise have been provided in the are provided in Chapter 10 – Noise and are detailed further above.		
Badger	Impact 4: Impacts on rare and protected species or upon their resting or breeding sites. Includes impacts caused by pollution, artificial lighting, noise and vibrations causing disturbance or displacement.	No active badger setts were identified on the site. However, badgers likely use the site for foraging, and it is likely that the site forms a part of the territory of one or more clans due to the suitability of the habitat on the site. The removal of the habitats within the proposed extraction area will cause a reduction in habitats suitably for foraging and sett building, which may put added pressure on the clan(s) that use it. This impact would lead to a reduction of the badger population at the local level. However, badger territories are large enough that this impact is unlikely to be so significant to cause a significant effect to local badgers.	Retained habitats around the boundary of the proposed extraction area (see Embedded mitigation) will allow badgers to continue to use parts of the site for foraging and commuting to other parts of the surrounding area. Proposed native planting of trees and hedgerows (see Figure 2-6) will compensate for the habitats lost. A pre-commencement survey will be conducted by a qualified ecologist immediately prior to the start of the proposed works to check that the disused outlier sett identified on the site has not become active and require closing. The check will also ensure that no additional new setts have been created on the site. If any active badger setts are identified, a derogation licence from NPWS will be applied for to close all setts within the proposed extraction area. Habitat losses will be compensated for as detailed in the Embedded mitigation. This will mitigate the impact of those habitats lost within the proposed extraction area that are suitable for this species. Artificial lighting will not be prevalent throughout the site, and no artificial lighting will be directed towards the valuable habitats for badgers. Proposed works will only be undertaken in the daylight, other than during winter when lighting may be required. Artificial lighting will only be implemented at limited areas (i.e., near machinery / buildings etc.). All necessary lighting will be angled downwards and away from any retained or created habitats of value to badger. The site will be restored to agricultural land use following the completion of the sand extraction works. Suitable habitats for badgers will be restored on the site at this point and badger populations in the local area will recover to their baseline levels. Relevant mitigation relating to noise have been provided in the are provided in Chapter 10 – Noise and are detailed further above.	There will be a possible reduction in the badger population at a local level in the short- and medium-term, leading to a potential reduction in badger population at a local level. Proposed mitigation will reduce habitat losses as detailed in Figure 2-5 and in the long-term, the site will be restored to its previous agricultural use (Figure 2-6) and the badger population will be able to recover to its baseline levels. Therefore, the residual effects on this species will be limited to the local level, short- to medium-term and not significant.	Not significant
Hedgehog	Impact 4: Impacts on rare and protected species or upon their resting or breeding sites. Includes impacts caused by pollution, artificial lighting, noise	The removal of habitats within the proposed extraction area will cause a reduction of suitable refugia and foraging habitat for this species. This would likely cause a reduction in the population of this species on a local level.	An ECoW will be appointed to the site to oversee all removal of woodland, scrub and hedgerow habitats to check that no hedgehogs are present. Any hedgehogs found will be moved to a similar retained habitat.	There will be a possible reduction in the hedgehog population at a local level in the short- and medium-term, leading to a potential reduction in hedgehog population at a local level.	Not significant



Important ecological feature	Impact	Potential effects to IEF	Proposed mitigation	Significance of residual effects	Significance
	and vibrations causing disturbance or displacement.	Individual hedgehogs may be harmed through the removal of woodland, scrub and hedgerows in particular where they may find suitable refugia.	Habitat losses will be compensated for as detailed in the Embedded mitigation. This will mitigate the impact of those habitats lost within the proposed extraction area that are suitable for this species. Artificial lighting will not be prevalent throughout the site, and no artificial lighting will be directed towards the valuable habitats for hedgehog. Proposed works will only be undertaken in the daylight, other than during winter when lighting may be required. Artificial lighting will only be implemented at limited areas (i.e., near machinery / buildings etc.). All necessary lighting will be angled downwards and away from any retained or created habitats of value to this species. The site will be restored to agricultural land use following the completion of the sand extraction works. Suitable habitats for hedgehog will be restored on the site at this point and hedgehog populations in the local area will recover to their baseline levels. Relevant mitigation relating to noise have been provided in the are provided in Chapter 10 – Noise and are detailed further above.	Proposed mitigation planting will reduce habitat losses as detailed in Figure 2-5 and in the long-term, the site will be restored to its previous agricultural use (Figure 2-6) and the hedgehog population will be able to recover to its baseline levels. The species may experience a minor increase in localised disturbance, but mitigation will allow this species to continue to forage within retained and created habitats. Therefore, the residual effects on this species will be limited to the local level, short- to medium-term and not significant.	
Pine marten	Impact 4: Impacts on rare and protected species or upon their resting or breeding sites. Includes impacts caused by pollution, artificial lighting, noise and vibrations causing disturbance or displacement.	The removal of woodland and hedgerow habitats within the proposed extraction area will cause a reduction of suitable refugia and foraging habitat for this species. This would likely cause a reduction in the population of this species on a county level. Individual pine marten may be harmed through the removal of woodland in particular, where pine marten are most likely to find suitable refugia.	An ECoW will be appointed to the site to oversee all removal of woodland habitat to check that no pine marten are present. If any are identified, the ECoW will ensure that works are stopped until the animal has safely dispersed into an unimpacted area. Habitat losses will be compensated for as detailed in the Embedded mitigation. This will mitigate the impact of those habitats lost within the proposed extraction area that are suitable for this species. Mature woodland (and forestry) located outside the proposed extraction area will be retained under the current proposals. It is assessed that these areas are more likely to support pine marten than the areas within the proposed extraction area that will be lost. Relevant mitigation relating to noise have been provided in the are provided in Chapter 10 – Noise and are detailed further above.	The woodland removal is limited to the areas located within the proposed extraction area, and is limited to coppiced woodland, lacking mature trees. More mature woodland will be retained along the site boundaries and outside the proposed extraction area, including the woodland within the SPA. This is assessed as more likely to support pine marten than the limited area of woodland to be lost. Therefore, pine marten will be able to continue to use the local area, and any losses will be minimised through the proposed mitigation measures. With the implementation of the proposed mitigation measures, pine marten losses will be minimised. Any accidental harm to individuals will not significantly harm the local or county population and this species will easily recover. Habitat losses may put added strain on local and county pine marten populations. However, this will be limited to the duration of the proposed extraction works, and the population will be able to recover to baseline levels following the restoration of the site to baseline agricultural land use (Figure 2-6). Therefore, the residual effects on this species will be limited to the local level, short- to medium-term and not significant.	Not significant
Irish hare	Impact 4: Impacts on rare and protected species or upon their resting or breeding sites. Includes impacts caused by pollution, artificial lighting, noise	The removal of grassland habitats within the proposed extraction area will cause a reduction of suitable refugia and foraging habitat for this species.	An ECoW will be appointed to the site to oversee all removal of woodland habitat to check that no hares are present. If any are identified, the ECoW will ensure that	With the implementation of the proposed mitigation measures, Irish hare losses will be minimised. Any accidental harm to individuals will not significantly	Not significant



Important ecological feature	Impact	Potential effects to IEF	Proposed mitigation	Significance of residual effects	Significance
	and vibrations causing disturbance or displacement.	This would likely cause a reduction in the population of this species on a local level. Individual hares may be harmed through the removal of woodland in particular, where hares are most likely to find suitable refugia. General construction and operational activities will cause disturbance through the creation of noise and vibrations.	works are stopped until the animal has safely dispersed into an unimpacted area. Habitat losses will be compensated for as detailed in the Embedded mitigation. This will mitigate the impact of those habitats lost within the proposed extraction area that are suitable for this species. The site will be restored to agricultural land use following the completion of the sand extraction works. Suitable habitats for hares will be restored on the site at this point and hare populations in the local area will recover to their baseline levels. Relevant mitigation relating to noise have been provided in the are provided in Chapter 10 – Noise and are detailed further above.	harm the local population and this species will easily recover. Habitat losses may put added strain on local Irish hare populations. However, this will be limited to the duration of the proposed extraction works, and the population will be able to recover to baseline levels following the restoration of the site to baseline agricultural land use. Therefore, the residual effects on this species will be limited to the local level, short- to medium-term and not significant.	
Red squirrel	Impact 4: Impacts on rare and protected species or upon their resting or breeding sites. Includes impacts caused by pollution, artificial lighting, noise and vibrations causing disturbance or displacement.	Red squirrels may be adversely affected through the loss and reduction of woodland on the site. This will cause a reduction of habitat suitable for foraging and refugia for this species. This impact would adversely affect the red squirrel population, and potentially cause an impact of county-level significance.	Only woodland located within the proposed extraction area will be lost. All other woodland located outside this area, which is likely of better quality and more suitable for red squirrel (due to the presence of mature trees and larger extents), will be retained. An ECoW will be appointed to the site to oversee all removal of woodland habitat to check that no red squirrel are present. If any are identified, the ECoW will ensure that works are stopped until the animal has dispersed found will be moved to a similar retained habitat. Habitat losses will be compensated for as detailed in the Embedded mitigation. This will mitigate the impact of those habitats lost within the proposed extraction area that are suitable for this species, including the planting of woodland, treelines and scrub, which will benefit this species. Relevant mitigation relating to noise have been provided in the are provided in Chapter 10 – Noise and are detailed further above.	Proposed mitigation will reduce habitat losses as detailed in Figure 2-5 and in the long-term, the site will be restored to its previous agricultural use and the red squirrel population will be able to recover to its baseline levels. The presence of the ECoW during sensitive habitat clearance will reduce the potential impact of harm to individual red squirrels. With the implementation of the proposed mitigation, the effects to red squirrel will be limited to the duration of the construction and operation phases. There may be a short- to medium-term reduction in the local population, which would be significant on a county level. However, this population will recover to the baseline levels following the completion of the sand extraction works. Therefore, the residual effects on this species will be limited to the local level, short- to medium-term and not significant.	Not significant
Irish stoat	Impact 4: Impacts on rare and protected species or upon their resting or breeding sites. Includes impacts caused by pollution, artificial lighting, noise and vibrations causing disturbance or displacement.	Habitat removal of scrub, woodland, and hedgerows in particular will cause a reduction in habitat suitable for foraging and refugia for this species. This impact would adversely affect the stoat population on a local level.	An ECoW will be appointed to the site to oversee all removal of woodland, scrub and hedgerow habitats to check that no Irish stoat are present. If any are identified, the ECoW will ensure that works are stopped until the animal has dispersed found will be moved to a similar retained habitat. Habitat losses will be compensated for as detailed in the Embedded mitigation. This will mitigate the impact of those habitats lost within the proposed extraction area that are suitable for this species. The site will be restored to agricultural land use following the completion of the sand extraction works. Suitable habitats for stoat will be restored on the site at this point and stoat populations in the local area will recover to their baseline levels. Relevant mitigation relating to noise have been provided in the are provided in Chapter 10 – Noise and are detailed further above.	Proposed mitigation will reduce habitat losses as detailed in Figure 2-5 and in the long-term, the site will be restored to its previous agricultural use and the stoat population will be able to recover to its baseline levels. The restoration plan details the planting of woodland, treelines, and scrub, which will benefit this species. The presence of the ECoW during sensitive habitat clearance will reduce the potential impact of harm to individual Irish stoat. With the implementation of the proposed mitigation, the effects to stoat will be limited to the duration of the construction and operation phases. There may be a short- to medium-term reduction in the local population, which would be significant on a local level. However, this population will recover to the baseline levels following the completion of the sand extraction works.	Not significant



Important ecological feature	Impact	Potential effects to IEF	Proposed mitigation	Significance of residual effects	Significance
				Therefore, the residual effects on this species will be limited to the local level, short- to medium-term and not significant.	
Salmonids	Impact 4: Impacts on rare and protected species or upon their resting or breeding sites. Includes impacts caused by pollution, artificial lighting, noise and vibrations causing disturbance or displacement.	Sediment, dust or accidental spillages may enter the adjacent stream and may cause affect salmonids directly through altering the water chemistry or may indirectly affect them via reducing macro-invertebrates within the stream and causing an overall reduction of their prey. Moreover, the proposed works during the construction and operation phases will cause noise and vibrations as well as potential dust. The above impacts may also affect their breeding behaviour.	Relevant mitigation relating to noise have been provided in the are provided in Chapter 10 – Noise and are detailed further above. Chapter 7 – Water details mitigation measures that apply to the hydrological impacts are relevant to otters including surface water quality and is detailed further above. Other than some minor quantities of dust creation, the river will not be impacted directly by the proposed development proposals. The general good practices (as detailed in Table 8-15 of the Chapter 8 – Air Quality) will minimise dust creation caused from the proposed sand extraction works and are detailed above. The removal of livestock from the site will be required to facilitate the construction/operation phase of the development, which will cause a reduction in poaching and nitrogen deposition through reduced cattle faeces in the river habitat.	It is anticipated the salmonids breed upstream of the Site's location as salmonids breed in upstream gravel beds. Therefore, any dust, pollution and noise impacts will only impact migrating or salmonids downstream. Moreover, with the implementation of the proposed mitigation, potential effects to this species will be minimised. All effects will last for the duration of the construction and operational phases. Any pollution that does enter the habitat will be quickly diluted and distributed to non-harmful levels due to the transient nature of the habitat. Following the completion of both of these phases, there will be no residual effects to salmonids and their population will be able to recover to baseline levels. Effects to salmonids is assessed to be minor and short-term and not significant.	Not significant



In-combination Effects with other developments

- 5.359 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 project 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 (CIEEM, 2018).
- 5.360 The Laois County Development Plan 2021-2027 was reviewed for strategies and objectives that may act in-combination with the project. There are no strategies or objectives in the Laois County Development Plan 2021-2027 that are likely to result in significant effects when considered in-combination with the proposed development.
- 5.361 A GIS search was undertaken of available online planning search facilities provided by the prevailing local planning authorities, An Bord Pleanála and the EIA Portal, as well as the Laois County Development Plan (2021-2027) and Kilkenny County Development Plan (2021-2027) and the on-line planning portal for these counties. The GIS search covered a radius of c. 5km from the application site. **Table 5-28** details the granted planning applications. All other applications are considered sufficiently distant from the site to have no in-combination effects with the project.

