Rowan

RECEIVED: 15/09/2025

Ballyfeeny Green Energy Project

Environmental Impact Assessment Report Volume III

Appendix 6.10 - Species Habitats and Management Plan

September 2025

This page is left intentionally blank

RECEIVED: 15/09/2025

RECEIVED: 15/09/2025

Ballyfeeny Green Energy Limited

Ballyfeeny Green Energy Project

Appendix 6.10: Species Habitats and Management Plan

September 2025

This report considers the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

INIS Environmental Consultants Ltd.

Suite 16,
Block A,
Clare Technology Park,
Gort Road,
Ennis,
County Clare
Ireland.

RECEIVED: 15/09/2025

Quality Assurance

Copyright Inis Environmental Consultants Ltd.

The findings outlined within this report and the data we have provided are to our knowledge true and express our bona fide professional opinions. This report has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) good practice guidelines. Where pertinent CIEEM Guidelines used in the preparation of this report include the *Guidelines for Ecological Report Writing* (CIEEM, 2017a), *Guidelines for Preliminary Ecological Appraisals* (CIEEM, 2017b) and *Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine*, (CIEEM, 2024). CIEEM Guidelines include model formats for Preliminary Ecological Appraisal and Ecological Impact Assessment. Also, where pertinent, evaluations presented herein take cognisance of recommended Guidance from the EPA such as *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (EPA, 2022), and in respect of European sites, *Managing Natura 2000 sites. The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (European Commission, 2018).

Due cognisance has been given at all times to the provisions of the *Wildlife Act, 1976-2023,* the *European Union (Natural Habitats) Regulations*, the *European Communities (Birds and Natural Habitats) Regulations 2011-2021,* EU Regulation on Invasive Alien Species under *EU Regulation 1143/2014*, the EU Birds *Directive 2009/147/EC* and *Habitats Directive 92/43/EEC*.

No method of assessment can completely remove the possibility of obtaining partially imprecise or incomplete information. Any limitation to the methods applied or constraints however are clearly identified within the main body of this document.

Version	**Date**		**Name**	**Signature**
Final	08/09/2025	**Report approved by:**	Dr. Alex Copland BSc PhD MIEnvSc	
Project Reference	**2232C**	**Title**	Ballyfeeny Green Energy Project - Species Habitat and Management Plan	

Notice

This Species Habitat and Management Plan (SHMP) was produced by INIS Environmental Consultants Ltd. (INIS) on behalf of Ballyfeeny Green Energy Limited (hereafter known as the 'Developer') to accompany **EIAR Chapter 6 - Biodiversity** for the Ballyfeeny Green Energy Project. The purpose of this SHMP is to provide details of required mitigation, enhancement, and monitoring to avoid significant adverse effects on species and habitats from the Ballyfeeny Green Energy Project (hereafter referred to as the proposed 'Project'), and to ensure a positive long-term effect on biodiversity is delivered.

RECEIVED: 15/09/2025

This report may not be used by any person other than the client, without the client's express permission. In any event, INIS accepts no liability for any costs, liabilities or losses arising as a result of the use of or reliance upon the contents of this report by any person other than the client.

This report is confidential to the client and INIS accepts no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies upon the report at their own risk.

© INIS Environmental Consultants Ltd., 2025.

RECEIVED: 15/09/2025

Table of Contents

1 Introduction 1

1.1 Statement of Authority 2

1.2 Project Background 3

1.3 Overview 3

1.4 Ecological Baseline: Key Species 3

1.4.1 Peregrine 4
1.4.2 Barn Owl 5
1.4.3 Bats 5
1.4.4 Hedgerow/Treelines and other Linear Habitats 5
1.4.4.1 Hedgerows (WL1) 6
1.4.4.2 Treelines (WL2) 6
1.4.4.3 Hedgerows/Treelines (WL1/WL2) 6
1.4.4.4 Treeline/Eroding/upland rivers (WL2/FW1) 6
1.4.4.5 Drainage ditch/Hedgerows (FW4/WL1) 6
1.4.4.6 Hedgerows/Treelines/Drainage ditch (WL1/WL2/FW4) 6
1.4.5 Oak-Ash-Hazel Woodland 7

2 Management Objectives 8

2.1 Ecological Context 8

2.1.1 Peregrine 8
2.1.1.1 Breeding Requirements 8
2.1.1.2 Wintering Requirements 10
2.1.2 Barn Owl 10
2.1.2.1 Habitat use 10
2.1.2.2 Nesting habitats 10
2.1.3 Bats 11
2.1.4 Compensatory Habitat Calculations 11

3 Management Prescriptions 12

3.1 Peregrine and Barn Owl Management Prescriptions 12

3.1.1 Timing of Works 12
3.1.2 Nest Sites 13
3.1.3 Poisons and Stupefying Baits 13

3.2 Bat Buffers 14

3.3 Hedgerows and Treelines 16

3.4 Oak-Ash-Hazel Woodland (and other woodland habitats) 18

3.5 Additional Habitat Management 18

3.5.1 Forestry (Woodland) Management 18
3.5.2 Improved Agricultural Grassland 19

4 Implementation and Maintenance 20

4.1 Timing 20

4.2 Consent 20

4.3 Procedures 20

4.4 Responsibilities 20

5 Monitoring and Reviews *21*

5.1 Peregrine 21

5.2 Barn Owl 21

5.3 Bat buffers 22

5.4 Hedgerow and Treelines 22

5.5 Woodland 22

5.6 Reduction in habitat suitability around turbines 23

5.7 Collision Fatality Monitoring 23

5.8 Reporting 24

6 Species and Habitat Management Plan Conclusion *25*

7 References *26*

Annex A *28*

Annex B *34*

RECEIVED: 15/09/2025

List of Tables

Table 1.1: Baseline linear habitats within the proposed wind farm Site and extent of habitat loss ... 6
Table 1.2: Baseline habitats within the proposed wind farm Site and extent of habitat loss..... 7
Table 2.1: Typical annual breeding cycle for Peregrine (Hardey et al., 2013) 9
Table 3.1: Managed habitats for the proposed Project..... 12
Table 3.2: Turbine buffer distances relative to hedgerow and treeline feature heights..... 16

List of Figures

Figure A- 1: Proposed Project windfarm element site layout. 29
Figure A- 2: Bat buffers- Technology Options 1 & 2. 30
Figure A- 3: Bat buffers- Technology Option 3 *..... 31*
Figure A- 4: Linear habitat loss. *..... 32*
Figure A- 5: Proposed linear habitat enhancement and replanting areas..... 33

1 INTRODUCTION

RECEIVED: 15/09/2025

This Species Habitat and Management Plan (SHMP) focuses on five Key Ecological Receptors (KERs) identified within EIAR **Chapter 6: Biodiversity** for the proposed Ballyfeeny Green Energy Project (hereafter referred to as the 'Project'):

- Peregrine (*Falco peregrinus)*;
- Barn Owl (*Tyto alba*);
- bat buffers;
- Linear habitats (hedgerow/treeline) replacement; and
- Oak-Ash-Hazel woodland habitat replacement.

In addition, there is a recommendation for re-seeding temporary construction areas with Perennial Ryegrass (*Lolium perrenne*) to limit Kestrel (*Falco tinnunculus*) foraging activities around the wind turbines.

Context on the ecological baseline of the proposed Project regarding these species and their habitats is provided in **Section 0**. By providing detailed management prescriptions for these species and their habitats, this SHMP will also ensure appropriate mitigation and enhancements are delivered for other key ecological features identified in **Chapter 6: Biodiversity** of the Environmental Impact Assessment Report (EIAR) for the proposed Project. The SHMP should therefore be read in conjunction with this chapter and its associated technical appendices.

This report has been prepared in reference to the current best practice guidance by the suitably experienced and qualified personnel listed in EIAR **Chapter 6 Biodiversity**.

This report contains information on the locations of sensitive ecological features (e.g., specially protected species) which should be **treated as confidential**.

The principal aims of the SHMP are as follows:

- To ensure no disturbance is caused to Peregrine nesting activity during the construction phase of the proposed Project;
- To enhance nesting opportunities for Barn Owl, during construction and during the operational phase of the proposed Project;
- To reduce possible impacts such as collision risk, to bat species from the wind turbines associated with the proposed Project;
- To ensure on-site replacement of equivalent lengths/areas and species compositions of hedgerows and treelines removed during construction and will remain so for operational lifetime of the proposed Project;
- To provide good quality habitat within the proposed wind farm Site boundary (enhancing the existing biodiversity of the site for prey items and wildlife in general).

The rationale of the SHMP is based on results from available research on relevant species and habitats in Ireland.

1.1 Statement of Authority

RECEIVED: 15/09/2025

Cillian Burke BSc (Assistant Ecologist, INIS): ecologist with a BSc (Hons) in Environmental Science from the University of Galway. Cillian has experience in undertaking multi-disciplinary surveys including habitat surveys, bat surveys and mammal surveys, as well as supporting as an Ecological Clerk of Works. Cillian has authored ecological reports including AA Screening Reports, NIS, EcIA and Biodiversity Net Gain (BNG) Reports. Cillian authored this SHMP.

Conor Daly MSc BSc (Hons.) ACIEEM (Ecologist, INIS), contributed to the writing of this SHMP. Conor was awarded a MSc in Biodiversity and Conservation and an Honours BSc (Hons) in Zoology. Conor has conducted bird, mammal, habitat and entomological surveys for renewable energy projects, conservation monitoring projects and private developments since 2021. Over his four years as an ecologist, Conor has written Preliminary Environmental Assessments (PEA), Appropriate Assessment (AA) Screening, NIS and EIAR reports. During his employment with Inis, Conor has been involved in conducting a range of reports, including Appropriate Assessment (AA) Screenings, Natura Impact Statements (NIS), and Environmental Impact Assessment (EIA) Screenings and reports. He has also provided guidance on biodiversity management regarding compliance with national pollinator and biodiversity action plans.

Dr Alex Copland BSc PhD MIEnvSc MCIEEM is Technical Director with INIS. Alex has over 25 years of professional experience working in both statutory and private companies, in third-level research institutions and with environmental NGOs. He is a full member of the Institute of Environmental Sciences (IES) and the Chartered Institute of Ecology and Environmental Management (CIEEM). He is proficient in experimental design and data analysis and has managed several large-scale, multi-disciplinary ecological projects. These have included research and targeted management work for species of conservation concern, the design and delivery of practical conservation actions with a range of stakeholders and end-users, education and interpretation on the interface between people and the environment and the development of coordinated, strategic plans for birds and biodiversity. He has written numerous scientific papers, developed and contributed to evidence-based position papers, visions and strategies on birds and habitats in Ireland. He has supervised the successful completion of research theses for several post-graduate students, including doctoral candidates and is a collaborative researcher with both UCD and UCC. He also sits on the Editorial Panel of the scientific journal, *Irish Birds*, which publishes original ornithological research relevant to Ireland's avifauna, and CIEEM'S Irish Policy Group.