Table 5-28: Granted planning applications between 2018 - 2023

Planning Ref / Link	Brief Description	Approximate Distance from Site	Planning Status
20154	Construction of: 1. A slatted cattle house, 2. The conversion of an existing hayshed to a slatted cattle house, (3) a cattle handling area and all ancillary works and services.	Adjacent	Permission granted 27/07/20
Unknown	Quarry Mounthall - Google Maps .	c. 1.2 km SW	N/A
22740	New single storey National Mountain Bike Trail Head Building consisting of a Café, Bike Hire Facility, Toilets, car park and all associated site works, demolition of an existing building at Baunreagh, Co. Laois.	c. 4 km NE	Permission granted 14/03/23

- 5.362 The proposed development 20154 is sufficiently small in size and scale to have very few in-combination effects with this application. The impacts may cause a minor in-combination effect if the construction phase of 20154 overlaps with the construction and/or operation phases of this application. However, it is anticipated that the relatively small scale of the development of 20154 will cause only very short-term and localised effects. The risk of pollution events or dust creation from this development entering the stream to the south of the site is considered negligible due to the distance as well as the general south-western prevailing wind that the site experiences (Met Éireann, n.d.). Therefore, there will be limited in-combination effects to the water quality.
- 5.363 The proposed development 22740 comprises a new building. It is therefore small in size and scale. Similarly to the effects of 20154, there may be an overlap in increased noise and vibrations with 22740 and this application. While the 22740 development is sufficiently distant from this application that there will be no overlap in noise effects, the in-combination noise may impact the hen harriers within the Slieve Bloom



Mountains SPA. However, the AA Screening for 22740 (Oran Ecology, 2022) details that disturbance caused by the proposed development will not cause significant levels of disturbance to hen harrier 'alone or in-combination' with other projects identified. This is due to the short-term duration and small nature and scale of the proposed development.

- 5.364 The planning status of the quarry is unknown. If it is disused, then there will be no in-combination effects with the project. However, if this quarry is active, then the operation phase impacts detailed in **Table 5-27** will be exacerbated. Most notably:
- Noise and vibrations caused during the construction and operation phases will be an increased in-combination effect with the other quarry in terms of the area affected by the noise (and the subsequent species impacted as a result), and/or the increased volume within the local area. Which may cause disturbance to species where none was previously anticipated. All species may be affected by such disturbance. And the in-combination effect may reduce the ability of species to habituate to the noise levels.
 - Increased dust levels entering the stream and affecting downstream protected flora and fauna, as well as downstream designated sites. Note that potential in-combination effects to downstream designated sites (which also covers many of the protected fauna and habitats associated with these sites) is considered in the accompanying AA Screening and NIS report for this site.



Conclusion

- 5.365 SLR Consulting Limited conducted an ecological assessment of the Site and prepared this biodiversity chapter to inform the wider Environmental Impact Assessment process and production of an Environmental Impact Assessment Report to accompany the planning application by Breedon for the continued permitted use and extension of the sand and gravel pit as detailed in Chapter 2 of the EIAR.
- 5.366 The application site is not subject to any statutory or non-statutory designation and no such sites will be directly or indirectly impacted upon by the proposed development. A separate AA Screening and Natura Impact Statement report has been prepared to be read alongside this report relating to impacts to designated sites.
- 5.367 The proposed extraction operations will result in the direct loss of all woodland, scrub, grassland, hedgerows and trees within the proposed extraction area. Existing habitats including woodland, scrub, hedgerows and treelines located outside the proposed extraction area will be retained.
- 5.368 There will be perimeter screening berms constructed along the eastern, southern and western boundaries of the extension extraction area using the stripped topsoil and overburden soils and some of the berms will be planted with native plant species and will also naturally develop scrub habitat as it re-vegetates over time.
- 5.369 Baseline results are presented in **Baseline Ecological Conditions** section. Impacts, recommended mitigation measures and residual effects are presented in **Table 5-27**, located in the **Assessment of Effects and Mitigation Measures** section.
- 5.370 In the long term, and with the implementation of the mitigation measures, there will be no significant loss of habitats as compensation habitat will be created (as detailed on the restoration plan **Figure 2-6**). Moreover, following the completion of the operation phase, the site will be restored to its current agricultural land use and certain baseline habitats (i.e., grassland, hedgerows and treelines) will be able to recover.
- 5.371 No significant effects are predicted to impact any rare and protected species in the long term and potential significant effects have been appropriately mitigated for in the short- and medium-terms either from the project alone or in-combination with those developments identified in **Table 5-28**.



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Figures

Figure 5-1: Site Location Plan

Figure 5-2: Designated Sites

Figure 5-3: Habitat Map

Figure 5-4: Hen harrier survey vantage point location and results – Surveys 1 & 2

Figure 5-5: Breeding bird transect route

Figure 5-6: Breeding bird survey results – Surveys 1 - 4

Figure 5-7: Breeding bird territories

Figure 5-8: Bat activity survey results

Figure 5-9: Bat emergence survey results – Surveys 1 & 2

Figure 5-10: Camera trap location

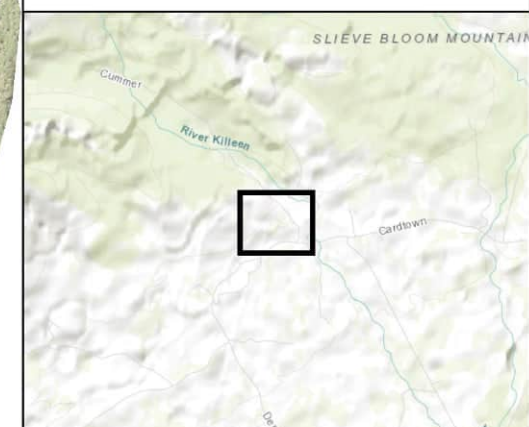
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LEGEND

- Planning Application Area
- Applicant's Land Interest Area
- Proposed S & G Extraction Area
- Target Note
- Tree with Moderate Bat Roosting Potential
- Tree with Low Bat Roosting Potential
- WL1 - Hedgerow
- WL2 - Treeline
- BL2 - Earth Bank
- WD1 - (Mixed) Broadleaved Woodland
- WD4 - Conifer Plantation
- ED1 - Exposed Sand, Gravel or Till
- ED2 Spoil and Bare Ground Mosaic
- GA1 - Improved Agricultural Grassland
- FL8 - Other Artificial Lakes and Ponds
- WN5 - Riparian Woodland
- WS1 - Scrub
- GS4 - Wet Grassland

Note:
Figure only showing extent of drone imagery flown by SLR. White space has no imagery available.



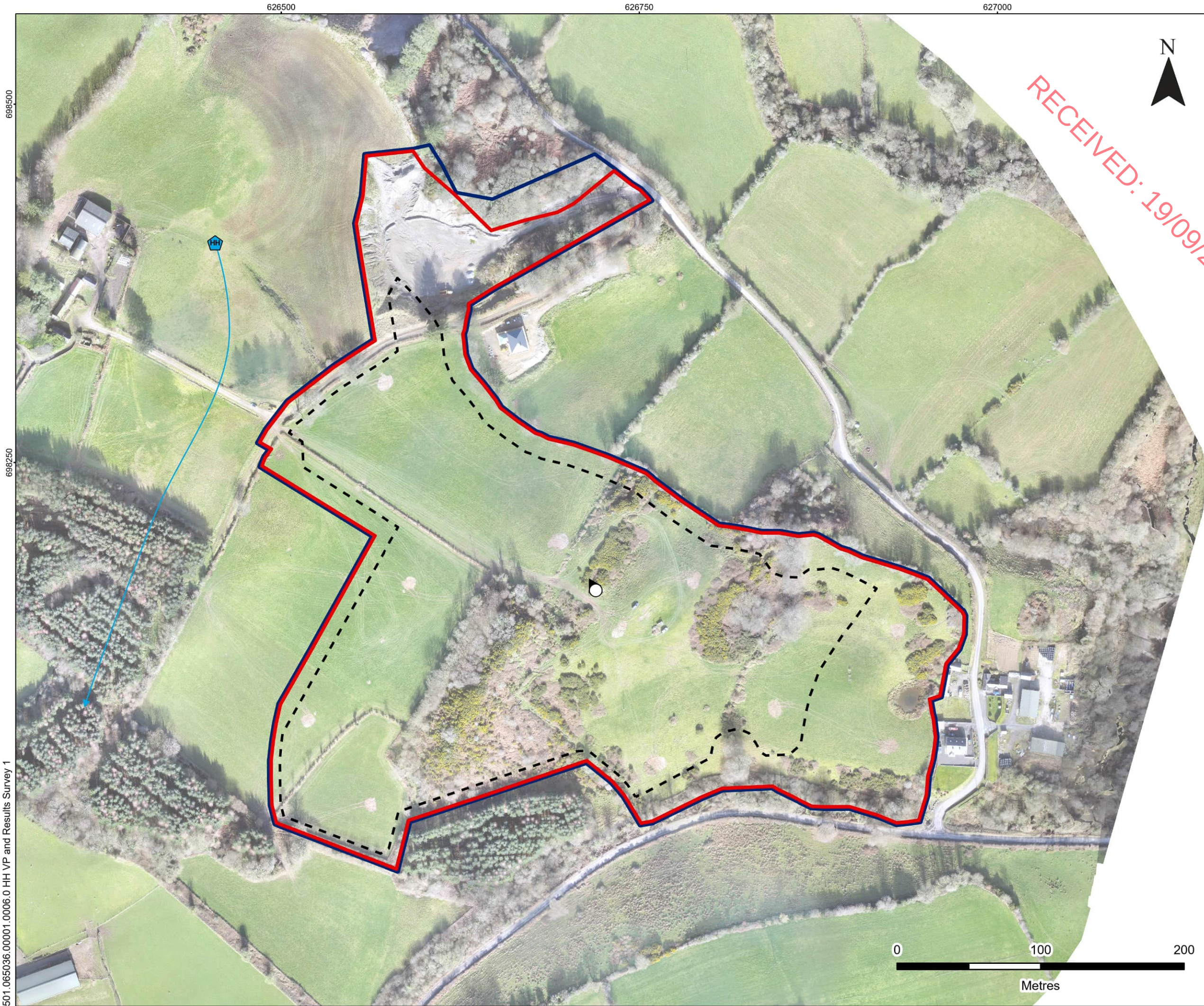
BREEDON IRELAND



CAMROSS S & G PIT DEVELOPMENT
ENVIRONMENTAL IMPACT
ASSESSMENT REPORT
HABITAT MAP

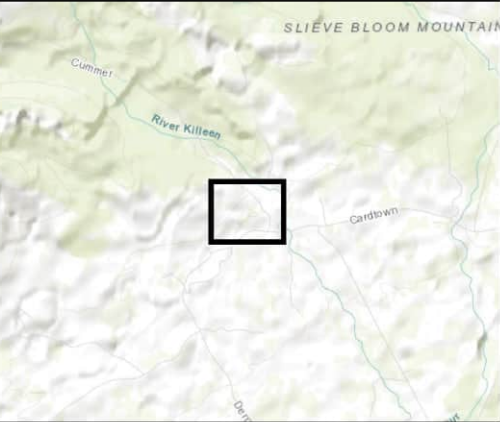
FIGURE 5-3

Scale 1:2,500 @ A3 Date SEPTEMBER 2024



- LEGEND
- Planning Application Area
 - Applicant's Land Interest Area
 - Proposed S & G Extraction Area
 - Hen Harrier Vantage Point
 - Species Record
 - Hen Harrier
 - Flight Line Species Record
 - Hen Harrier

Note:
Figure only showing extent of drone imagery flown by SLR. White space has no imagery available.



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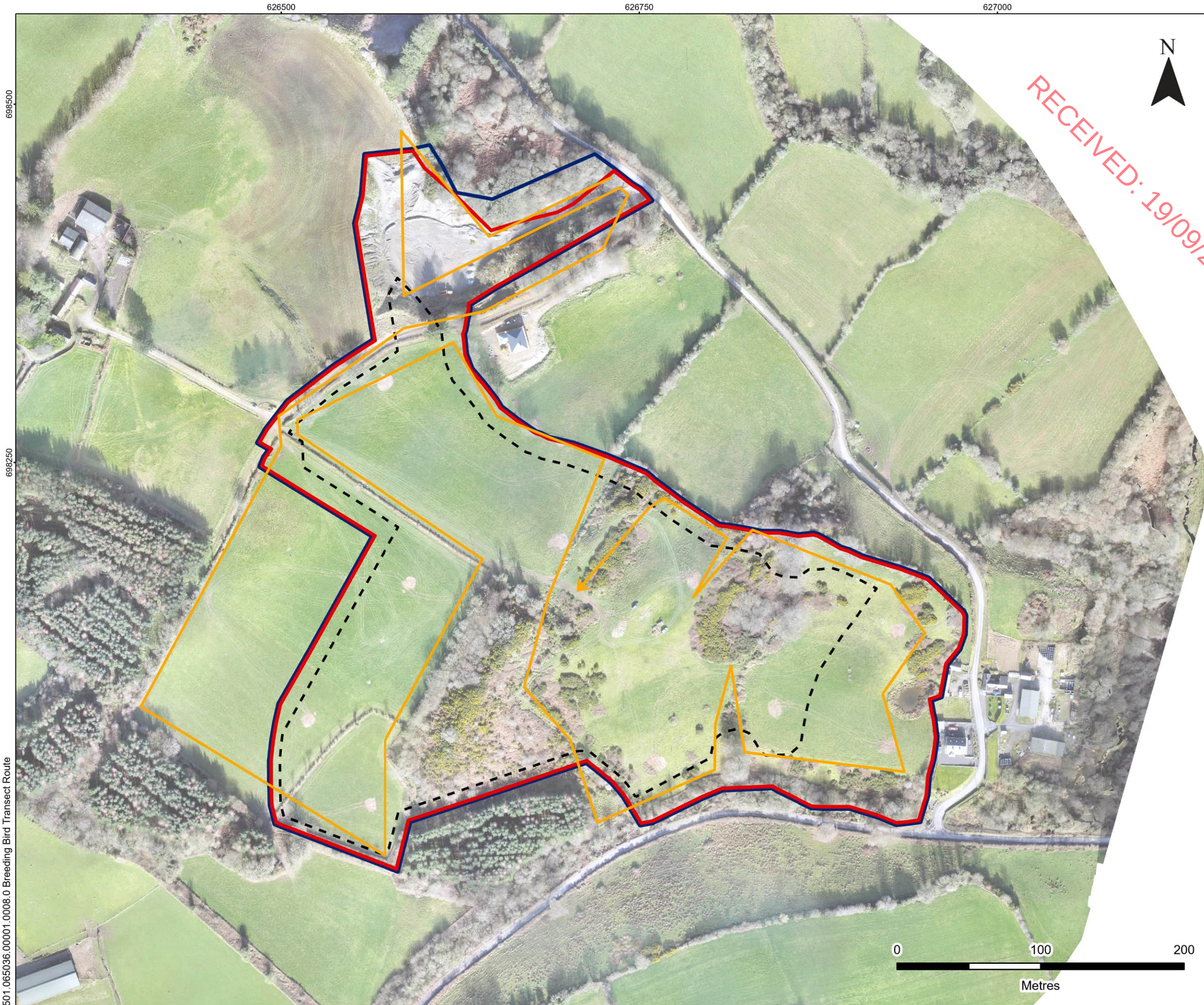


CAMROSS S & G PIT DEVELOPMENT
ENVIRONMENTAL IMPACT
ASSESSMENT REPORT
HEN HARRIER SURVEY VANTAGE
POINT LOCATION AND RESULTS -
SURVEY 1 04/04/2024

FIGURE 5-4

Scale 1:2,500 @ A3 Date SEPTEMBER 2024

501.065036.00001.0006.0 HH VP and Results Survey 1



LEGEND

-  Planning Application Area
-  Applicant's Land Interest Area
-  Proposed S & G Extraction Area
-  Breeding Bird Transect Route

Note:
Figure only showing extent of drone imagery flown by SLR. White space has no imagery available.



BREEDON IRELAND



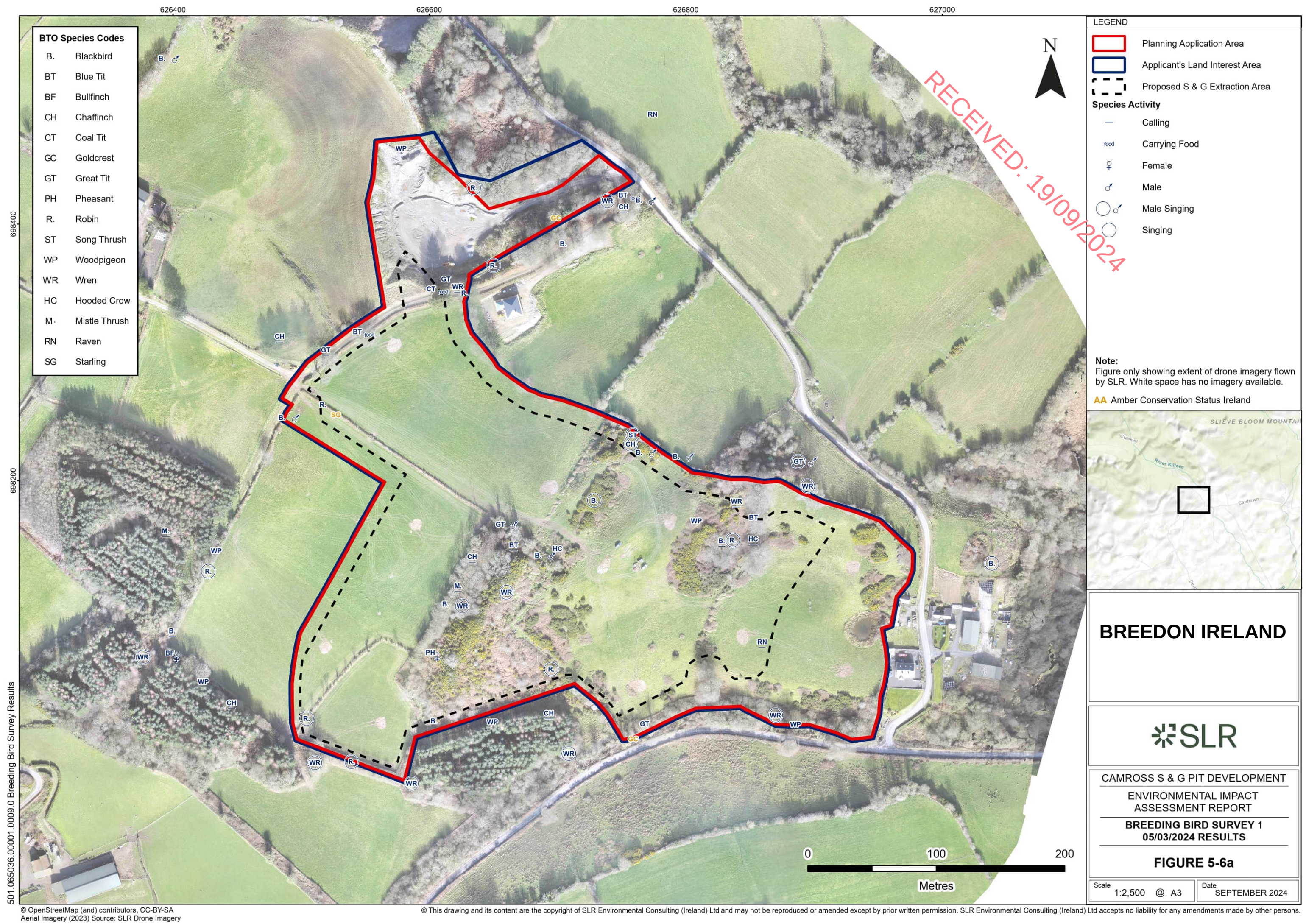
CAMROSS S & G PIT DEVELOPMENT
ENVIRONMENTAL IMPACT
ASSESSMENT REPORT
BREEDING BIRD TRANSECT ROUTE

FIGURE 5-5

Scale 1:2,500 @ A3

Date SEPTEMBER 2024

501.065036.00001.0008.0 Breeding Bird Transect Route



BTO Species Codes	
B.	Blackbird
BT	Blue Tit
BF	Bullfinch
CH	Chaffinch
CT	Coal Tit
GC	Goldcrest
GT	Great Tit
PH	Pheasant
R.	Robin
ST	Song Thrush
WP	Woodpigeon
WR	Wren
HC	Hooded Crow
M.	Mistle Thrush
RN	Raven
SG	Starling

LEGEND

Planning Application Area

Applicant's Land Interest Area

Species Activity

Calling

food

Carrying Food

♀

Female

♂

Male

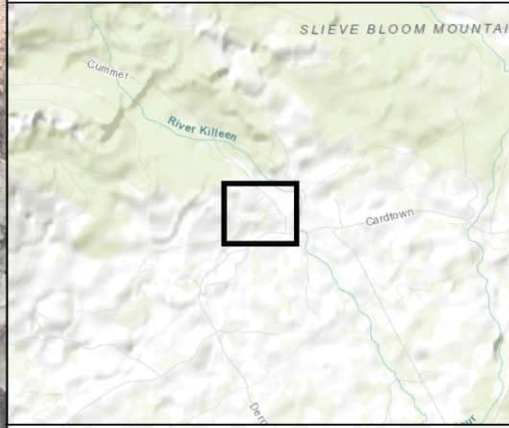
♂

Male Singing

○

SingingNote:
Figure only showing extent of drone imagery flown by SLR. White space has no imagery available.

AA Amber Conservation Status Ireland



BREEDON IRELAND

CAMROSS S & G PIT DEVELOPMENT

ENVIRONMENTAL IMPACT

ASSESSMENT REPORT

BREEDING BIRD SURVEY 1

05/03/2024 RESULTS

FIGURE 5-6a

Scale 1:2,500 @ A3

Date SEPTEMBER 2024

501.065036.00001.0009.0 Breeding Bird Survey Results



BTO Species Codes	
B.	Blackbird
BC	Blackcap
BT	Blue Tit
BF	Bullfinch
CH	Chaffinch
CC	Chiffchaff
CT	Coal Tit
D.	Dunnock
GC	Goldcrest
GO	Goldfinch
GT	Great Tit
R.	Robin
ST	Song Thrush
SL	Swallow
WW	Willow Warbler
WP	Woodpigeon
WR	Wren
HC	Hooded Crow
M.	Mistle Thrush
RN	Raven
SG	Starling

LEGEND

Planning Application Area

Applicant's Land Interest Area

Species Activity

Calling

food

Carrying Food

♀

Female

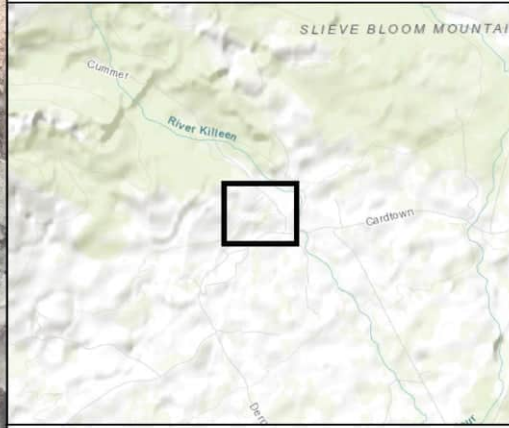
♂

Male

○

SingingNote:
Figure only showing extent of drone imagery flown by SLR. White space has no imagery available.

AA Amber Conservation Status Ireland



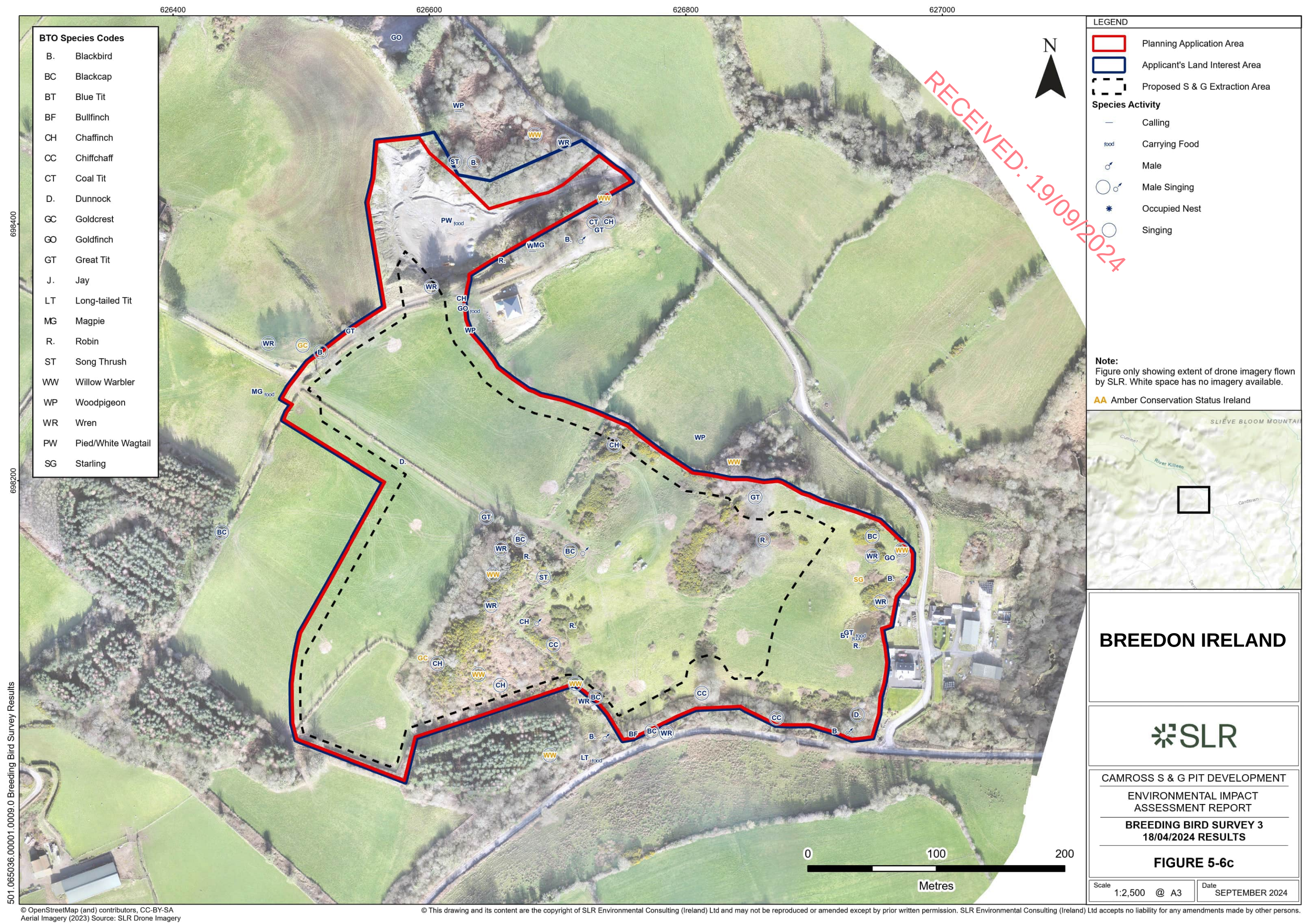
BREEDON IRELAND

CAMROSS S & G PIT DEVELOPMENT
ENVIRONMENTAL IMPACT
ASSESSMENT REPORT
BREEDING BIRD SURVEY 2
11/04/2024 RESULTS

FIGURE 5-6b

Scale 1:2,500 @ A3 Date SEPTEMBER 2024

501_065036.00001.0009.0 Breeding Bird Survey Results

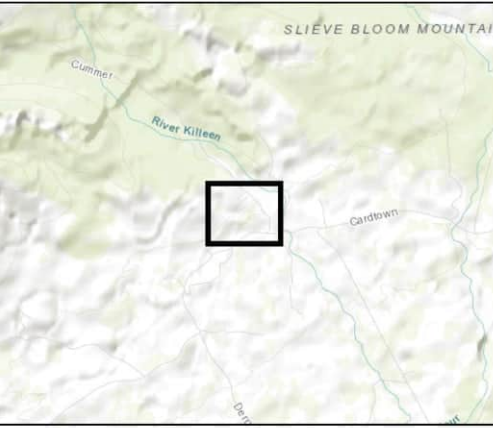


BTO Species Codes	
B.	Blackbird
BC	Blackcap
BT	Blue Tit
BF	Bullfinch
CH	Chaffinch
CC	Chiffchaff
CT	Coal Tit
D.	Dunnock
GC	Goldcrest
GO	Goldfinch
GT	Great Tit
J.	Jay
LT	Long-tailed Tit
MG	Magpie
R.	Robin
ST	Song Thrush
WW	Willow Warbler
WP	Woodpigeon
WR	Wren
PW	Pied/White Wagtail
SG	Starling

LEGEND	
	Planning Application Area
	Applicant's Land Interest Area
	Proposed S & G Extraction Area
Species Activity	
	Calling
	Carrying Food
	Male
	Male Singing
	Occupied Nest
	Singing

Note:
Figure only showing extent of drone imagery flown by SLR. White space has no imagery available.