Daniel Connell BSc MSc MCIEEM AEnvCoW is Principal Ecologist at Inis Environmental Consultants Ltd. He has 12 years' combined experience in Ecology and Consultancy within Ireland, and more than 10 years' experience in Environmental Journalism for both ENGOs and National Press in Ireland and the UK. He holds an honours degree in Natural Sciences, from University of Galway and studied for a Masters in Biodiversity, Wildlife and Ecosystem Health at The University of Edinburgh (DL). He has a comprehensive understanding of environmental law and an in-depth knowledge of woodland, wetlands, freshwater, coastal, and marine ecosystems, and the respective botanical, avian, invertebrate, and mammal species which inhabit them. He has worked on large infrastructural projects, including renewable energy, forestry, construction, flood relief schemes, oil & gas exploration, road projects, aviation,

RECEIVED 15/09/2025

tourism, recreational, industrial, commercial, transport, and residential developments. He has overseen various projects as Ecological Clerk of Works (ECoW) and has conducted extensive terrestrial, freshwater, and marine ecology fieldwork and assessment throughout his career.

Daniel has experience in designing, undertaking, managing, and delivering extensive ecological field survey programmes, and in assessing impacts and designing/implementing mitigation measures, for complex infrastructure projects. He has experience in the preparation of Environmental Impact Assessment (EIA), Ecological Impact Assessment (EcIA), Appropriate Assessment (AA) Screening, Natura Impact Statements (NIS), and Preliminary Ecological Appraisal (PEA) reports across a range of projects and plans, including development plans, industrial, transport, residential, and renewable energy developments.

1.2 Project Background

The proposed Project comprises a wind energy development including six turbines and all associated infrastructure including, Turbine Foundations, Turbine Hardstands, Site Access Tracks, Wind Farm Internal Cabling, Grid Connection Route (GCR), Relay Tower, Onsite Substation and works required along the public road network for the turbine delivery. A full description of the proposed Project is provided in **Chapter 2 - Project Description**. Site Description

1.3 Overview

The proposed wind farm Site is located in the townlands of Ballyfeeny and Tully, County Roscommon (**Figure A- 1**). To the west of the site, within 5km, is the town of Strokestown. The Ballymartin_26 Watercourse (IE_SH_26O060890) flows approximate directly west of the site boundary, in an east to northwest direction into the Kilglass Lough. The Culliagh Stream (IE_SH_26F030400) also flows directly adjacent to the eastern side of the proposed Project site boundary, in a north to south direction (**EIAR Chapter 6 - Biodiversity** and **8 – Water, Hydrology and Hydrogeology**). The surrounding environment is comprised largely of agricultural pastureland and conifer plantations.

Access to the proposed Project is primarily achieved using the regional road R371. Local roads surrounding the site can also be used to enable ease of access to survey sites.

The proposed wind farm Site predominantly comprises of conifer plantation and agricultural lands. The proposed Project also includes land allocated for associated elements including the Grid Connection Route (GCR) and the Turbine Delivery Route (TDR).

1.4 Ecological Baseline: Key Species

As described in **Section 1**, this SHMP focuses on the management of habitat for five KERs identified within EIAR **Chapter 6 - Biodiversity**. These species and habitats were selected for targeted habitat management action based on their use of the proposed Project and adjacent land, their conservation status, and the potential effects of the proposed Project on their local populations and occurrence. Detailed information on the ecological baseline of the proposed Project with regard to these species and habitats is provided in EIAR **Chapter 6 - Biodiversity** and summarised below.

1.4.1 Peregrine

Peregrine is an Annex I species on the EU Birds Directive and has exper[redacted] historical declines within the Northern Hemisphere and has continued vulnerability as a r[redacted]f direct human impact involving poisoning, shooting (NPWS, 2018) and persecution (NPWS [redacted]). In the Republic of Ireland (ROI) 2017 national survey, 425 territorial pairs were recorded ([redacted] Parr & O'Brien 2018). It currently has an increasing population trend and breeding rang[redacted] both the short-term and long-term in Ireland (Article 12 Reporting).

In the ROI, most Peregrine studies have been based on monitoring data collated throughout the country. Norriss (1995), using data from the national survey, found the interaction of cliff height, orientation and rainfall widely influenced occupancy of natural nest sites. It was also found that breeding success was strongly influenced by rainfall levels and cliff size, especially in the west of Ireland. In the most recent ROI survey, Co. Wicklow had the highest densities of Peregrines in the country (Madden *et al.* 2009). Over 20% of the surveyed territories and 7.2% of the ROI's total population were in Wicklow in 2002, despite Wicklow only accounting for 2.8% of the country's surface area. As well as coastal cliffs and upland mountains, Peregrines breed on natural cliffs and quarries in lowland areas, where cereal and dairy production are the primary land-uses (Burke *et al.,* 2015).

Peregrines were frequently recorded within and adjacent to the proposed Project during the detailed field surveys undertaken between 2023 and 2024, during the breeding and winter seasons. All figures and relevant data are detailed in **Appendix 6.5** of the EIAR **Chapter 6 – Biodiversity.**

Peregrine was observed nine times during the breeding 2023 VP surveys. Two main territories were identified:

- 355.4m west of the proposed Project, over conifer plantation and the active quarry, where a nest was confirmed in June 2023; and
- Partially within the proposed Site boundary, 47.4m south of the T03 hardstand and 31.7m east of the T04 hardstand. The territory is mostly located over conifer plantation and agricultural fields south of the proposed Site boundary.

Peregrine was observed once during the winter 2023/2024 VP surveys and flightline activity recorded the Peregrine flying 129.7m north of the GCR.

In 2024 breeding season VP surveys, Peregrine was observed on six occasions. One flightline was recorded partially within the proposed Site boundary, 83.5m from the T02 hardstand. Flightline activity was recorded in the vicinity of the Peregrine nest identified during the 2023 and 2024 breeding raptor surveys. Two flightlines were recorded over the footprint of the GCR route and 378.8m east of the proposed Site boundary.

During the 2023 breeding raptor survey, a Peregrine nest was recorded. The nest was recorded [redacted]

During the breeding season 2024 breeding raptor surveys, [redacted]

RECEIVED 15/09/2025

[redacted] the other adult Peregrine was in the nest calling in response. In May 2024, one Peregrine chick was recorded in the nest.

As evidenced by the confirmed nest site during the breeding seasons 2023 and 2024, there is suitable breeding and hunting habitat for Peregrine within and surrounding the proposed Site boundary.

1.4.2 Barn Owl

Barn Owl is included on the BoCCI Red List. Declines in Barn Owl populations in Ireland are the results of several factors, these include intensification of agriculture resulting in the reduction of prey-rich habitat, use of coagulant rodenticides and increasing mortality caused by increasing road works (Lusby & O'Clery, 2014). The Bird Atlas (2007-2011) shows a decline of 39% in the breeding range for Barn Owl in the last 40 years. There is an estimated 400 minimum to 500 maximum breeding pairs in Ireland (Article 12 Reporting).

Barn Owls breed in ruined or abandoned buildings and, to a lesser extent in outbuildings (barns/sheds). Breeding success depends on the availability of prey. In winter, they are largely resident, though young birds will wander in search of new territories. All figures and relevant data for Barn Owl are detailed in **Appendix 6.5** of the EIAR **Chapter 6 – Biodiversity.**

During the breeding season 2024, a Barn Owl sighting was recorded 29.6m southeast of the proposed Onsite Substation. Several potential Barn Owl nesting sites were recorded within and surrounding the proposed wind farm Site boundary, although none were confirmed as being active.

1.4.3 Bats

There are ten recorded bat species in Ireland. Of these Leisler's Bat (*Nyctalus leisleri*) are a relatively high-flying species of open habitats, that potentially occur within the rotor sweep zone. (SNH, 2021). However, pipistrelle species have been observed to investigate new landscape structures such as turbine masts and many species will investigate new habitat areas, particularly where forestry habitats have been cleared (SNH, 2021). Three bat species, Leisler's Bat, Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*) Nathusius' Pipistrelle (*Pipistrellus nathusii*), Brown Long-eared Bat (*Plecotus auritus*), Daubenton's Bat (*Myotis daubentonii*), Natterer's Bat (*Myotis nattereri*) and Whiskered Bat (*Myotis mystacinus*) have all been recorded within the proposed Project boundary and have therefore been brought forward for consideration as KERs for the proposed project. All figures and relevant data for bats are detailed in **Appendix 6.6** of the EIAR **Chapter 6 – Biodiversity.**

1.4.4 Hedgerow/Treelines and other Linear Habitats

Baseline (i.e. pre-construction) linear habitats within and adjacent to the proposed Project (together forming the 'Study Area' that is subject to assessment and management prescriptions within this SHMP) are summarised in **Table 1.1,** with main habitats considered to be KERs (i.e., those with a "woody component such as hedgerows or treelines) described below. The habitat lengths are measured in metres (m). All figures and relevant data for habitats are detailed in **Appendix 6.3** of the EIAR **Chapter 6 – Biodiversity.**

RECEIVED: 15/09/2025

1.4.4.1 Hedgerows (WL1)

Linear strips of shrubs and occasionally low scrub, often with occasional trees, typically forming field boundaries. Common species recorded include Hawthorn (*Crataegus monogyna*), Holly (*Ilex aquifolium*), Bramble (*Rubus fructicosus agg.*), Ivy (*Hedera helix*), Gorse (*Ulex europaeus*) and Ash (*Fraxinus excelsior*). Significant areas of this habitat occur within the proposed wind farm Site boundary; within the footprints of T01, T02 and T06 and associated hardstands, hedgerows are a regularly occurring habitat along the GCR. A total area of 11,334m of this habitat was located within the proposed Project boundary.

1.4.4.2 Treelines (WL2)

Narrow rows or single lines of trees greater than 5m in height and typically occurring along field boundaries. The most common species recorded within the habitat is Ash. The habitat was recorded adjacent to hardstand areas located between T04 and T05 and partially within the T03 hardstand. A total of 793m occurred within the proposed wind farm Site boundary.

1.4.4.3 Hedgerows/Treelines (WL1/WL2)

This mosaic habitat was recorded within the footprint of the T05 hardstand. A total of 1,167m occurred within the proposed Project boundary.

1.4.4.4 Treeline/Eroding/upland rivers (WL2/FW1)

This mosaic habitat was recorded going through the footprint of the T04 hardstand. Common species recorded include Oak (Q*uercus spp*), Ash, Alder (*Alnus glutinosa*), Hawthorn, Willow (*Salix spp*) and Holly. A total of 338m occurred within the proposed wind farm Site boundary.

1.4.4.5 Drainage ditch/Hedgerows (FW4/WL1)

This mosaic habitat occurs partially within the footprint of the T05 hardstand and 29.82m northwest of T06. A total of 507m occurred within the proposed wind farm Site boundary.

1.4.4.6 Hedgerows/Treelines/Drainage ditch (WL1/WL2/FW4)

This mosaic habitat occurs within the footprint of the T05 hardstand. A total of 168m occurred within the proposed wind farm Site boundary.

Table 1.1: *Baseline linear habitats within the proposed wind farm Site and extent of habitat loss*

Habitat (Fossitt Code)	Pre-construction extent within the proposed Project Site (m)	Extent of habitat loss (m)	
		Technology Option 1 or 2	Technology Option 3
Hedgerows (WL1)	11,334m	873m	876m
Treelines (WL2)	793m	23m	24m
Hedgerows/Treelines (WL1/WL2)	1,167m	427m	427m
Drainage ditch (FW4)	507m	-	-
Treeline/Eroding/upland rivers (WL2/FW1)	338m	279m	289m
Drainage ditch/Hedgerows (FW4/WL1)	374m	15m	15m

Habitat (Fossitt Code)	Pre-construction extent within the proposed Project Site (m)	Extent of habitat loss (m)	
		Technology Option 1 or 2	Technology Option 3
Hedgerows/Treelines/Drainage ditch (WL1/WL2/FW4)	168m	28m	28m

RECEIVED: 15/09/2025

1.4.5 Oak-Ash-Hazel Woodland

Baseline (i.e. pre-construction) habitats within and adjacent to the proposed Project (together forming the 'Study Area' that is subject to assessment and management prescriptions within this SHMP) are summarised in **Table 1.2.**

Oak-Ash-Hazel woodland is the only habitat identified as a KER that will be subject to habitat loss arising from the proposed Project. Native, semi-natural woodland that occurs on base-rich or calcareous soils that are generally dry or well-drained, or on rocky limestone terrain (Fossitt, 2000). This habitat was recorded partially within the footprint of T04 and associated hardstand areas. Common species recorded include Oak, Ash and Hawthorn. The total area of habitat recorded within the proposed Project was 1.48ha.

All figures and relevant data for habitats are detailed in **Appendix 6.3** of the EIAR **Chapter 6 – Biodiversity.**

Table 1.2: Baseline habitats within the proposed wind farm Site and extent of habitat loss

Habitat (Fossitt Code)	Pre-construction extent within the proposed Project Site (ha)	Extent of habitat loss (ha)	
		Technology Option 1 or 2	Technology Option 3
Conifer plantation (WD4)	47.58	9.32	9.72
Improved agricultural grassland (GA1)	22.03	3.99	3.99
Wet grassland (GS4)	14.85	<0.01	<0.01
Building and artificial surfaces (BL3)	12.07	-	0.46
Improved agricultural grassland/Wet grassland (GA1/GS4)	15.16	2.59	2.59
Recently-felled woodland (WS5)	4.63	.89	0.93
Scrub (WS1)	4.03	0.01	0.01
Mixed broadleaved woodland (WD1)	3.53	-	-
Amenity grassland (GA2)	2.74	-	-
Oak-ash-hazel woodland (WN2)	1.48	0.39	0.39
Active quarries and mines (ED4)	2.19	<0.01	<0.01
Buildings and artificial surfaces/ Spoil and bare ground/ Recolonising bare ground (BL3/ED2/ED3)	0.57	<0.01	<0.01
Dry meadows and grassy verges (GS2)	0.34	-	1
Wet willow-alder-ash woodland (WN6)	0.253	0.01	0.01
Scrub/ Wet willow-alder-ash woodland (WS1/WN6)	0.05	-	-
Other artificial lakes and ponds (FL8)	0.01	-	-

2 MANAGEMENT OBJECTIVES

RECEIVED: 15/09/2025

As outlined in **Section 1**, the purpose of this SHMP is to prescribe detailed mitigation, enhancement and monitoring approaches to avoid significant adverse effects on species and habitats from the proposed Project and achieve enhancements for these and other ecological features, notably for Peregrine, Barn Owl, Bats, hedgerow and treeline habitats and Oak-Ash-Hazel woodland. As such, taking into consideration the ecological baseline and the potential effects on ecological features identified in EIAR **Chapter 6 - Biodiversity**, the primary objectives of this SHMP are:

- Where the known Peregrine nest site occurs, the preservation of this nest site and their surrounding core foraging habitat should take precedence over other management prescriptions;
- Encourage or support Barn Owl populations in the area surrounding the proposed Project through the installation of a Barn Owl nesting box;
- To create bat buffers around turbines where there is high activity of bats, following Best Practice guidance (SNH, 2021); and
- To ensure on-site replacement of equivalent lengths/areas and species compositions of hedgerows and treelines following the removal of such habitats for bat buffers, and woodland during construction and will remain so for operational lifetime of the proposed Project, such that commuting and foraging habitat is not lost during construction and operation and decommissioning phases of the proposed Project;

In addition to these key management objectives, management measures should seek to deliver enhancements for other KERs identified in EIAR **Chapter 6 - Biodiversity** where the opportunity arises, to maximise the biodiversity benefit provided by the proposed Project. This includes Perennial ryegrass planting and habitat removal around temporary construction areas to limit Kestrel and other birds foraging around the turbined during operation phase of the proposed Project.

2.1 Ecological Context

In order to meet the management objectives, the ecological requirements of target species and habitats must be understood. Context on these ecological features is therefore provided below.

2.1.1 Peregrine

Considering the importance of the proposed Project and adjacent land for breeding and wintering Peregrine, management prescriptions for this species must be underpinned by best practice guidance and understanding of the ecological requirements of Peregrine and the existing threats and pressures on this species.

2.1.1.1 Breeding Requirements

Areas supporting successful breeding Peregrine populations must provide both suitable nesting locations and suitable foraging habitat, as evidenced by field sightings conducted during the breeding and winter seasons. This habitat must remain suitable throughout the

breeding season, which typically extends from March to August inclusive, during which the birds typically forage up to 2 - 6km from the nest site. Indicative breeding timings for Peregrine provided by Hardey *et al.* (2013) are detailed in **Table 2.1** below to provide context to inform mitigation and management recommendations.

RECEIVED: 15/09/2025

Table 2.1: Typical annual breeding cycle for Peregrine (Hardey et al., 2013)

Breeding activity	Peak period	Range	Duration (days)
Site occupation	March to July	All year (for some pairs)	-
Courtship display	-	Early March to late April	-
Egg-laying	Early April to late April	Mid-March to early May	2-12
Incubation	Early April to late May	Mid-March to early June	28-35
Hatching	Early May to late May	Late April to early June	-
Young in nest	Early May to late June	Late April to late July	35-42
Fledging	Late June to early July	Early June to late July	-
Juvenile dispersal	August to September	July to January	-

In Britain and Ireland, most eyries are on cliffs or crags. Peregrines tend to use the largest suitable cliffs available, although the quality of ledges for breeding is important, and large cliffs will be ignored if they do not provide adequate ledges. The cliffs may be broken, a series of small rock faces, a single sheer crag, or a rocky gully (Ratcliffe, 1993). Inland breeding cliffs are often above or overlooking a river or a lake. Peregrines will frequently re-use breeding ledges. In the absence of cliffs, Peregrines will breed on the ground, for example on steep sand banks above burns or on heathery slopes. They occasionally breed in trees using the old nests of other species, such as Raven (*Corvus corax*). Eyries on man-made structures such as power stations, bridges, quarry machinery, churches and electricity pylons are becoming more common (Ratcliffe, 1993; Harwood, 2000).

Preferred foraging areas include targeting areas used by prey items such as Golden Plover (*Pluvialis apricaria*) and Red Grouse (*Lagopus lagpus* ssp *hibernicus*) in the uplands, seabirds on the coast, and Feral/Racing Pigeons (*Columba livia f. domestica*) and Starlings (*Sturnus* vulgaris) are popular prey in urban areas. They mainly target birds, usually taken in the air and sometimes on the ground or on water. Peregrines employs a spectacular hunting technique where the bird 'stoops' from high above its intended prey, with its wings held close into the body, reaching great speeds.

Research into the disturbance of Peregrine during the breeding season found that the minimum/maximum approach distance for Peregrine during the breeding season was 500-750m (Goodship & Furness, 2022).

RECEIVED: 15/09/2025

2.1.1.2 Wintering Requirements

Peregrines are mostly resident in Ireland but show some movement away from its breeding areas in the winter. They can be found on the coast, especially on estuaries where they hunt on concentrations of water birds. Some Peregrines move into cities, where Feral Pigeons provide suitable prey; individuals have been captured on film by a road traffic camera looking down over the quays in central Dublin. Some Peregrines at this time of the year could have immigrated from Britain or even further afield.

2.1.2 Barn Owl

In recent decades, the Barn Owl population in Ireland has experienced a dramatic decline in their breeding range and numbers. Once a much more common bird throughout Ireland, a decline was first noted from around the 1950's. The latest bird Atlas (Balmer *et al.*, 2013) highlighted a breeding range decline of 39% over the previous 40 year period. As a result of this decline, the Barn Owl is categorised as a Red-listed Bird of Conservation Concern in Ireland (Gilbert *et al.*, 2021).

2.1.2.1 Habitat use

In Ireland, Barn Owls are non-migratory and also sedentary; once a pair establishes in an area they tend to remain in the same territory throughout their lives. They are not a strongly territorial species and will only actively defend the immediate area of the nest site, so territories can often overlap. A good Barn Owl territory, in addition to suitable foraging habitat, will also have suitable nesting sites as well as a number of roost sites which are used at different times of the year. As Barn Owls are birds which favour lowland farmland, the majority of nests are below 150m, with the highest recorded sites in Ireland being close to 300m in altitude.