AA Amber Conservation Status Ireland



BREEDON IRELAND



CAMROSS S & G PIT DEVELOPMENT
ENVIRONMENTAL IMPACT
ASSESSMENT REPORT
BREEDING BIRD SURVEY 3
18/04/2024 RESULTS

FIGURE 5-6c

Scale	1:2,500 @ A3	Date	SEPTEMBER 2024
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501.065036.00001.0009.0 Breeding Bird Survey Results



BTO Species Codes

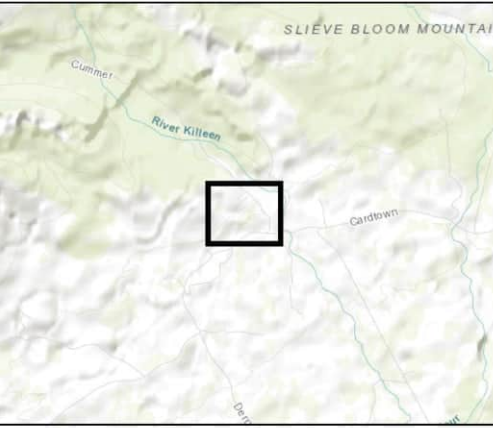
- B. Blackbird
- BC Blackcap
- BT Blue Tit
- CH Chaffinch
- CC Chiffchaff
- CT Coal Tit
- D. Dunnock
- GC Goldcrest
- GT Great Tit
- LT Long-tailed Tit
- R. Robin
- SL Swallow
- TC Treecreeper
- WW Willow Warbler
- WP Woodpigeon
- WR Wren

- LEGEND**
- Planning Application Area
 - Applicant's Land Interest Area
 - Proposed S & G Extraction Area

- Species Activity**
- Calling
 - food Carrying Food
 - mat Carrying Nest Material
 - ♂ Male
 - ♂ Male Singing
 - Singing

Note:
Figure only showing extent of drone imagery flown by SLR. White space has no imagery available.

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BREEDON IRELAND



CAMROSS S & G PIT DEVELOPMENT
ENVIRONMENTAL IMPACT
ASSESSMENT REPORT
BREEDING BIRD SURVEY 4
02/05/2024 RESULTS

FIGURE 5-6d

Scale 1:2,500 @ A3 Date SEPTEMBER 2024





- LEGEND
- Planning Application Area
 - Applicant's Land Interest Area
 - Proposed S & G Extraction Area
- Breeding Bird Record**
- Willow Warbler
- Breeding Bird Territory**
- Willow Warbler

Note:
Figure only showing extent of drone imagery flown by SLR. White space has no imagery available.



BREEDON IRELAND

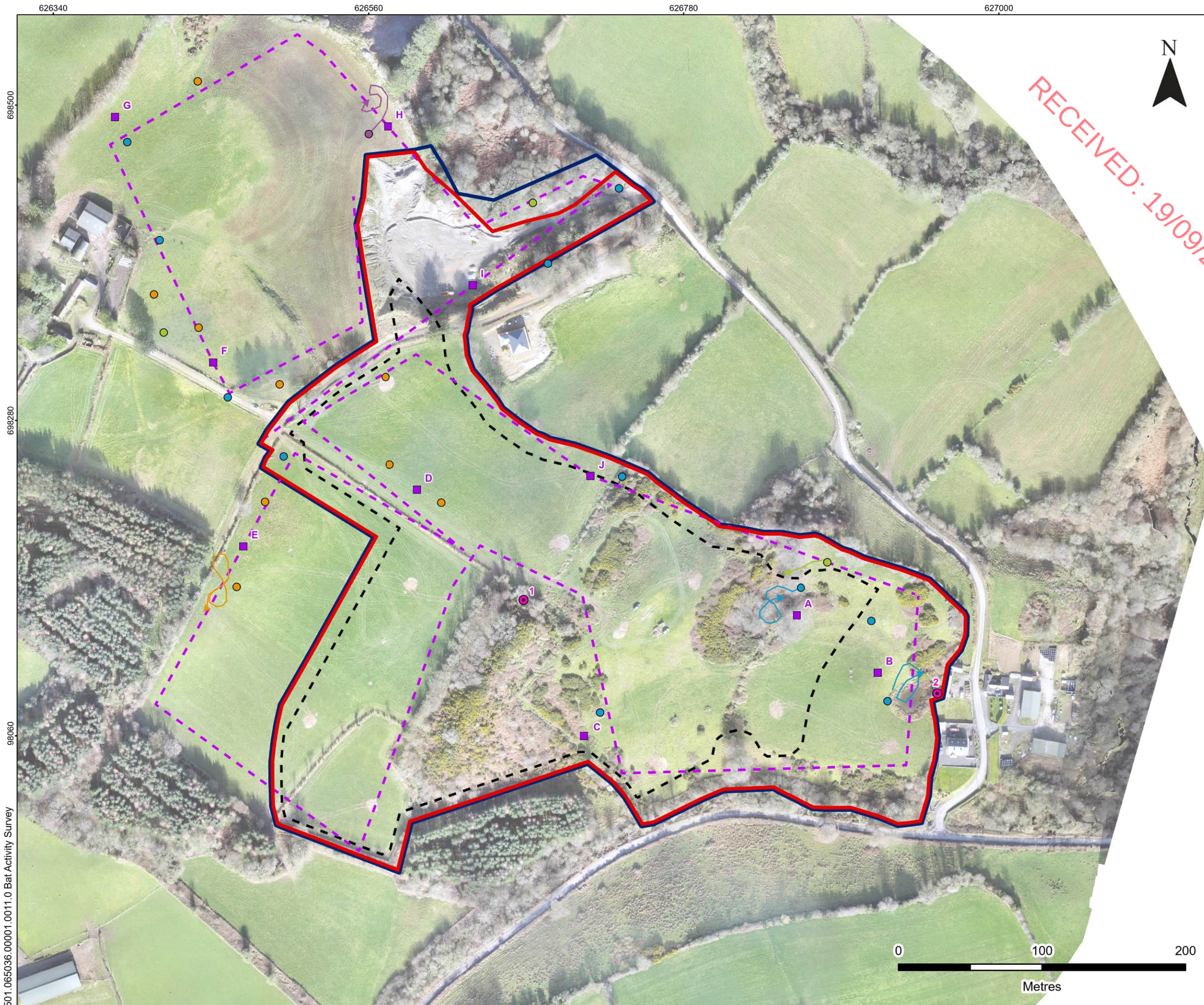


CAMROSS S & G PIT DEVELOPMENT
ENVIRONMENTAL IMPACT
ASSESSMENT REPORT
BREEDING BIRD TERRITORIES
WILLOW WARBLER

FIGURE 5-7b

Scale 1:2,500 @ A3 Date SEPTEMBER 2024

501.065036.00001.0010.0 Breeding Bird Territories



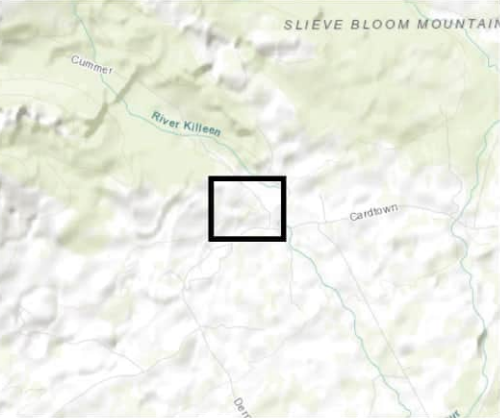
LEGEND

Planning Application Area

Applicant's Land Interest Area

Species Record

Species Flight Line Record

Note:
Figure only showing extent of drone imagery flown by SLR. White space has no imagery available.

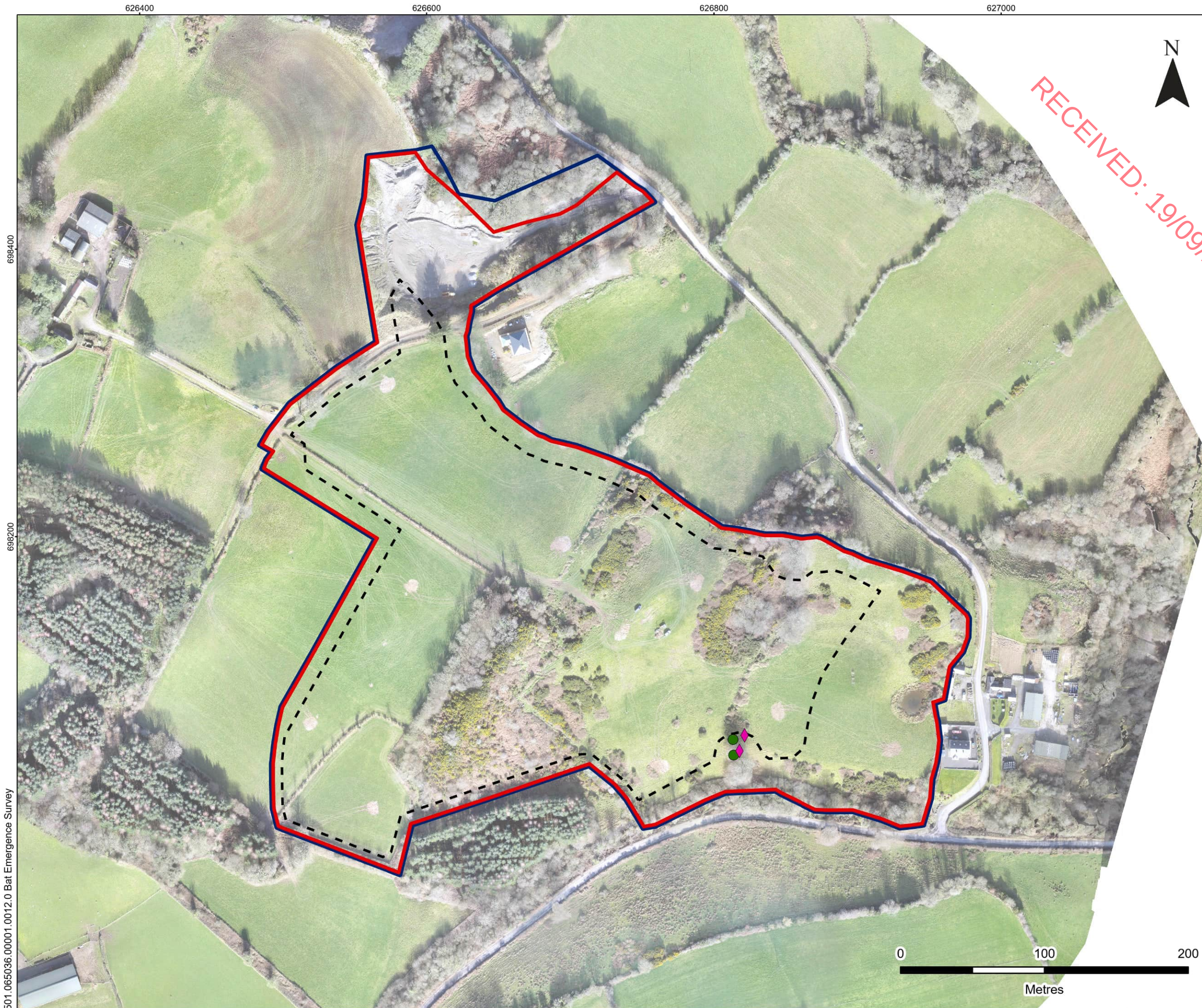
BREEDON IRELAND



CAMROSS S & G PIT DEVELOPMENT
ENVIRONMENTAL IMPACT
ASSESSMENT REPORT
BAT ACTIVITY SURVEY RESULTS

FIGURE 5-8

Scale	1:2,500 @ A3	Date	SEPTEMBER 2024
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LEGEND

- Planning Application Area
- Applicants Land Interest Area
- Proposed S & G Extraction Area
- Bat Trees
- Surveyor Location

Note:
Figure only showing extent of drone imagery flown by SLR. White space has no imagery available.