2.1.2.2 Nesting habitats

Barn Owls require a dry, dark and secluded site for nesting. In Ireland the most common nest sites are old, ruined buildings, such as castles, churches, ruined mansions, derelict farmhouses and farm buildings. Within these structures, chimneys are the most frequently used for nesting, although roof spaces and wall cavities are also popular choices within ruined buildings. Although Barn Owls generally tend to avoid human activity, as long as the nest site itself is free from disturbance, they can occasionally nest in occupied houses, busy farm buildings and in towns and villages. In addition to man-made structures, they will also use a range of other sites which meet their nesting requirements including cavities in cliffs or quarries, hollow cavities in old mature trees, as well as purpose-built nest boxes

There are many different types and designs of nesting box for Barn Owls, but all share similar features. Barn Owl boxes should have an interior space of minimum 450mm wide, 450mm high and 750mm deep, with an entrance hole at least 120mm square. An exercise platform should be positioned below the entrance. Boxes should be placed as high as possible, with a clear flightline from the front of the box to open countryside. Clean out boxes in November,

leaving a 1cm layer of bark chippings on the base. Keep disturbance to a minimum at other times.

RECEIVED: 15/09/2025

2.1.3 Bats

Both direct collision with turbine blades and barotrauma resulting from close contact with blades have been reported as an issue for bats at operational wind farms (Cryan & Barclay, 2009). The susceptibility of different bat species to such impacts depends on multiple factors; notably their tendency to fly at rotor blade height. SNH (2021) provides a generic assessment of bat collision risk for UK species, based on species behaviour and flight categorisation as well as evidence of casualty rates in the UK and Europe. This bat species collision risk assessment is considered to represent best available information for use in an Irish context. This species collision risk categorisation is used in combination with relative abundance to indicate the potential vulnerability of bat populations. Relative abundances for Irish species were determined in accordance with guidance provided by Wray *et al*. (2010) in combination with available population data.

The proposed Project will therefore include mitigation to minimise the risk of collisions and baropressure effects, notably by clearing linear Tree/Hedgerow features and forestry features within a recommended buffer distance of 50m from the turbine blade tips to suitable tree or shrub habitat features, to make this area unfavourable for bats and thus discourage them from flying through/in close proximity to turbines. The current recommended guidance for this mitigation is dependent upon the turbine size and hub height to determine the buffered distance from each turbine location. For the three Technology Options identified for use in the proposed Project, slightly different bat buffer requirements are calculated (see **Table 1.1** and **Table 1.2** for the habitat loss calculations associated with the three Technology Options.

Management should include measures to ensure the habitats removed to facilitate bat buffers are rendered unfavourable to bats for the lifetime of the windfarm (e.g. via mowing or through an intensive grazing plan). Replacement planting to create new commuting and foraging corridors - that do not draw bats back into the rotor swept area but encourage linear commuting corridors, linking up existing habitat features across the site and in the wider landscape.

2.1.4 Compensatory Habitat Calculations

Areas of direct habitat loss hedgerow, treeline and woodland during the construction phase must be compensated for. The habitat loss is outlined in **Table 1.1** (for hedgerows/treelines) and **Table 1.2** (For Oak-Ash-Hazel woodland) and shown in **Figure A- 4**.

3 MANAGEMENT PRESCRIPTIONS

RECEIVED: 15/09/2025

Specific habitat management prescriptions relevant to Peregrine, Barn Owl and Bats are detailed below. Hedgerow and treeline management details are also provided. These habitat types within the managed areas (**Table 3.1**) are important for delivering appropriate mitigation and enhancements to prevent habitat loss.

When identifying the proposed management areas for this plan, the larger scale landscape was assessed to determine where linear habitat features and woodland that were included for habitat creation or enhancement could be targeted. In some cases, additional extents of hedgerows were removed to prevent animals (particularly bats, but also birds) from moving along these linear habitats which then end abruptly at a buffered distance for a turbine. Instead, these areas were added to the habitat replacement calculations to create a more "linked-up" landscape that allows great connectivity between habitats that may be of higher value for foraging bats (or other animals moving through the landscape).

In addition to habitat-specific management prescriptions indicated below, the following general habitat management prescriptions are relevant to all habitats within the Study Area. The total meters or hectares of habitat involved with each management area can be found in **Table 3.1**.

Table 3.1: Managed habitats for the proposed Project.

Fossitt Code	Area (ha)	% of study area
Conifer plantation (WD4)	47.58ha	33.6%
GA1 Improved agricultural grassland	32.03ha	22.6%
Wet grassland (GS4)	14.85ha	10.49%
Oak-ash-hazel woodland (WN2)	1.48ha	1.04%
Fossitt Code	**Length (m)**	**% of study area**
Hedgerows (WL1)	11,334m	77.2%
Hedgerows/Treelines (WL1/WL2)	1,167m	7.9%
Treelines (WL2)	793m	5.4
Treelines/Eroding/upland rivers (WL2/FW1)	338m	2.3.%
Drainage ditch/Hedgerows (FW4/WL1)	374m	2.54%
Hedgerows/Treelines/Drainage ditch (WL1/WL2/FW4)	168m	1.14%

3.1 Peregrine and Barn Owl Management Prescriptions

3.1.1 Timing of Works

In accordance with current best practice guidance, and as detailed in **EIAR Chapter 6: Biodiversity** (**Section 6.7: Mitigation Measures**), the exclusion zone around active Peregrine nests should be 750m (Goodship & Furness, 2022) during the construction phase. Activities prohibited within these exclusion zones are likely to include machinery use (e.g., for ground excavations and forestry planting and felling. Exclusions zones for Kestrel (250m; Goodship & Furness, 2022) and Barn Owl (150 - 175m; Shawyer, 2011) should also be implemented where active nests are located during the construction phase.

RECEIVED: 15/09/2025

3.1.2 Nest Sites

As described above, effects on nesting Peregrine must be avoided. Long-term monitoring will be undertaken to identify any Peregrine nest locations and to monitor any identified nest sites, with particular emphasis on monitoring the active nest location prior to undertaking construction or maintenance works, so that appropriate mitigation can be adopted.

Landowners should refrain from publicising the locations of the Peregrine nest site and (as far as is practical) avoid approaching the active nest between the period 1st March to 31st July inclusive (see **Table 3.1**).

Additionally, surveys would be required to determine if there is a confirmed nesting or roosting site for Barn Owl. If a roost/nest is confirmed, a suitability appraisal would be required, and a nest box will be provided and meet published guidelines (Lusby & Clery, 2014) in a suitable location.

3.1.3 Poisons and Stupefying Baits

No use of any poisons or stupefying baits will be permitted within the wind farm Site due to the major negative effects these can have on Peregrine, Barn Owl and other wildlife, both directly and through secondary poisoning and other indirect effects.

3.2 Collision Risk Mitigation

3.2.1 Habitat Management

For Kestrel and Buzzard, mitigation to limit foraging activity around turbines will be implemented. This will include measures to reduce prey availability within the hardstand areas associated with each turbine. Although Kestrel was not recorded breeding or nesting within the Project, significant levels of foraging activity were recorded within the wind farm Site boundary, particularly over the footprints of T03, T04 and T05. There is suitable foraging habitat within the Site boundary for Kestrel, so no significant effects are likely for breeding Kestrel in respect of habitat loss. Nevertheless, management to limit Kestrel foraging activity around turbines will be implemented. This will include the following measures to reduce prey availability within the hardstand areas associated with each turbine:

- Removal of timber/brash from felling and chipping of tree stumps to ground level;
- Piping/filling over of open field/forestry drains;
- Spread and compaction of chipped wood and spoil to create a flat surface to prevent rapid colonisation of new vegetation; and
- Ryegrass planting and the creation of uniformly short vegetation heights via infrequent mowing or trimming of vegetation around areas not proposed for other measures (e.g., replanting, enhancement).

3.2.2 Turbine Curtailment

RECEIVED: 15/09/2025

For Peregrine, the risk of collision is more likely associated with birds flying through the site when leaving or arriving at the breeding location rather than birds hunting around the turbines. As adult Peregrines would normally be highly effective in avoiding man-made structures such as antennae, masts and turbines, the risk of collision is likely to be highest when inexperienced young birds are initially fledged and engaging in flight practice. As the young birds will often follow the adults in their initial practice flights, the turbines which pose the highest risk would be determined by the route used most regularly by the adults when exiting the breeding location.

Monitoring of the breeding location through the breeding season or for as long as the breeding attempt is in progress will ne undertaken. In the early stage of the breeding cycle, monitoring will focus on determining the routes taken by the adults when leaving the site (or arriving back at same). This may indicate the turbines which pose the highest potential risk of collision. Through June, emphasis will be on assessing the progress of the young and when the birds are fledged (the average date of fledging in Britian/Ireland is mid-late June (Hardey *et al*., 2013)). At this stage the birds are highly vocal and easily detected by an observer. From thence on, focus will be on the behaviour and movements of the young birds. For several weeks, the young will be fed by the parents whilst they practice hunting themselves. If there are two or more young, they will also engage in social activities and play 'hunting games' in the air. As the young grow stronger, they and the parents move increasingly further from the home cliff during the day, but the family may return there at night to roost. With time, the young will gain full independence and will roost away from the natal site.

From the above, it is considered that there is at least a **4-week period** when the young birds are at the highest risk of collision with the turbines. In this period, it is proposed to curtail during daylight hours the turbine or turbines which are likely (based on earlier observations) to pose a likely significant risk to fledgling collision. An alternative approach that will be assessed will be to turn off the required turbines immediately when the young birds are becoming active in the morning (which will vary between days based on weather) and leave them off until they settle down later in the day (which could be for several hours). This will require daily on-site monitoring for the duration of the nesting season.

As noted, the above mitigation would only be required in the years when the breeding territory is occupied and when young birds are reared successfully.

3.3 Bat Buffers

Best practice guidance suggests that bat feature buffers should achieve a 50m separation distance between the rotor swept area and the closest feature(s) (Scottish Natural Heritage (SNH), 2021)).

Based on the dimensions of the Technology Options proposed, **Table 4.2** provides the range of turbine tower to feature distance that are required for hedgerows and treelines, depending on the feature height. The feature heights on site must be taken as the final (maximum) tree height that would be obtained over the lifetime of the wind farm, i.e. estimated tree heights

after 30 years. The proposed turbine bat buffers are shown in

RECEIVED: 15/09/2025

Figure A- 2 and **Figure A- 3**.

The maximum extent to which felling for turbine buffers is permitted has been pre-determined. For all turbines where felling is required (T01, T03 and T04), an allowance of up to 109m is provided by the proposed felling zones. This would ensure 50m standoffs are met to a maximum feature height of 40m, which is considered more than adequate to accommodate all scenarios for this site. Bat buffers for the three Technology Options are

RECEIVED: 15/09/2025

rounded to the nearest meter, as shown in

RECEIVED: 15/09/2025

Figure A- 2 and Error! Reference source not found..

Table 3.2: Turbine buffer distances relative to hedgerow and treeline feature heights.

Feature height	Technology Option 2		Technology Option 1		Technology Option 3	
Blade Length (m)	66.6m		68m		69.125m	
Hub Height (m)	90m		92m		90m	
Feature	**Hedge**	**Tree**	**Hedge**	**Tree**	**Hedge**	**Tree**
Feature height	2m	40m	2m	40m	2m	40m
Buffer	76.50m	105.34m	76.32m	105.92m	80.29m	108.12m

RECEIVED: 15/09/2025

3.4 Hedgerows and Treelines

Linear features within the study area are predominantly hedgerows, treelines, and mosaic habitats of the two habitat types that currently occupy 13,569m within the Study Area. The construction of the proposed Project involves the removal of Hedgerows (WL1), Treelines and mosaics of the two (WL1/WL2); in the worst-case scenario, the habitat loss will involve the loss of 876m of all hedgerow habitat (WL1) (equating to 7.6% of hedgerow habitat within the proposed Project), 24m of all Treeline habitat (equating to 3.2% of treeline habitats within the proposed Project), and 759m of hedgerows/treelines mosaic habitats (equating to 35% of these mosaic habitats within the proposed Project). This loss is linear habitat is attributed to construction works and the implementation of bat buffers.

Forming contiguous managed areas with new hedgerows/treelines to be planted to maximise connectivity between woodland habitats within and outside of the proposed Project will enhance the biodiversity value of the landscape as a whole (Correa Ayram *et al*., 2016). Loss of connectivity can reduce the size and quality of available habitat, impede and disrupt movement (including dispersal) to new habitats, and affect seasonal migration patterns (Rudnick *et al*., 2012). These changes can lead, in turn, to detrimental effects for populations and species, including decreased carrying capacity, population declines, loss of genetic variation, and ultimately species extinction (Rudnick *et al*., 2012).

Approximately 381m of existing hedgerow and treeline were identified for enhancement within the Study Area. Those areas within the extent of hedgerow and treeline that are poor in quality will be enhanced and fenced to prevent (further) damage from livestock in areas where livestock are/could be present. As part of the restoring process, competing vegetation and alien invasive plant species will be removed following relevant guidance (Department for Agriculture, Food, and the Marine (DAFM), 2021; National Roads Authority (NRA) (2010)). Hedgerow and treeline habitats including a shelterbelt of these features along road routes and on the edge of bat buffer zones that have been identified for enhancement and planting are shown in **Figure A- 5** and illustrative plates showing enhancement and panting areas are shown in **Annex B**. A further 3km will be planted to offset the remaining habitat loss of hedgerows and treelines and will also contribute to encouraging bats not flying toward or through blade sweep zones.

Objectives and criteria for success have been developed in accordance with the Green, Low-Carbon, Agri-Environment Scheme (GLAS) specifications (DAFM, 2020) and the Hedgerow Appraisal System (Foulkes *et al.,* 2013).

Habitat management prescriptions for hedgerows and treelines are listed below:

RECEIVED: 15/05/2025

- Retain existing areas of hedgerows and treelines;
- Reinstate hedgerows and treelines where there is evidence of recent removal;
- Plant 3km of new hedgerows/treelines using native fruit and seed-bearing species, examples of native hedgerow species include hawthorn, blackthorn (*Prunus spinosa*), Holly, Hazel (*Corylus avellana*), Spindle (*Euonymus europaeus*), examples of native treeline species include Willow, Birch (*Betula spp.*), Alder, Sessile Oak (*Quercus petraea*) and Pedunculate Oak (*Quercus robur*) using a 'like-for-like' approach to replace lost hedgerows/treelines where possible;
- Plants must be of Irish Origin or Irish Provenance and purchased from DAFM registered professional operators;
- New planting will be undertaken in the appropriate season, with bareroot stock planted October to December (avoiding periods when the ground is waterlogged or frozen) unless on clay, when planting should be delayed until March due to risk of heave during heavy frost;
- Planting will not be undertaken until the first appropriate season post-construction to avoid damage to whips;
- A low earthen bank or mound will be prepared utilising spoil from the construction of the Project to plant the hedgerow and treelines on or beside. The low earthen bank will slow waterflow, to increase water retention and storage at the base of the hedge and enhance root growth.
- To ensure new hedgerows are beneficial for biodiversity, there must be six plants per metre in a double staggered row with >10 species per 30m section. Overall, no one species will make up more than 70% of the total number of plants;
- Maintain hedgerows to prevent the hedge 'escaping' (i.e., hedgerows which have not been topped, allowing the hedgerow to become a line of trees), with hedgerow trees left uncut and the remainder of the hedgerow cut into an 'A' shape (i.e., wider at the base than at the top);
- If planting a new treeline, a 'like-for-like' approach to replace lost hedgerows/treelines where possible must be chosen, with one tree at every 15m;
- Water during first year to assist with establishment. Frequency of watering to adapt to weather conditions;
- If planting new hedgerows in a grass or tillage field, they must be protected from livestock with an appropriate permanent fence, which can be moved out further as the hedgerow matures and expands;
- Trees will be left to mature without cutting and protected with a tree guard/shelter and fenced off from livestock if present;
- Cut hedgerows annually during establishment phase to encourage sideways growth and canopy closure. Some plants will not be cut / trimmed and allowed to grow into mature hedgerow trees;

RECEIVED: 15/08/2025

- General gaps within hedgerow and treeline habitat will be filled with spoil and planted where possible;
- Competing vegetation will be controlled, preferably via mulching with organic matter, and avoiding the use of chemical herbicides and burning;
- Failed or dead plants (identified during condition assessments) should be replaced in the following planting season;
- Pile hedge cuttings into heaps and leave to decay naturally more than 60m from any operating turbines; and
- Should any newly planted hedgerows require temporary removal to allow for maintenance works to the wind farm, they will be reinstated following the criteria mentioned above.

3.5 Oak-Ash-Hazel Woodland (and other woodland habitats)

The construction of Site Access Tracks and Turbine Hardstands associated with T04 will result in the removal of higher conservation value woodland habitat, which consists of 0.39ha of Oak-Ash-Hazel woodland (WN2). This habitat loss will be compensated for, with measures outlined in **Section 3.3** above.

3.6 Additional Habitat Management

3.6.1 Forestry (Woodland) Management

The construction and operation for the proposed Project requires the removal of woodland habitats. The majority of the proposed felling involves the removal of lower conservation value Conifer Plantation (WD4) to create turbulence reduction buffers and bat buffers around selected turbines (T01, T03 and T04).

Habitat management prescriptions for forestry felling and replanting are listed below:

- All felling operations are to be carried out in accordance with any felling licence issued by the Forest Service;
- Any area of forestry felled as part of a regular forest rotation should be replanted with a similar species within one year of felling unless otherwise stipulated by any condition of the felling licence (ideally, at least 10% of any species mix would consist of native broadleaf species);
- All clear-felling forestry operations will be in accordance with current Forest Service guidelines;
- All forestry thinning and fertilising operations will be in accordance with current Forest Service guidelines; and
- Any measures adopted to control disease in forestry areas will be in accordance with current Forest Service guidelines.

RECEIVED: 15/09/2025

- The species mix used for woodland replacement will be taken from species recorded within those habitats, however; no ash will be planted, due to the potential loss of planted trees as a result of ash dieback; and
- All planted woodland areas will be immature and therefore be protected from stock, (e.g., grazing cattle) and competition from other plants until they are established (measures including fencing and individual sapling guards may have to be employed).

3.6.2 Improved Agricultural Grassland

Improved agricultural grassland currently occupies 29.56ha within the managed area, comprising 26.07% of the Study Area. A mosaic of improved agricultural grassland and wet grassland occupies a further 7.69ha within the managed area, comprising 6.7% of the Study Area. To reduce or offset collision risk during operation, measures to dissuade sensitive species from nesting or foraging near turbines will be implemented. Mitigation to limit Kestrel foraging activity around turbines will be implemented. This will include the following measures to reduce prey availability within the hardstand areas associated with each turbine:

- Removal of timber/brash from felling and chipping of tree stumps to ground level;
- Piping/filling over of open field/forestry drains;
- Spread and compaction of chipped wood and spoil to create a flat surface to prevent rapid colonisation of new vegetation; and
- Ryegrass planting and the creation of uniformly short vegetation heights via infrequent mowing or trimming of vegetation around areas not proposed for other measures (e.g., replanting, enhancement).

4 IMPLEMENTATION AND MAINTENANCE

RECEIVED: 15/09/2025

4.1 Timing

Apart from pre-construction surveys (see **Section 6** below), this SHMP will be implemented concurrently with the commencement of the construction phase of the proposed Project and subsequently throughout the operational phase of the proposed Project.

4.2 Consent

The managed area incorporates the pooled land holdings of multiple landowners. These landowners will retain full ownership of their lands during the operation of the proposed Project. Option agreements are in place that will allow Ballyfeeny Green Energy Limited to maintain the prescriptions set out in the SHMP.

4.3 Procedures

This SHMP will be implemented on a specific landowner-by-landowner basis as follows:

- A meeting has been held with individual landowners to outline the general aims, objectives and requirements of the SHMP and all are in agreement with the requirements;
- An initial audit of the individual landholdings has been conducted to establish the current land management practices, stocking rates, habitat conditions, enhancement opportunities and any limitations to habitat management;
- A specific farm plan will be prepared for each individual landowner. Each farm plan will include a map of the relevant landholding and a prescriptive list of actions to be undertaken and will detail the time of year when the necessary works and management measures will be undertaken. and;
- Prescriptions for individual farm plans will be selected from the management options described herein, in reference to the baseline characteristics of the landholding and the surrounding land (as established during the audit described above).

4.4 Responsibilities

The Developer, Ballyfeeny Green Energy Limited will ultimately responsible for the implementation of this SHMP to ensure that adverse effects on biodiversity features (notably Peregrine and hedgerow and treeline habitat) are avoided, and enhancements are delivered. In the event of favourable consideration of the proposed Project application, it is anticipated that the implementation of this SHMP will be secured by means of a condition within the management plan agreement. Ballyfeeny Green Energy Limited will subsequently incentivize relevant landowners to adhere to this SHMP.

Ballyfeeny Green Energy Limited will engage a suitably qualified ecologist to oversee the implementation of this SHMP. Implementation is also likely to require the input of agricultural advisors regarding the determination of appropriate stocking levels.