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CAMROSS S & G PIT DEVELOPMENT
ENVIRONMENTAL IMPACT
ASSESSMENT REPORT

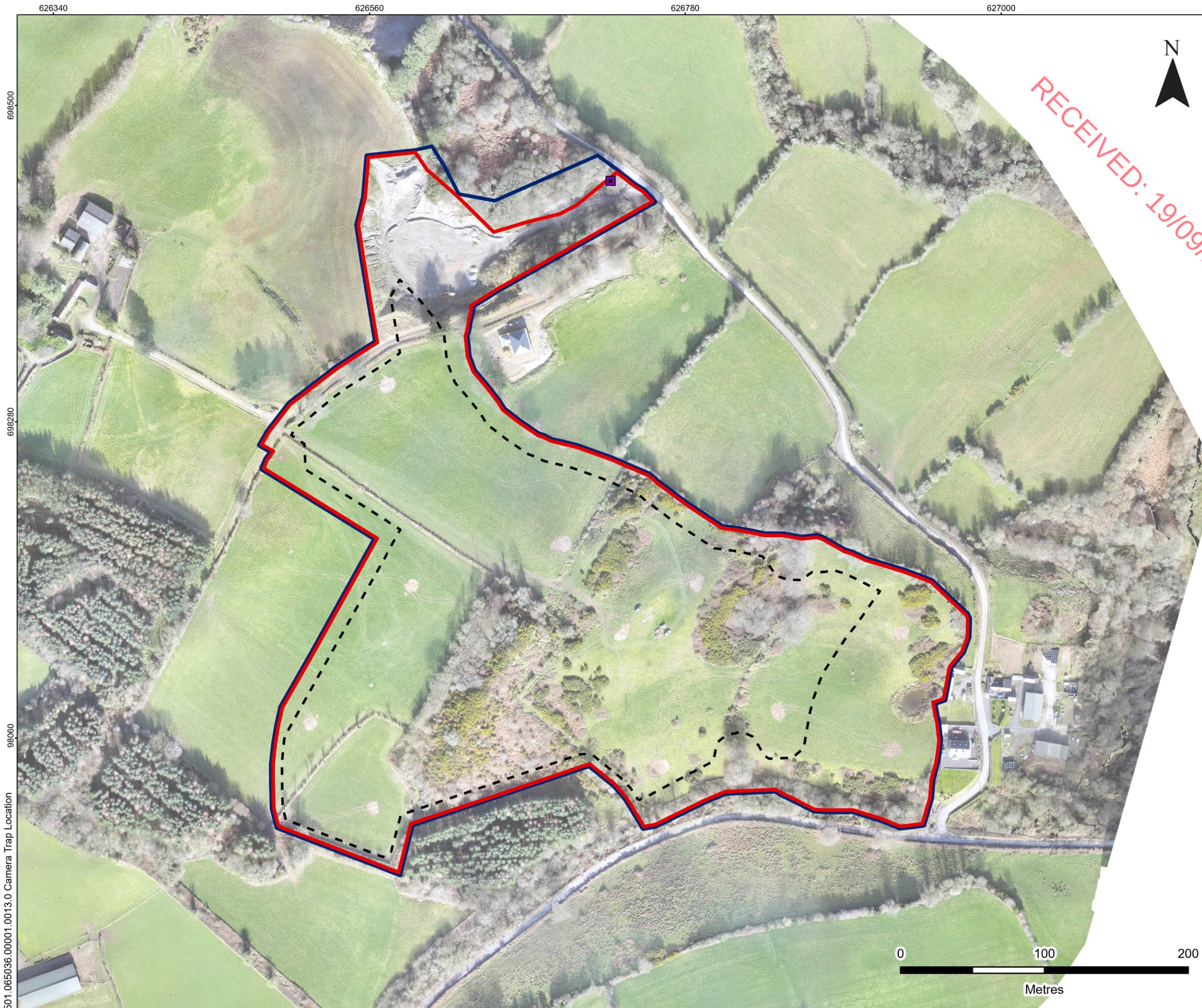
BAT EMERGENCE SURVEY 1 RESULTS
03/07/2024

FIGURE 5-9

Scale 1:2,500 @ A3

Date SEPTEMBER 2024

501.065036.00001.0012.0 Bat Emergence Survey



LEGEND

- Planning Application Area
- Applicants Land Interest Area
- Proposed S & G Extraction Area
- Bat Camera Trap Location

Note:
Figure only showing extent of drone imagery flown by SLR. White space has no imagery available.



BREEDON IRELAND



CAMROSS S & G PIT DEVELOPMENT
ENVIRONMENTAL IMPACT
ASSESSMENT REPORT
CAMERA TRAP LOCATION

FIGURE 5-10

Scale 1:2,500 @ A3 Date SEPTEMBER 2024

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Appendix 5-A Relevant Legislation and Planning Policy

5-A.1 EIA Directive 2014/52/EU

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 2011/92/EU, on the assessment of the effects of certain public and private projects on the environment (the EIA Directive) into Irish planning law.

5-A.2 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 projects. 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.

5-A.3 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 2022. 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 Project Plans.

5-A.4 Eastern and Midland Regional Assembly - Regional Spatial and Economic Strategy

The regional biodiversity and regional heritage policy objectives are set out in the following section and summarised in Table 5-A.4.

Table 5-A.4: Regional biodiversity and natural heritage policies for the eastern and midlands region.

Policy Reference	Policy
RPO 7.16	Support the implementation of the Habitats Directives in achieving an improvement in the conservation status of protected species and habitats in the Region and to ensure alignment between the core objectives of the EU Birds and Habitats Directives and local authority development plans.
RPO 7.17	Facilitate cross boundary co-ordination between local authorities and the relevant agencies in the Region to provide clear governance arrangements and coordination mechanisms to support the development of ecological networks and enhanced connectivity between protected sites whilst also addressing the need for management of alien invasive species and the conservation of native species.
RPO 7.18	Work with local authorities and state agencies to promote the development of all aspects of park management in the Wicklow National Park and the Slieve Bloom Mountains.
RPO 7.19	Support the consideration of designating a National Park for the peatlands area in the Midlands.
RPO 7.20	Promote the development of improved visitor experiences, nature conservation and sustainable development activities within the Dublin Bay Biosphere in cooperation with the Dublin Bay UNESCO Biosphere Partnership.

5-A.5 Relevant Planning Policy

5-A.5.1 Laois County Development Plan 2021-2027

The Co. Laois planning policy and legislation relating to biodiversity that is relevant to the proposed project is set out in the following section.

This plan contains a number of policies relevant to ecology and nature conservation that are summarised in Table A-2.

Table A-2: Biodiversity policies within the Laois County Development Plan 2021 - 2027

Policy Reference	Policy
CS 03	In the assessment of development proposals, to take account of transport corridors, environmental carrying capacity, availability and/or capacity to provide waste water and water supply services, potential to conflict with Water Framework Directive objectives, potential to impact on the integrity of European sites and Annexed Habitats and species, features of biodiversity value including ecological networks, impact on landscape and visual characteristics, education and other socioeconomic objectives.
CA ST 1	Protect and enhance the County's floodplains subject to flooding as "green infrastructure" where appropriate and subject to compliance with the Habitats Directive.
CM LU 2	Ensure that peatland areas which are designated (or proposed for designation) as NHAs, SACs or SPAs are conserved for their ecological, climate regulation, archaeological, cultural and educational significance;
CA LU 4	Support the creation and enhancement of ecological linkages and buffer zones from development;
CA LU 5	Support the creation and protection of ecological resilient and varied landscapes to help support a wide range of species;
RL 14	Support in principle the expansion of the aggregates and concrete products industry which offers opportunity for employment and economic development generally subject to environmental , traffic and planning considerations and ensure that any plan or project

Policy Reference	Policy
	associated with extractive industry is subject to Appropriate assessment screening in compliance with the Habitats Directive and subsequent assessment as required, applicants for planning permission shall have regard to the GSI-ICF Quarrying Guidelines.
DM RL 3	MINING AND AGGREGATES Applications for new development for aggregate extraction, processing and associated processes, shall 1. identify existing public rights of way and walking routes which may be impacted on or are adjacent to the development site. They shall be kept free from development as a Rights of Way/Walking Route 2. ensure the protection, conservation, preservation and safeguarding of recorded monuments and areas in their vicinity, World Heritage Sites (including Tentative Sites), NHA's, Euro Sites, Nature Reserves, scenic views and prospects archaeological sites and features, natural heritage, natural environment, features of natural beauty or interest and prescribed sites, geological sites and areas of geological/geomorphological or historic interest and areas of high scenic amenity from inappropriate development that might be detrimental to them. 3. minimise adverse effect on the environment and visual and natural amenities to the greatest possible extent must be carried out during all life cycle stages, whether in respect of new quarries or extensions to existing ones and development will be prohibited if the quality of the environment or landscape, particularly sensitive landscape, is adversely affected or there is a reduction of the visual amenity of areas of high amenity. 4. be landscaped either by the retention of existing vegetation or by screening to minimise the detracting from the visual quality of the landscape. 5. Require that development proposals on or in proximity to a quarry site should investigate the nature and extent of the risks associated with the development together with appropriate mitigation.
ES 50	Ensure that external lighting and lighting schemes are designed so that light spillage is minimised, thereby limiting light pollution into the surrounding environment and protecting the amenities of nearby properties and wildlife, including protected species.
BNH 1	Protect, conserve, and seek to enhance the county's biodiversity and ecological connectivity.
BNH 2	Conserve and protect habitats and species listed in the Annexes of the EU Habitats Directive (92/43/EEC) (as amended) and the Birds Directive (2009/147/EC), the Wildlife Acts 1976 and 2010 (as amended) and the Flora Protection Orders.
BNH 3	Support and co-operate with statutory authorities and others in support of measures taken to manage proposed or designated sites in order to achieve their conservation objectives and maintain the favourable conservation status and conservation value of Sites under National and European legislation and International Agreements and maintain and /develop linkages between them where feasible.
BNH 4	Protect and maintain the conservation value of all existing and future Natural Heritage Areas, Nature Reserves, Ramsar Sites, Wildfowl Sanctuaries and Biogenetic Reserves in the county.

Policy Reference	Policy
BNH 5	Projects giving rise to significant cumulative, direct, indirect or secondary impacts on Natura 2000 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 shall not be permitted on the basis of this Plan (either individually or in combination with other plans or projects) [1]. Screening for AAs and AAs undertaken shall take into account invasive species as relevant.
BNH 6	Assess, in accordance with the relevant legislation, all proposed developments which are likely to have a significant effect (directly or through indirect or cumulative impact) on designated natural heritage sites, sites proposed for designation and protected species
BNH 7	Protect Natural Heritage Areas (NHA) from developments that would adversely affect their special interests.
BNH 10	Support the objectives of the All-Ireland Pollinator Plan 2015-2020 by encouraging the planting of pollinator friendly trees and plants within grass verges along public roads and existing and future greenways, new hedgerows, public parks and public open spaces in towns and villages, including part of mixed use and residential developments.
BNH 11	Support measures to protect Swift population such as the creation of Swift nest cavities in all new commercial and public buildings (schools/libraries, etc)
BNH 13	It is a policy objective of the Council to require new developments to identify, protect and enhance ecological features by making provision for local biodiversity (for example, through provision of swift boxes or bricks, bat roost boxes, green roofs, etc.) and improve the ecological coherence of wider green infrastructure.
BNH 14	It is an objective of the Council to protect existing swift roosts as identified in the County Swift Survey and ensure existing nest sites are not lost through inappropriate renovation or destruction.
BNH 15	In dealing with applications for new developments, the Planning Authority will have regard to the following: Inclusion of swift nesting opportunities in new buildings through use of swift brick or swift nest boxes where appropriate
DM BNH 1	DEVELOPMENTS IN PROXIMITY TO pNHA Where a development is of a significant scale or in close proximity to a pNHA, the Council will require an Ecological Impact Assessment to determine the impact of the proposed development on the designated site or natural heritage.
DM BNH 2	APPROPRIATE ASSESSMENT Article 6(3) and 6(4) of the Habitats Directive requires an Appropriate Assessment of any plan or project whether within or outside a designated Natura 2000 site, which does not directly relate to the management of the site but may impact upon its conservation objectives. All planning applications shall be screened for Appropriate Assessment and a Phase II Appropriate Assessment carried out if necessary. Where full Appropriate Assessment is required, the assessment shall be based on best scientific knowledge, by a person with ecological expertise. It shall address the potential impacts of the plan or project on the conservation objectives of any Natura 2000 site. The impacts assessed must include the indirect and cumulative impacts of approving the plan or project, considered with any current or proposed activities, developments or policies impacting on the site. The potential impacts of policies outside Natura 2000 sites but potentially impacting upon them (known as 'ex situ' impacts) must also be included in the