5 MONITORING AND REVIEWS

RECEIVED: 15/09/2025

5.1 Peregrine

Annual Peregrine monitoring will take place throughout the pre-construction, construction and operational phases (Years 1, 2, 3, 5, 10 and 15) of the proposed Project by an appropriately qualified ornithologist. This monitoring should be undertaken in accordance with best practice survey methods (Gilbert *et al*., 1998; Hardey *et al*., 2013) and focus on recording the following information:

- The number and locations of active nests;
- The timing and success of breeding attempts, notably the number of chicks successfully fledged;
- The number and locations of winter roost sites; and
- The number of Peregrines present during the breeding and winter seasons.

The findings of this annual monitoring should be used to guide ongoing management approaches. In addition to monitoring Peregrine, Kestrel will also be targeted as a focal species for pre-construction monitoring. If active Kestrel nests are located, these will be assessed by a suitably qualified ornithologist who will advise of any additional mitigation or management measures to avoid adverse impacts to this species.

Flight Activity surveys will also be conducted following Vantage point methodology as set by SNH (2017) to identify the extent of any nesting adults or fledgling juveniles approaching construction works and active turbines between April and September.

5.2 Barn Owl

Annual Barn Owl monitoring will take place throughout the pre-construction, construction and operational phases (Years 1, 2, 3, 5, 10 and 15) of the proposed Project by an appropriately qualified ornithologist. This monitoring should be undertaken in accordance with best practice survey methods (Gilbert et al., 1998; Hardey et al., 2013) and focus on recording the following information:

- The number and locations of active nests;
- The timing and success of breeding attempts, notably the number of chicks successfully fledged; and
- The number and locations of roost sites.

Where a nest box is installed (location will be decided based on nest and appropriate alternative location), this nest box will be surveyed as part of these monitoring measure to track its success and efficacy as an enhancement measure.

RECEIVED: 15/09/2025

5.3 Bat buffers

Bat buffers are designed to create ecologically unsuitable and generally featureless habitat around turbines and to deter foraging bats, as well as potential prey items for foraging raptor species.

- Monitoring in Year 1, 2 & 3 by an appropriately qualified ecologist will be required to ensure vegetation clearance measures and ongoing management in the desired habitat conditions (T01 & T06); and
- Once the optimal conditions have been created (after year 3) the habitat will continue to be maintained in this manner via operational maintenance implemented by the wind farm operator.

This monitoring will form part of an audit report and feedback on all habitats will be provided in annual reports. It will be a condition of these landowner agreements for the Developer to address any issue in relation to identified management actions with the operator.

5.4 Hedgerow and Treelines

Newly created or enhanced hedgerows will be subject to condition assessment by an appropriately qualified ecologist, following the Hedgerow Appraisal System (Foulkes *et* al., 2013) each year after planting for the first five years (the establishment phase), and then every five years until (and including) year 20 (the operations phase).

This will help identify ongoing management actions, such as weed control, gapping up and where fence maintenance is required.

- By Year 5 after planting, hedgerows should meet the criteria for 'Favourable' under the Hedgerow Appraisal System.
- In addition to the condition assessment, the diversity of the tree/shrub/climber component (otherwise described in the Hedgerow Appraisal System as 'canopy' forming species) should be the same, or greater than, that at planting (>10 native species per 30m length).

These condition assessments will form part of an audit report and feedback on all hedgerows will be provided to landowners under their management agreements. will be a condition of these landowner agreements for the Developer to address any issue in relation to identified management actions with the operator.

5.5 Woodland

Newly planted broadleaf woodland will be monitored based on the dimensions, species composition, presence of positive and negative indicator species, vegetation height and ground conditions by an appropriately qualified ecologist. These conditions will be each year after planting for the first five years (the establishment phase), and then every five years until (and including) year 20 (the operations phase).

This will help identify ongoing management actions, such as weed control, gapping up and where fence maintenance is required.

RECEIVED: 15/09/2025

- By Year 5 after planting, woodlands should meet the criteria for 'Favourable' under the Hedgerow Appraisal System (which will be adapted for non-hedgerow "woody" habitats.
- In addition to the condition assessment, the diversity of the tree/shrub/climber component (otherwise described in the Hedgerow Appraisal System as 'canopy' forming species) should be the same, or greater than, that at planting.

These condition assessments will form part of an audit report and feedback on all woodlands will be provided to landowners under their management agreements. will be a condition of these landowner agreements for the Developer to address any issue in relation to identified management actions with the operator.

5.6 Reduction in habitat suitability around turbines

In order to monitor mitigation measures taken to reduce or offset raptor foraging activity around turbine, the following measures will be recorded:

- Annual vegetation checks by an appropriately qualified ecologist in Years 1, 2, 3, 5, 10 and 15 around turbines indicate that these areas are being maintained as unsuitable for foraging raptors (including Kestrel).
- Bird surveys (breeding and wintering bird transects) by an appropriately qualified ornithologist every year during Years 1, 2, 3, 5, 10 and 15 post-construction.
- This monitoring will form part of an audit report and feedback on all habitats will be provided in annual reports. will be a condition of these landowner agreements for the Developer to address any issue in relation to identified management actions with the operator.

5.7 Collision Fatality Monitoring

As specified in EIAR **Chapter 6 - Biodiversity**, detailed collision fatality monitoring will be undertaken to confirm the accuracy of the collision risk modelling predictions made within EIAR Chapter 6, and to guide any additional mitigation requirements. Carcasses of birds and bats likely to be associated with turbine collisions will be searched for qualified ecologists and where available by handlers with specially trained detection dogs. This monitoring will involve monthly searches of carcasses within monitoring years (Years 1, 2, 3, 5, 10 and 15 in all months (i.e. January-December)) to ensure breeding and wintering species are accounted for.

All feather spots and bird carcasses will be photographed and logged in an annual fatality search report, which will be submitted to relevant stakeholders as dictated by the planning authority.

Control group surveys to account for efficiency of surveyors (human searches vary in number of present carcasses found during surveys from <10%-50% accuracy depending on surveyor experience; Detection Dogs 50%-100% accuracy) (Domínguez del Valle *et al.*, 2020). Carcass removal trials will also be conducted in concert with carcass searches to inform the rate of predation of carcasses.

Recorded fatalities to be calibrated against known predator removal rates to provide an

estimate of overall fatality rates.

Mitigation measures should be reviewed in light of the findings of this collision fatality monitoring and updated as needed to avoid significant effects; especially on KERs such as Peregrine and Kestrel.

Response measures to higher than predicted post-mitigation fatality rates are provided in the **EIAR Chapter 6**.

RECEIVED: 15/09/2025

5.8 Reporting

Reports on the direct management and maintenance of each managed area will be on an annual basis (One annual planning compliance report, covering both breeding and wintering season when monitoring work is being undertaken) with reports submitted to Ballyfeeny Green Energy Limited. These reports will detail the ongoing work and maintenance being carried out to ensure optimal foraging returns from each area. The setting up of management prescriptions is not sufficient; active seasonal management of these prescriptions will be needed if the plan is to be meaningful and effective.

6 SPECIES AND HABITAT MANAGEMENT PLAN CONCLUSION

RECEIVED: 15/09/2025

The development of the proposed Project needs mitigation for the disturbance to Peregrine during construction of the proposed Project. As a result, management prescriptions outlined in **Section 3** have been put in place to reduce the disturbance caused to the active Peregrine nest identified in close proximity to the proposed wind farm Site boundary.

Additional enhancement measures are also proposed for Barn Owl (nest box provision) and for bat buffers around turbines. Furthermore, this SHMP allocates a total of 3km of linear habitats (hedgerows and treelines) to offset the loss of bat commuting and foraging habitat, and 0.39ha of oak-ash-hazel woodland as compensatory habitats management for the lifetime of the proposed Project.

The operational phase risk for fatality to breeding Peregrine is possible but is not considered likely based on the CRM and the activity levels recorded for Peregrine East of the known nest site. Disturbance to individuals and potential fatality from operating turbines will be offset by the 750m exclusion zone, the monitoring for Peregrine during the breeding season to identify whether fledgelings will be active in July/August/September and therefore being at risk for collision and fatality monitoring to verify no fatality to Peregrine occurs.

The management prescriptions applied will benefit general wildlife in both the short term and long term and will ensure the supply of a substantial area of suitable foraging habitat, over and above that lost as a result of the proposed Project. The overall aim of the management plan is for a net gain of foraging habitat following development and operation of the proposed Project. The management prescriptions proposed will enhance the existing biodiversity of the areas for prey items and wildlife in general, which is an extremely important component of successful SHMP application.

The habitat management measures, notably for linear features including hedgerows and treelines, will also contribute to enhancement of commuting and foraging habitat for bats.

Ballyfeeny Green Energy Limited will be solely responsible for implementation of all aspects of the plan and will ensure that the relevant stakeholders are regularly briefed on the progress of the plan in relation to achieving its objectives (including any proposed deviation from the provisions of the Plan which may be required for any reason).

It is concluded that the SHMP which is proposed will provide full and effective additional mitigation for Peregrine disturbance and linear habitat compensation, as part of the development of the proposed Project, above that which will be lost due to disturbance or habitat loss.

7 REFERENCES

RECEIVED 15/09/2025

Annex 2: Bird species' status and trends reporting format for the period 2008-2012. Available at: https://cdr.eionet.europa.eu/Converters/run_conversion?file=/ie/eu/art12/envuvesya/IE_birds_reports-14328-144944.xml&conv=343&source=remote#A082_B. Accessed on 06/11/2024.

Anon. (2010) *National Parks and Wildlife Service Farm Plan Scheme, Terms and Conditions Document.* Department of Environment, Heritage and Local Government, Dublin, Ireland.

Burke, B.J., Clarke, C., Fitzpatrick, A., Carnus, T. and McMahon, B.J. 2015 Population status and factors affecting the productivity of peregrine falcon Falco peregrinus in County Wicklow, Ireland, 20082012. Biology and Environment: Proceedings of the Royal Irish Academy 2015. DOI: 10.3318/ BIOE.2015.11.

Carey, Michael (2006). Fertiliser application to conifer plantations on oligotrophic peat sites. Silviculture / Management 14. Council for Forest Research and Development (COFORD).

Correa Ayram, C.A., Mendoza, M.E., Etter, A. and Salicrup, D.R.P., 2016. Habitat connectivity in biodiversity conservation: A review of recent studies and applications. *Progress in Physical Geography*, *40*(1), pp.7-37.

DAFM, 2020. GLAS Specification Tranche 1 – 30 September 2020. Available at gov.ie – GLAS Specifications Tranche 1 - 16 October 2015 (www.gov.ie) Accessed 07/11/20204.