Policy Reference	Policy
	assessment. (Refer to: Appropriate Assessment of Plans and projects in Ireland, Guidance for Planning Authorities, DEHLG (2009).
BNH 23	Encourage, pursuant to Article 10 of the Habitats Directive, the management of features of the landscape, such as traditional field boundaries and laneways important for the ecological coherence of the Natura 2000 network and essential for the migration, dispersal and genetic exchange of wild species.
BNH 26	Protect individual trees, groups of trees and woodland in the interests of landscape conservation (including townscapes) and nature conservation as part of the development management process.
BNH 27	Protect existing hedgerows, particularly of historical and archaeological importance of townland boundaries, from unnecessary removal in order to preserve the rural character of the countryside and promote biodiversity.
BNH 28	Ensure that hedgerow removal to facilitate development is kept to an absolute minimum and, where unavoidable, a requirement for mitigation planting will be required comprising a hedge of similar length and species composition to the original, established as close as is practicable to the original and where possible linking into existing adjacent hedges. Native plants of a local provenance should be used for any such planting.
BNH 30	Ensure that hedgerow and mature tree removal to facilitate development is kept to an absolute minimum and, where unavoidable, a requirement for mitigation planting will be required comprising a hedge of similar length and species composition to the original, established as close as is practicable to the original and where possible linking into existing adjacent hedges. Native plants of a local provenance should be used for any such planting.
DM BNH 4	MATURE TREES Where there are trees within an application site, or on land adjacent to it that could influence or be affected by proposed development (including street trees), the planning application must include a detailed submission prepared by a suitably qualified Arboriculturist in accordance with British Standard 5837: 2012 'Trees in relation to design, demolition and construction – Recommendations'. A Tree Management Plan shall be provided to ensure that trees are adequately protected during development and incorporated into the design of new developments.
DM BNH 4	MATURE TREES Where there are trees within an application site, or on land adjacent to it that could influence or be affected by proposed development (including street trees), the planning application must include a detailed submission prepared by a suitably qualified Arboriculturist in accordance with British Standard 5837: 2012 'Trees in relation to design, demolition and construction – Recommendations'. A Tree Management Plan shall be provided to ensure that trees are adequately protected during development and incorporated into the design of new developments.
DM BNH 5	HEDGEROWS In dealing with applications for new developments, the Planning Authority will have regard to the following: a) Retention of a connected network of good quality hedgerows; b) The value of hedgerows as green infrastructure (landscape, biodiversity, shelter, supporting services to agriculture/horticulture); c) The avoidance of the unnecessary removal of hedgerows; d) If it is necessary to remove a hedgerow, developers should be reminded of their obligations under the Wildlife Acts not to remove or interfere with them during the bird nesting season, between March 1st and 31st August. Also, replacement or

Policy Reference	Policy
	compensatory planting of hedgerows using indigenous species such as whitethorn or blackthorn only will be required; e) Proposals to integrate hedgerows into the layout of a new linear feature such as a road/ pedestrian/cycle track; f) Depending on the potential risks of anti-social activity or requirements for a more garden look the margins of these new hedgerows/woodlands/new shrubberies could be planted with colourful non-natives (for amenity) or spiny shrubs to deter vandals. g) By occasionally mowing the grass margin of hedgerows (or part of it), they will look managed. As litter will accumulate in long grass along their margins arrangements will have to be made to carry out regular clean ups; h) Encouragement should be given to develop a new linear feature of biodiversity value such as a hedgerow or dry-stone wall, particularly if this type of habitat is found adjacent to the development site; i) The use of native tree and shrub species similar to those found in adjacent hedgerows in new or replacement hedgerows; j) The wholesale removal of hedgerows to facilitate the achievement of adequate sightline visibility for one-off houses in the countryside will not be encouraged.
BNH 31	Protect waterbodies and watercourses from inappropriate development, to ensure they 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.
BNH 37	Protect the Nore Pearl Mussel through the measures set out in the Freshwater Pearl Mussel Nore Sub-Basin Management Plan (2009).
BNH 39	Protect, conserve, preserve, manage and enhance wetlands (including fens and turloughs) from infilling, fragmentation, degradation and protect and conserve their quality, character and features. Resist development (including land reclamation) which would destroy, fragment and degrade wetlands, coastal wetlands, estuarine marshland and control adjacent development by the use of buffer zones.
BNH 41	Protect the county's designated peatland areas and landscapes and to conserve and manage their ecological, archaeological, cultural, and educational heritage by promoting high environmental standards in conjunction with Bord na Mona, NPWS, IPPC, NGO's and local communities.
DM BNH 6	PEATLANDS In the consideration of development on or adjacent to peatland areas, the following guiding principles should apply: • Consideration of the potential contribution of peatlands to climate change mitigation and adaptation including renewable energy production; Offaly County Development Plan 2021-2027: Draft Stage Chapter 13 Development Management Standards 402; • Consideration of habitats and species of environmental significance; • Consideration of the potential contribution of peatlands to an existing or proposed greenway / blueway / peatway network; • Consideration of the ecosystem services and tourism potential provided by peatlands; • Development of peatlands shall ensure that there are no negative impacts on water quality and hydrology; • Consideration of peatland stability; • Achieving of a carbon emissions balance; and

Policy Reference	Policy
	Incorporation of fire mitigation measures such as fire breaks or ensuring access points and routes are suitable for travel by emergency services.
LCA 19	Recognise the potential constraints on development created by river flood plains and the value of these flood plains as increasingly rare habitats.
LCA 23	Recognise the importance of peatlands for ecology, history, culture and for alternative energy production.
LCA 24	Conserve valuable habitats including any European and national designations.
LCA 25	Support the identification of projects that have the potential to achieve commercial value such as industrial developments, renewable energy, tourism developments etc. while at the same time promoting high environmental standards and supporting Biodiversity objectives.
LCA 27	Recognise that intact boglands are critical natural resources for ecological and environmental reasons and recognise that cutaway and cut-over boglands represent degraded landscapes and/or brownfield sites and thus are potentially robust to absorb a variety of appropriate developments.

5-A.5.1 Kilkenny City and County Development Plan 2021-2027

The Co. Kilkenny planning policy and legislation relating to biodiversity that is relevant to the proposed project is set out in the following section.

Development Management Requirements:

- To ensure that development proposals, where relevant, improve the ecological coherence of the Natura 2000 network and encourage the retention and management of landscape features that are of major importance for wild fauna and flora as per Article 10 of the Habitats Directive.
- To protect and where possible enhance wildlife habitats and landscape features which act as ecological corridors/networks and stepping stones, such as river corridors, hedgerows and road verges, and to minimise the loss of habitats and features of the wider countryside (such as ponds, wetlands, trees) which are not within designated sites.
- To ensure that appropriate mitigation and/or compensation measures to conserve biodiversity, landscape character and green infrastructure networks are required in developments where habitats are at risk or lost as part of a development.
- Require all developments in the early pre-planning stage of the planning process to identify, protect and enhance ecological features and habitats, and making provision for local biodiversity (e.g. through protection of existing breeding sites, and provision of appropriate new infrastructure such as swift, bat and barn owl boxes, bat roost sites, green roofs, etc.) and provide links to the wider Green Infrastructure network as an essential part of the design process.
- To protect existing woodlands, trees and hedgerows which are of amenity or biodiversity value and/or contribute to landscape character of the county, and to ensure that proper provision is made for their protection and management, when undertaking, approving or authorising development.
- To ensure that when undertaking, approving or authorising development that sufficient information is provided to enable an assessment of impacts on woodlands, trees, and hedgerows.

- To have regard to and seek the conservation of identified trees and woodlands from a) the National Survey of Ancient and Long-Established Woodlands, b) the Tree Register of Ireland (c) sites of significance identified in the Kilkenny Woodlands Survey 1997, (d) the National Survey of Native Woodlands, and (e) Survey of Mature Trees in Kilkenny City and Environs, in the assessment of planning applications.
- To retain hedgerows, and other distinctive boundary treatment such as stone walls, when undertaking, authorising or approving development; where the loss of the existing boundary is unavoidable as part of development, to ensure that a new hedgerow is planted using native species, and species of local provenance to replace the existing hedgerow and/or that the wall is re-built using local stone and local vernacular design.
- To discourage the felling of mature trees to facilitate development and, where appropriate make use of Tree Preservation Orders to protect important trees and groups of trees which may be at risk or have an amenity, biodiversity or historic value.
- To require the planting of native broadleaved species, and species of local provenance, in new developments as appropriate.
- To require relevant 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 Communities (Birds and Natural Habitats) Regulations 2011-2015.
- For proposals connected to surface water systems, risks associated with the spread of crayfish plague shall be considered and applicants should submit a crayfish plague management strategy where appropriate.
- The Council will promote the use of native plants and seeds from indigenous seed sources in all landscape projects.

Appendix 5-B

Bat Conservation Guidance

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Table 5-29: BCT Guidelines for assessing the potential suitability of proposed development sites for bats

Potential Suitability	Description of Roosting Habitats in Structures	Description of Potential Flight-Paths and Foraging Habitats
None	No habitat features on site likely to be used by any roosting bats at any time of the year (i.e. a complete absence of crevices/suitable shelter at all ground/underground levels)	No habitat features on site likely to be used by any commuting or foraging bats at any time of the year (i.e. no habitats that provide continuous lines of shade/protection for flight-lines or generate/shelter insect populations available to foraging bats).
Negligible ^a	No obvious habitat features on site likely to be used by roosting bats; however, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion.	No obvious habitat features on site likely to be used as flight-paths or by foraging bats; however, a small element of uncertainty remains in order to account for non-standard bat behaviour.
Low	A structure with one or more potential roost features that could be used by individual bats opportunistically at any time of the year. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions ^b and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity and not a classic cool/stable hibernation site but could be used by individual hibernating bats ^c).	Habitat that could be used by small numbers of bats as flight-paths such as a gappy hedgerow or unvegetated stream, but isolated i.e. not very well connected to the surrounding landscape by other habitat. Suitable but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions ^b and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only, such as maternity and hibernation – the categorisation described in this table is made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for flight-paths such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure with one or more potential roost sites that are obviously suitable for use by large numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions ^b and surrounding habitat. These structures have the potential to support high conservation status roosts, e.g. maternity or classic cool/stable hibernation site.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by bats for flight-paths such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as a broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roost.

Potential Suitability	Description of Roosting Habitats in Structures	Description of Potential Flight-Paths and Foraging Habitats
a Negligible is defined as ‘so small or unimportant as to be not worth considering, insignificant’. This category may be used where there are places that a bat could roost or forage (due to one attribute) but it is unlikely that they actually would (due to another attribute). b For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance. c Evidence from the Netherlands shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a range of building types in urban environments. Common pipistrelle swarming has been observed in the UK and winter hibernation of numbers of this species has been detected at Seaton Delaval Hall in Northumberland. This phenomenon requires some research in the UK, but ecologists should be aware of the potential for larger numbers of this species to be present during the autumn and winter in prominent buildings in the landscape, urban or otherwise.		

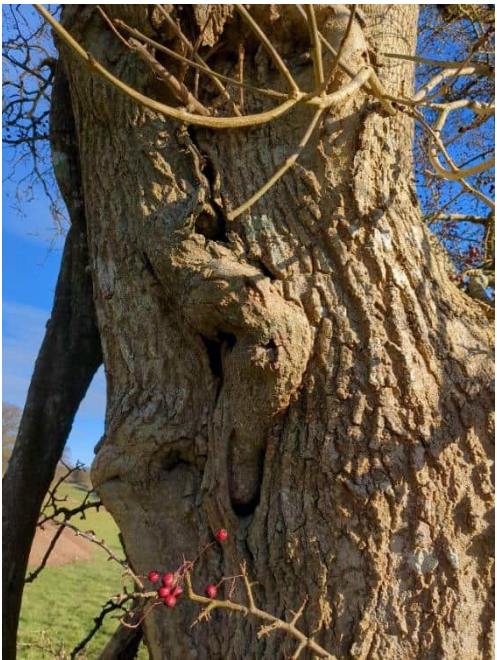
Appendix 5-C

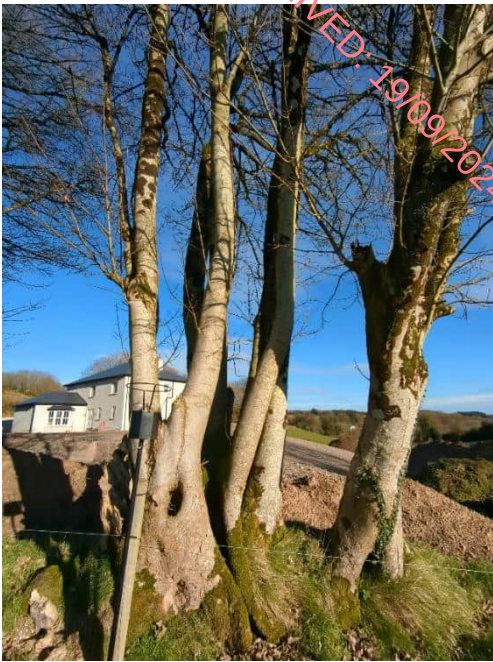
Potential Roost Assessment

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Ref.	Description	Evaluation	Overall assessment	Photograph
Tree 1	Tree 1 comprised a semi-mature ash located within the woodland/scrub mosaic to the south of the Site at approximate ITM co-ordinates 626722, 698044.	There were no PRFs identified on this tree. However, the main stem was covered in partially detached ivy with stem diameters in excess of 50 mm. It may be possible that PRFs exist within the obscured areas of the tree. It is anticipated that any potential PRFs within the stem would be suitable for crevice-dwelling and void-dwelling bats.	Low bat roosting potential	
Tree 2	Tree 2 (TN2) comprised a mature beech located on the edge of a treeline within the southern field at approximate ITM co-ordinates 626812, 698056.	The tree has vertically linear crevices located near the base and up to approximately 3 m along the main stem. Likely only suitable for single opportunistic crevice-dwelling bats. None of the crevices go significantly deep into the stem. There is a branch split on the NW aspect at a height of approximately 15 m. This split has a possible entry point leading further into the branch and further assessment is required.	Moderate bat roosting potential	

Ref.	Description	Evaluation	Overall assessment	Photograph
Tree 3	Tree 3 (TN3) comprised a mature beech located along a treeline at approximate ITM co-ordinates 626813, 698045.	There is a large trunk cavity with located approximately 3 m up the main stem. This has vertical linear crevices leading to potential roosting for numerous crevice-dwelling bats. There are also gaps leading behind deadwood into a potential trunk cavity.	Moderate bat roosting potential	
Tree 4	Tree 4 comprised a mature beech located along a treeline within the southern field at approximate ITM co-ordinates 626849, 698135.	There are minor crevices for single bats located throughout the main stem up to approximately 8 m in height. These are shallow and do not go deep enough to support numerous bats.	Low bat roosting potential	

Ref.	Description	Evaluation	Overall assessment	Photograph
Tree 5	Tree 5 comprised a mature beech located within treeline at approximate ITM co-ordinates 626859, 698145.	There were many shallow crevices located along the main stem which were not deep enough to support numerous bats.	Low bat roosting potential	
Tree 6	Tree 6 comprised a mature ash located within a treeline along the northeastern site boundary at approximate ITM co-ordinates 626672, 698276.	There were several instances of loose bark leading into a potential trunk cavity along the main and secondary stems, between heights of 1.5 m and 5 m.	Low bat roosting potential	

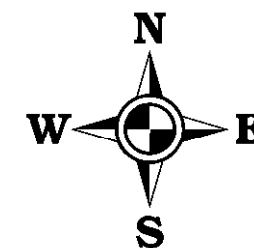
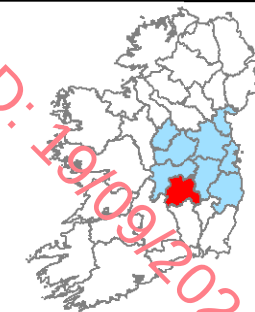
Ref.	Description	Evaluation	Overall assessment	Photograph
Tree 7	Tree 7 comprised of a mature, multi-stemmed sycamore located within a treeline at approximate ITM co-ordinates 626649, 698294.	There is a trunk cavity located at a height of approximately 1 m, however it was uncertain whether this leads further upward into the stem.	Low bat roosting potential	
Tree 8	Tree 8 comprised of two mature spruces located within a treeline located to the north of the Site between the existing S&G pit and the northern field at approximate ITM co-ordinates 626608, 698339.	No PRFs were identified, and these trees were only given a low assessment rather than a negligible assessment due to the dense canopy obscuring parts of the stem. However, based on the good health and semi-mature ages of the trees, it was considered unlikely to support features that would support larger numbers of bats.	Low bat roosting potential	

Ref.	Description	Evaluation	Overall assessment	Photograph
Tree 9	Tree 9 was located to the north of the Site, bordering the northern field at approximate ITM co-ordinates 626548, 698314.	There were no PRFs identified on this tree. However, the main stem was covered in partially detached ivy with stem diameters in excess of 50 mm. It may be possible that PRFs exist within the obscured areas of the tree. It is anticipated that any potential PRFs within the stem would be suitable for crevice-dwelling and void-dwelling bats.	Low bat roosting potential	

Appendix 5-D

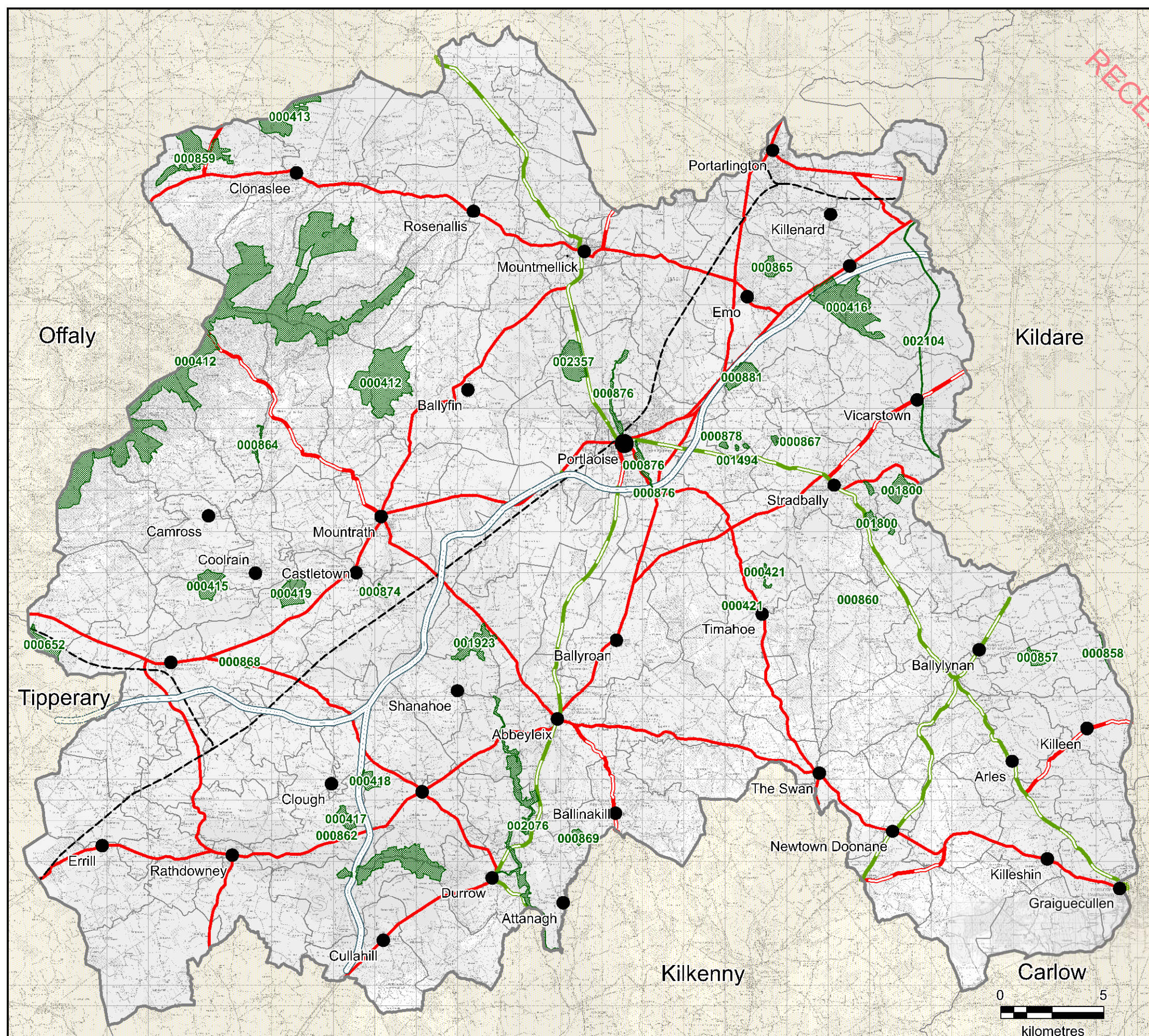
NHA's & Nature Reserves

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Legend:

- Natural Heritage Areas
- Town/Village
- Motorway
- National Secondary Roads
- Strategic Regional Roads
- Regional Roads
- Railway Routes
- County Boundary
- DED Boundaries



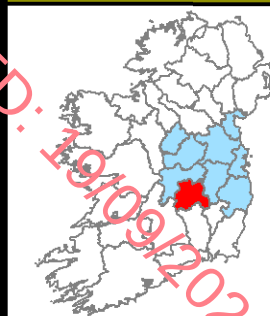
**MAP 11.3 - NATURAL
HERITAGE AREAS**



**LAOIS COUNTY COUNCIL
FORWARD PLANNING SECTION**

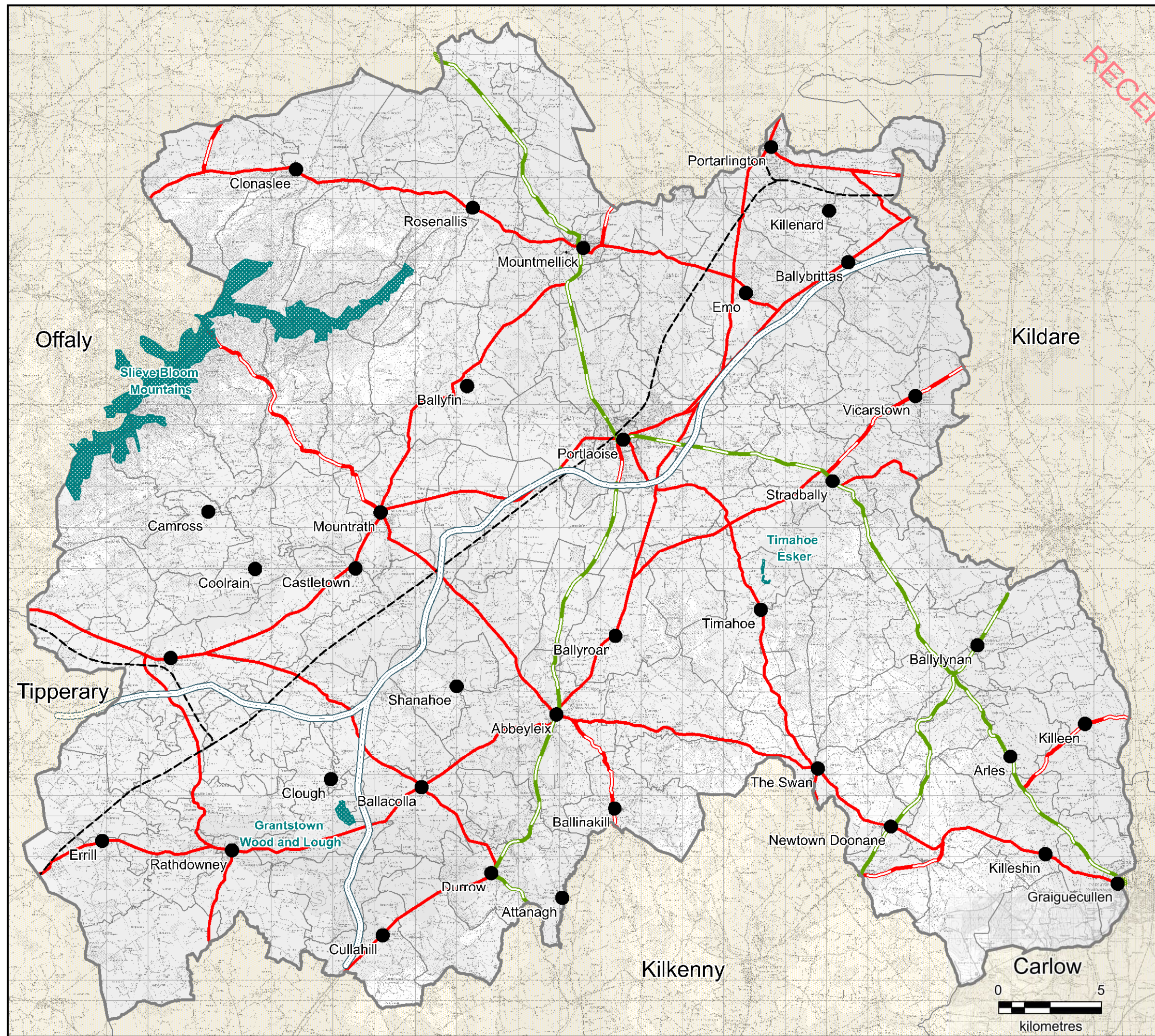
Drawn: Bryan Scully	Checked: David O'Hara & Nathan Smith	Approved: Angela McEvoy
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Legend:

- Nature Reserves
- Town/Village
- Motorway
- National Secondary Roads
- Strategic Regional Roads
- Regional Roads
- Railway Routes
- County Boundary
- DED Boundaries



**MAP 11.4 -
NATURE RESERVES**



**LAOIS COUNTY COUNCIL
FORWARD PLANNING SECTION**

Drawn: Bryan Scully	Checked: David O'Hara & Nathan Smith	Approved: Angela McEvoy
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Appendix 5-E Hedgerow Appraisal

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Table 5-30: Hedgerow significant assessment

Hedgerow reference	Central point location (ITM)	Criteria		Score	Justification
1	626577 698215	Historical significance	Period of establishment	Significant (3)	Hedgerow 1 forms an internal field boundary. Historical mapping ⁴² shows that this hedgerow/farm boundary was present in the first edition six-inch maps dating from surveys undertaken between 1829 and 1842.
		Species diversity significance	Tree/shrub/climber species count	Slightly significant (1)	Canopy dominated by hawthorn and hazel with some elder, holly, and blackthorn also present (i.e., five species)
		Ground flora significance	Species count	Low significance (0)	Ground flora included nettle, rush, creeping buttercup, wild strawberry, Yorkshire fog, creeping thistle, herb Robert, male fern, broad-leaved dock, common hogweed, foxglove, ivy, sorrel, germander speedwell <i>Veronica chamaedrys</i> , cleavers <i>Galium aparine</i> , willowherb, and ragwort. (i.e., 17 species in total). However, overall ruderals such as nettles and cleavers dominated the ground flora.
			Pteridophytes (Ferns)	N/A	Only one fern was present: male fern.
		Structure, construction & associated features	Wall/bank	Low significance (0)	No wall or bank present.
			Drain	Low significance (0)	No ditch present.
			Other	Low significance (0)	No badger sett or other notable features present.
		Habitat connectivity significance		Moderately significant (2)	Links with other hedgerows.
		Landscape significance		Low significance (0)	No notable landscape features present.
		Other factors of significance		N/A	N/A

⁴² Using first edition OS mapping: <https://osi.maps.arcgis.com/apps/dashboards/d5bdc7daef3e4537b67caa31dfcc42d5>. Accessed May 2024.

Hedgerow reference	Central point location (ITM)	Criteria		Score	Justification
2	626472 698222	Overall significance		Cumulative score	Justification
		Not considered 'Heritage hedgerows'		6	Cumulative score of 16 (or a cumulative score of 6 or greater in the Historical, Species Diversity or Structural Categories) needed.
		Historical significance	Period of establishment	Significant (3)	Hedgerow 2 forms a farm boundary located adjacent to a farm road/track. Historical mapping ⁴³ shows that this hedgerow/farm boundary was present in the first edition six-inch maps dating from surveys undertaken between 1829 and 1842.
		Species diversity significance	Tree/shrub/climber species count	Low significance (0)	Canopy species comprised gorse, bramble, hazel (i.e., three species)
		Ground flora significance	Species type	Slight significance (1)	Ground flora was limited due to the road/farm track and included herb Robert, buttercup, common hogweed, and meadowgrass. (i.e., four species in total).
			Species count		
			Pteridophytes (Ferns)	N/A	No ferns identified.
		Structure, construction & associated features	Wall/bank	Low significance (0)	No wall or bank present.
			Drain	Low significance (0)	No ditch present.
			Other	Low significance (0)	No badger sett or other notable features present.
		Habitat connectivity significance		Significant (3)	Links with other hedgerows as well as woodland located to the northeast and plantation woodland located to the southwest.
		Landscape significance		Moderately significant (2)	Links with other hedgerows.