DAFM, 2021. Alien Invasive Plant Species. Available at gov.ie - Alien Invasive Plant Species (www.gov.ie) Accessed 07/11/2024.

Domínguez del Valle, J., Cervantes Peralta, F. and Jaquero Arjona, M.I., 2020. *Factors affecting carcass detection at wind farms using dogs and human searchers.* Journal of Applied Ecology, 57(10), pp.1926-1935.

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

Foulkes, N., Fuller, J., Little, D., McCourt, S. and Murphy, P., 2013. Hedgerow Appraisal System – Best Practice Guidance on Hedgerow Surveying, Data Collection and Appraisal. The Heritage Council.

Gilbert, G., Gibbons, D.W. & Evans J. (1998) *Bird monitoring methods. A manual of techniques for key UK species.* RSPB, Sandy, Bedfordshire.

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

Goodship, N.M. & Furness, R.W. (2022) *Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species*. NatureScot Research Report 1283.

Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B., & Thompson, D. (2013) *Raptors: a field guide for surveys and monitoring.* [Available at: *https://raptormonitoring.org/need-advice-on-monitoring* – accessed 25/10/2023].

Harwood, E. (2000) *Peregrine falcons nesting on electricity towers.* British Birds 93(1): 44.

Lusby, J. & O'Clery M. Barn Owls in Ireland: Information on the ecology of Barn Owls and their conservation in Ireland. . s.l. : BirdWatch Ireland, 2014.

Madden, B., Hunt, J. and Norriss, D. 2009 *The 2002 survey of the peregrine Falco peregrinus breeding population in the Republic of Ireland*. Irish Birds 8, 5438.

Norriss, D.W. 1995 *The 1991 survey and weather impacts on the peregrine Falco peregrinus breeding population in the Republic of Ireland*. Bird Study 42, 2030.

NPWS (2013) *Bird of Prey Poisoning and Persecution Report 2011.* National Parks and Wildlife Service.

NPWS (2018) *Recording and Addressing Persecution and Threats to Our Raptors.* National Parks and Wildlife Service.

NRA (2010) *The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads.* National Roads Authority.

Ratcliffe, D. (1993) *The Peregrine Falcon.* Volume 1. Poyser, London.

Rudnick, D., Ryan, S.J., Beier, P., Cushman, S.A., Dieffenbach, F., Epps, C., Gerber, L.R., Hartter, J.N., Jenness, J.S., Kintsch, J. and Merenlender, A.M., 2012. The role of landscape connectivity in planning and implementing conservation and restoration priorities. Issues in Ecology.

Shawyer, C. R. 2011. *Barn Owl Tyto alba Survey Methodology and Techniques for use in Ecological Assessment: Developing Best Practice in Survey and Reporting.* IEEM, Winchester.

SNH (2021) *Bats and onshore wind turbines: surveys, assessment, and mitigation.* Scottish Natural Heritage.

Thompson, W. (1849). *The Natural History of Ireland.* Volume 1. London.

Wilson-Parr, R. & O'Brien, I. (Eds.) (2018). *Irish Raptor Study Group Annual Review 2017*.

RECEIVED: 15/09/2025

ANNEX A

SHMP MAPPING

RECEIVED: 15/09/2025

RECEIVED: 15/09/2025

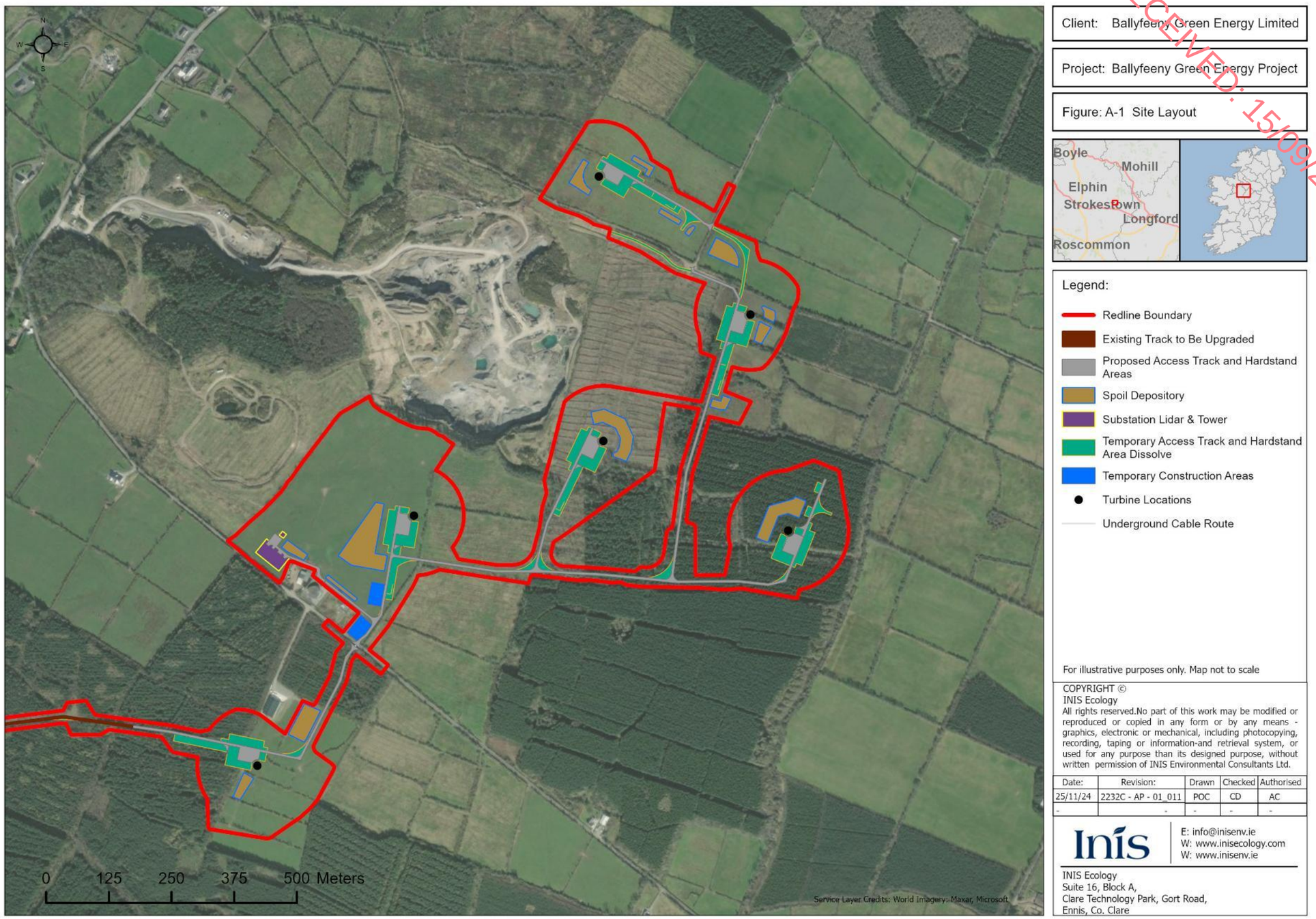

Figure A- 1: Proposed Project wind farm element site layout.

RECEIVED: 15/09/2025

Client: Ballyfeeny Green Energy Limited

Project: Ballyfeeny Green Energy Project

Figure: A-2 Bat Buffers - N133 & V-136

Legend:

- Bat Buffer Tree 106m
- Hedge Bat Buffer - 77m
- Redline Boundary
- Proposed Turbine Locations

For illustrative purposes only. Map not to scale

COPYRIGHT ©
INIS Ecology
All rights reserved.No part of this work may be modified or reproduced or copied in any form or by any means - graphics, electronic or mechanical, including photocopying, recording, taping or information-and retrieval system, or used for any purpose than its designed purpose, without written permission of INIS Environmental Consultants Ltd.

Date:	Revision:	Drawn	Checked	Authorised
12/08/25	A-2	POC	CB	AC
-	-	-	-	-

Inis
E: info@inisenv.ie
W: www.inisecology.com
W: www.inisenv.ie

INIS Ecology
Suite 16, Block A,
Clare Technology Park, Gort Road,
Ennis, Co. Clare

Figure A- 2: Bat buffers- Technology Options 1 & 2.