⁴³ Using first edition OS mapping: <https://osi.maps.arcgis.com/apps/dashboards/d5bdc7daef3e4537b67caa31dfcc42d5>. Accessed May 2024.

Hedgerow reference	Central point location (ITM)	Criteria		Score	Justification
		Other factors of significance		Low significance (0)	No notable landscape features present.
		Overall significance		Cumulative score	Justification
		Not considered 'Heritage hedgerows'		9	Cumulative score of 16 (or a cumulative score of 6 or greater in the Historical, Species Diversity or Structural Categories) needed.
3	626535 698052	Historical significance	Period of establishment	Significant (3)	Hedgerow 4 forms an internal field boundary. Historical mapping ⁴⁴ shows that this hedgerow/farm boundary was present in the first edition six-inch maps dating from surveys undertaken between 1829 and 1842.
		Species diversity significance	Tree/shrub/climber species count	Low significance (0)	Dominated by hazel and hawthorn (i.e., two species).
		Ground flora significance	Species count	Low significance (0)	Ground flora was very sparse and absent in many parts of the hedgerow. Where ground flora was present it included bramble, thistle, ivy, nettle, foxglove (i.e., five species in total).
			Pteridophytes (Ferns)	N/A	No ferns were recorded.
		Structure, construction & associated features	Wall/bank	Moderately significant (2)	Bank present between 0.5 – 1m in height difference.
			Drain	Low significance (0)	No ditch present.
			Other	Low significance (0)	No badger sett or other notable features present.
		Habitat connectivity significance		Significant (3)	Hedgerow 4 is connected to woodland and gorse scrub habitat to the northeast and plantation woodland to the southwest.

⁴⁴ Using first edition OS mapping: <https://osi.maps.arcgis.com/apps/dashboards/d5bdc7daef3e4537b67caa31dfcc42d5>. Accessed May 2024.

Hedgerow reference	Central point location (ITM)	Criteria		Score	Justification
		Landscape significance		Slightly significant (1)	Single link with semi-natural habitat including hedgerow
		Other factors of significance		Low significance (0)	No notable landscape features present.
		Overall significance		Cumulative score	Justification
		Not considered 'Heritage hedgerows'		9	Cumulative score of 16 (or a cumulative score of 6 or greater in the Historical, Species Diversity or Structural Categories) needed.
4	626812 698206	Historical significance	Period of establishment	Significant (3)	Hedgerow 4 forms a field boundary. Historical mapping ⁴⁵ shows that this hedgerow/farm boundary was present in the first edition six-inch maps dating from surveys undertaken between 1829 and 1842.
		Species diversity significance	Tree/shrub/climber species count	Slightly significant (1)	Dominated by gorse, hawthorn, hazel, blackthorn, with occasional oak (i.e., five species).
		Ground flora significance	Species count	Moderately significant (2)	Ground flora was very sparse and absent in many parts of the hedgerow. Where ground flora was present it included bramble, ivy, sorrel, dandelion, wild strawberry, ragwort, and nettle (i.e., seven species in total).
			Pteridophytes (Ferns)	N/A	No ferns were recorded.
		Structure, construction & associated features	Wall/bank	Low significance (0)	No wall or bank present.
			Drain	Low significance (0)	No ditch present.
			Other	Low significance (0)	No badger sett or other notable features present.
		Habitat connectivity significance		Significant (3)	Hedgerow 4 is connected to gorse scrub and treelines.

⁴⁵ Using first edition OS mapping: <https://osi.maps.arcgis.com/apps/dashboards/d5bdc7daef3e4537b67caa31dfcc42d5>. Accessed May 2024.

Hedgerow reference	Central point location (ITM)	Criteria	Score	Justification
		Landscape significance	Slightly significant (1)	Single link with semi-natural habitat including hedgerow
		Other factors of significance	Low significance (0)	No notable landscape features present.
		Overall significance	Cumulative score	Justification
		Not considered 'Heritage hedgerows'	10	Cumulative score of 16 (or a cumulative score of 6 or greater in the Historical, Species Diversity or Structural Categories) needed.

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Table 5-31: Hedgerow condition assessment

Hedgerow reference	Central point location (ITM)	Criteria		Score	Justification
1	626577 698215	Structural variables	Height	Adequate (1)	The average height of the hedgerow is approximately 1 - 2m across its length.
			Width	Adequate (1)	The average width of the hedgerow is approximately 1.5 - 2m across its length.
			Profile	Highly favourable (3)	The profile of the hedgerow is overgrown with outgrowths at the base.
			Basal density	Highly favourable (3)	The hedgerow was densely vegetated and opaque.
		Continuity	% of gaps	Highly-favourable (3)	There were no gaps throughout Hedgerow 1 and the hedgerow was continuous.
			Specific gaps	Highly-favourable (3)	No gaps present.
		Negative indicators	Bank/wall	N/A	No bank or wall present.
			% of canopy dominated by ivy	N/A	Ivy was present but only in minor quantities (i.e., <25%).
			Unfavourable species composition	Unfavourable (0)	Unfavourable species including ragwort, creeping thistle, and broad-leaved dock made up >10% of ground flora.
			Ground flora/hedge base	Unfavourable (0)	Unfavourable species including ragwort, creeping thistle, and broad-leaved dock and nutrient rich species including nettle and cleavers made up >20% of ground flora.
			Degraded margin	Unfavourable (0)	Poaching occurs up to the base of the hedgerow.

Hedgerow reference		Central point location (ITM)	Criteria		Score	Justification
			Overall condition		Cumulative score	Justification
			Unfavourable		14	A score of 0 in any category represents a hedgerow in unfavourable condition.
2	626472 698222	Structural variables	Height	Adequate (1)		The average height of the hedgerow is approximately 1 - 2m across its length.
			Width	Adequate (1)		The average width of the hedgerow is approximately 1.5 - 2m across its length.
			Profile	Highly favourable (3)		The profile of the hedgerow is overgrown with outgrowths at the base.
			Basal density	Highly favourable (3)		The hedgerow was densely vegetated and opaque.
		Continuity	% of gaps	Favourable (2)		There were no gaps throughout the hedgerow other than an access point where a gate was located. Therefore gaps made up <5% of the hedgerow
			Specific gaps	Unfavourable (0)		One gap present, which was approximately 10m in length.
		Negative indicators	Bank/wall	N/A		No bank or wall present.
			% of canopy dominated by ivy	N/A		No ivy was present.
			Unfavourable species composition	N/A		No unfavourable species recorded.
			Ground flora/hedge base	N/A		No unfavourable species recorded.

Hedgerow reference		Central point location (ITM)	Criteria		Score	Justification
			Degraded margin	Unfavourable (0)		Poaching occurs up to the base of one side the hedgerow, with a farm track present to the base on the other side.
			Overall condition		Cumulative score	Justification
			Unfavourable		10	A score of 0 in any category represents a hedgerow in unfavourable condition.
3	626535 698052	Structural variables	Height	Favourable (2)		The average height of the hedgerow is approximately 3 - 4m across its length.
			Width	Adequate (1)		The average width of the hedgerow is approximately 2m across its length.
			Profile	Adequate (1)		The profile of the hedgerow was wind-shaped and losing base structure.
			Basal density	Adequate (1)		The basal density was semi-opaque in places and open in others.
		Continuity	% of gaps	Adequate (1)		There were several gaps throughout the where the base of the hedgerow was thinning and minor gaps between plants making up the hedgerow. This comprised 5 – 10% of the hedgerow
			Specific gaps	Adequate (1)		Gaps were generally 1m in length.
		Negative indicators	Bank/wall	Highly favourable (3)		No degradation noted.
			% of canopy dominated by ivy	N/A		No ivy was absent.
			Unfavourable species composition	N/A		Undesirable thistles were present but not in significant quantities.

Hedgerow reference		Central point location (ITM)	Criteria		Score		Justification
			Ground flora/hedge base	N/A	Nutrient rich species were present including nettle and thistles. However, ground flora was dominated by bramble.		
			Degraded margin	Unfavourable (0)	Poaching occurs up to the base of both sides the hedgerow.		
		Overall condition		Cumulative score	Justification		
		Unfavourable		10	A score of 0 in any category represents a hedgerow in unfavourable condition.		
4	626812 698206	Structural variables	Height	Favourable (2)	The average height of the hedgerow is approximately 2 - 3m across its length.		
			Width	Favourable (2)	The average width of the hedgerow is approximately 2 - 3m across its length.		
			Profile	Adequate (1)	The profile of the hedgerow was wind-shaped and losing base structure.		
			Basal density	Adequate (1)	The basal density was semi-opaque in places and open in others.		
		Continuity	% of gaps	Favourable (1)	There were several gaps between plants making up the hedgerow. This comprised <5% of the hedgerow		
			Specific gaps	Unfavourable (0)	Gaps were present and reached >5m in length.		
		Negative indicators	Bank/wall	N/A	No bank or wall present.		
			% of canopy dominated by ivy	N/A	No ivy was present only in minor quantities.		
			Unfavourable species composition	N/A	Undesirable thistles and ragwort were present but not in significant quantities.		

Hedgerow reference		Central point location (ITM)	Criteria	Score		Justification
			Ground flora/hedge base	N/A	Nutrient rich species were present including nettle, dandelion and thistles.	
			Degraded margin	Unfavourable (0)	Poaching occurs up to the base of both sides the hedgerow.	
		Overall condition		Cumulative score	Justification	
		Unfavourable		7	A score of 0 in any category represents a hedgerow in unfavourable condition.	

Appendix 5-F Survey Sheets

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BAT ACTIVITY SURVEY RECORD SHEET

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Date		17/04/2024		Weather	
Surveyors		Hugo Brooks & Alice Magee		Temp:	9°C
Start time		20:34		Cloud cover:	6/8 oktas
Finish time		23:12		Wind force:	3 Bft.
Bat detector model		Batlogger M (0230)		Precipitation:	None
Map ref.	Stopping point ref.	Time	No. observed	Species ID (or frequency (kHz) recorded)	Notes & observations
1	A	20:59	1	Common pipistrelle	6m high & foraging
2	A	21:01	1	Soprano pipistrelle	5m high
3	A to B	21:04	1	Common pipistrelle	Heard not seen
4	B	21:07	1	Common pipistrelle	Foraging over and around pond (many passes)
5	C	21:17	1	Common pipistrelle	Heard not seen (faint call)
6	D	21:26	1	Common pipistrelle	Heard not seen
7	D	21:28	1	Common pipistrelle	Heard not seen
8	E	21:35	2	Common pipistrelle	Feeding, many passes
9	E to F	21:42	1	Common pipistrelle	Heard not seen
10	E to F	21:44	1	Common pipistrelle	Heard not seen (many passes)
11	E to F	21:46	1	Common pipistrelle	Heard not seen (many passes)
12	F to G	21:49	2	Soprano pipistrelle	Heard not seen
13	F to G	21:51	2	Common pipistrelle and soprano pipistrelle	Heard not seen
14	F to G	21:54	1	Common pipistrelle	Heard not seen

HEN HARRIER SURVEY RECORD SHEET

Date	04/04/2024	Weather				
Surveyor	Hugo Brooks					
Start time	07:27		Hour 1	Hour 2	Hour 3	Hour 4
		Temp. (°C):	6	7	8	9
		Cloud cover (oktas):	8	8	8	8
End time	11:15	Wind speed (Bft.):	1	1	2	2
		Cloud height:	150 – 500m	150 – 500m	150 – 500m	150 – 500m
		Visibility:	Moderate (1-3 km)	Moderate (1-3 km)	Good (>3km)	Good (>3km)
Species	No. seen	Time of observation	Flight ref.	Target species?	Notes	
Hen harrier	1	08:28	See Figure 5-4	Yes	Female in flight	
Raven	1	09:35	N/A	No	N/A	
Buzzard	1	09:43	N/A	No	N/A	
Buzzard	1	09:57	N/A	No	N/A	

Date	16/05/2024	Weather				
Surveyor	Hugo Brooks					
Start time	07:05		Hour 1	Hour 2	Hour 3	Hour 4
		Temp. (°C):	10	12	14	15
		Cloud cover (oktas):	1	2	4	3
End time	11:35	Wind speed (Bft.):	2	2	2	2
		Cloud height:	>500m	>500m	>500m	>500m
		Visibility:	Good (>3km)	Good (>3km)	Good (>3km)	Good (>3km)
Species	No. seen	Time of observation	Flight ref.	Target species?	Notes	
Kestrel	1	09:34	N/A	No	Male	
Kestrel	1	11:10	N/A	No	Male	
Buzzard	2	11:13	N/A	No	N/A	

15	G	21:57	1	Common pipistrelle	6m high
16	G to H	22:03	1	Unknown	Heard not seen
17	H	22:08	2	Common pipistrelle and soprano pipistrelle	Heard not seen
18	H to I	22:27	1	Common pipistrelle	Heard not seen
19	H to I	22:30	1	39.48	Heard not seen
20	H to I	22:37	1	Common pipistrelle	Heard not seen
21	I	22:43	1	Common pipistrelle	Heard not seen
22	I to J	22:57	1	Common pipistrelle	Heard not seen
23	I to J	23:00	1	Common pipistrelle	Heard not seen
24	I to J	23:03	1	Soprano pipistrelle	Heard not seen

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Appendix 5-G Species and Habitat Distribution and Ranges

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