RECEIVED: 15/09/2025

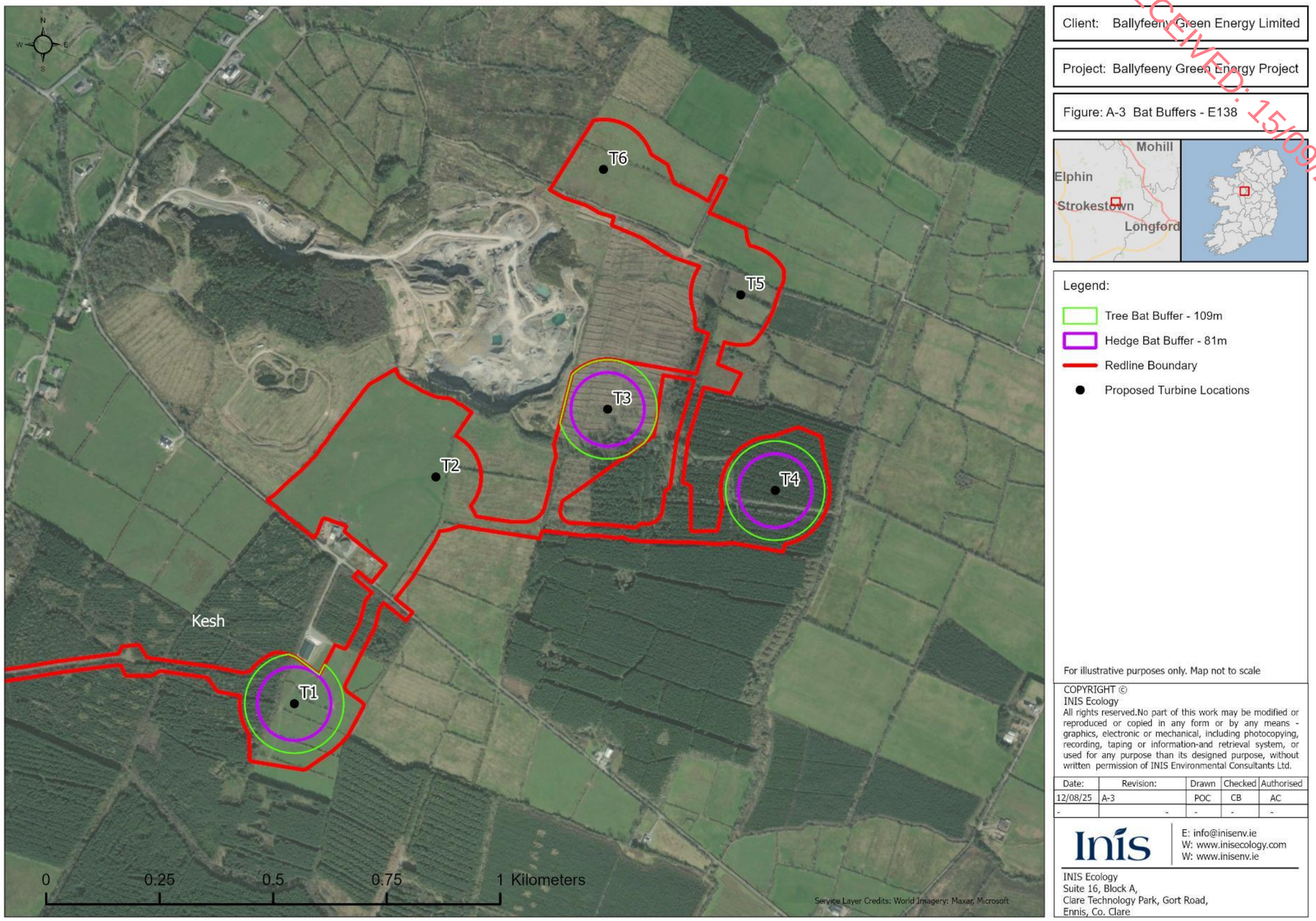

Figure A- 3: Bat buffers- Technology Option 3

RECEIVED: 15/09/2025

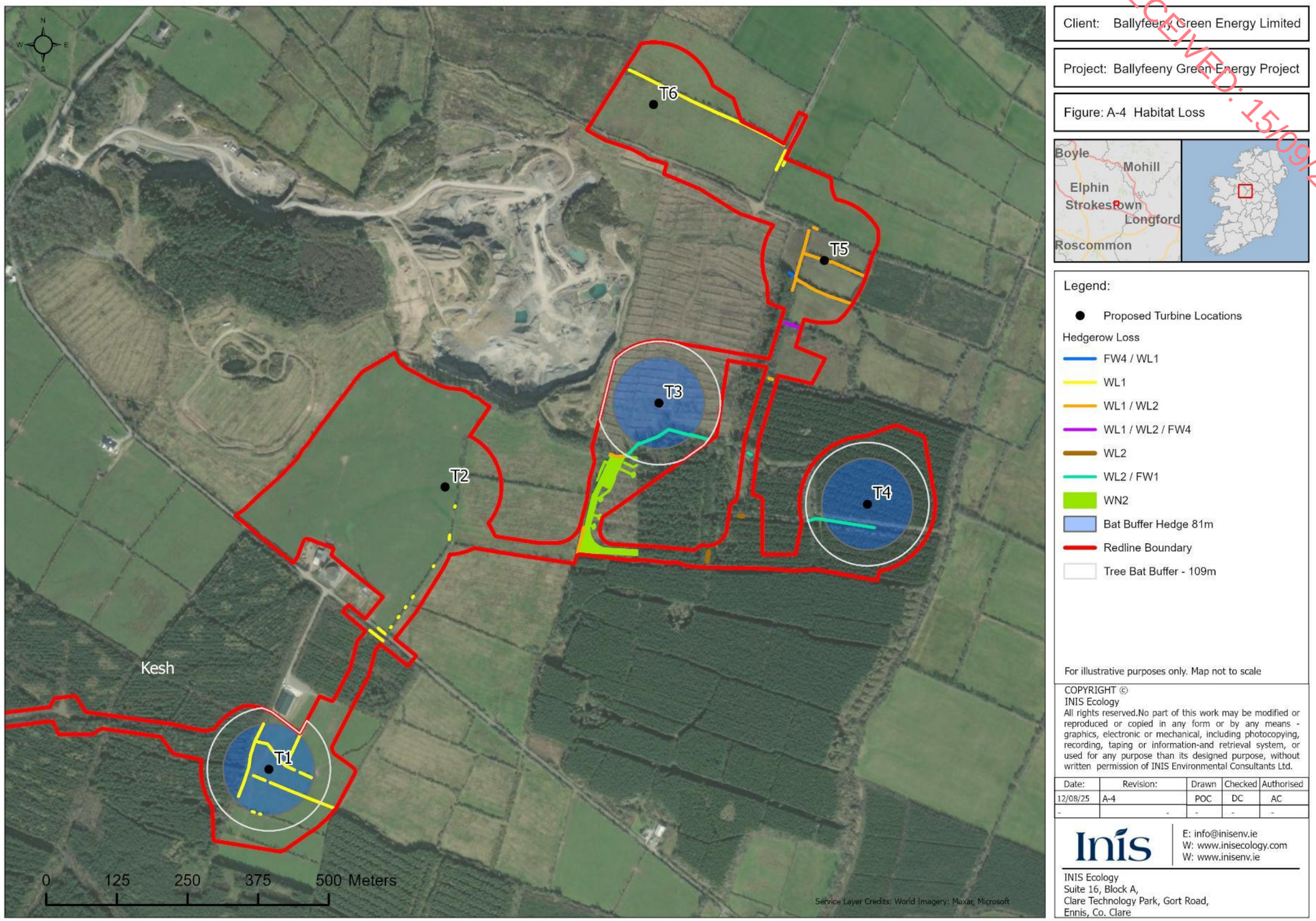

Figure A- 4: Linear habitat loss.

RECEIVED: 15/09/2025

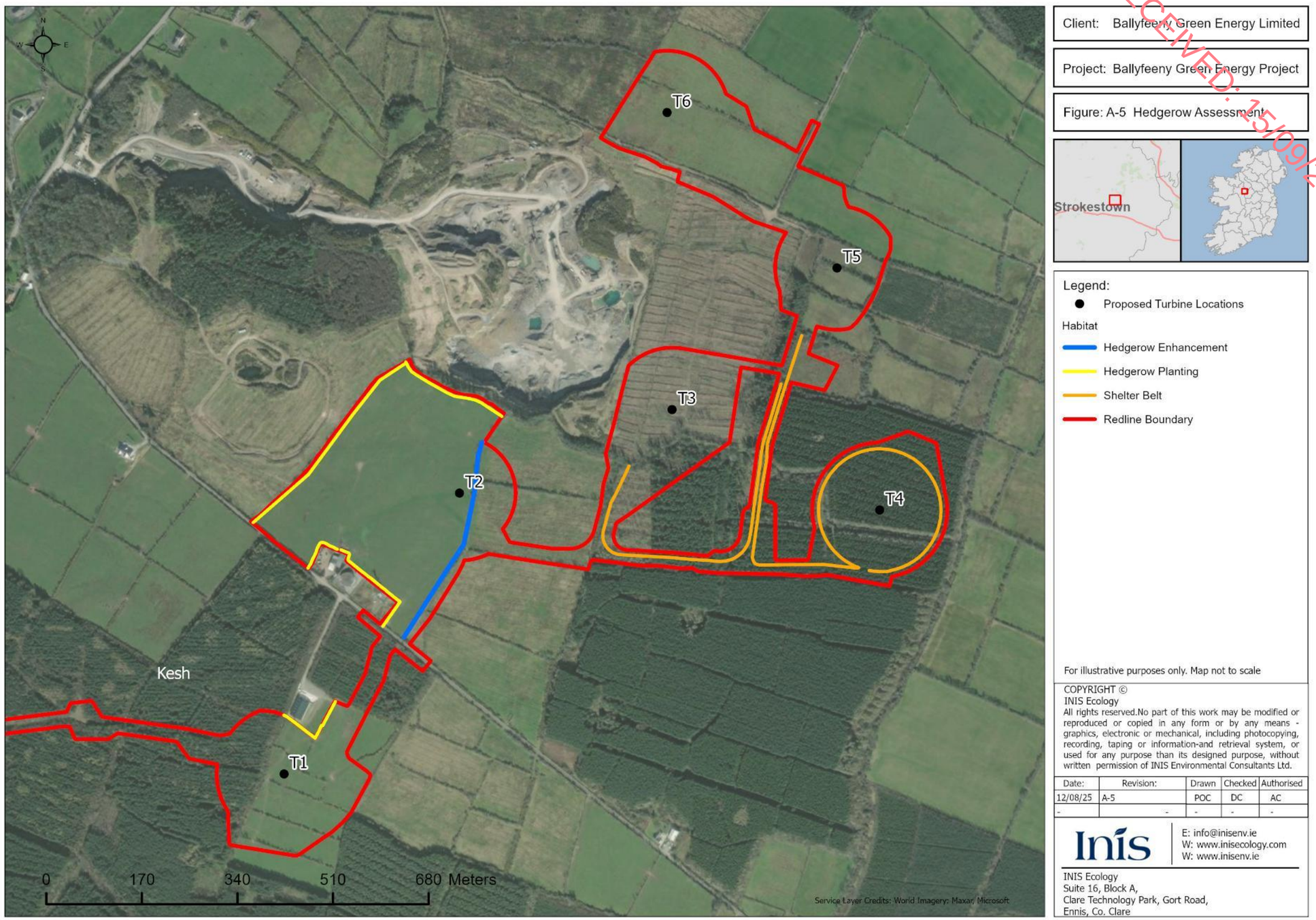

Figure A- 5: Proposed linear habitat enhancement and replanting areas.

RECEIVED: 15/09/2025

ANNEX B

ILLUSTRATIVE PLATES

Plate 1: Suitable habitat for planting, located 373m west of T02

RECEIVED: 15/09/2025

Plate 2: Scrub habitat, suitable for enhancement, located west of T02

Plate 3: Gap in hedgerow, suitable for enhancement, northwest of T02.

Plate 4: Gap in hedgerow, possible animal crossing (1.5m)

Plate 5: 285m for planting along existing fencing, located adjacent to existing farmyard

Plate 6: Gap in hedgerow (5m)

Plate 7: Gap in hedgerow/treeline habitat (2m) likely used for access	**Plate 8: Gap in hedgerow/treeline habitat (7m)**
Plate 9: Gap in hedgerow/treeline habitat (3m)	**Plate 10: Footprint for proposed planting/shelter habitat**
Plate 11: Treeline suitable for enhancement	**Plate 12: Gap in treeline**

RECEIVED: 15/09/2025

Plate 13: Hedgerow suitable for enhancement	**Plate 14: Hedgerow in very poor condition, suitable for replanting, located north of T01**

RECEIVED: 15/09/2025