Hen Harrier Foraging Habitat Loss Report

Lissinagroagh Wind Farm

FuturEnergy Ireland

27-28 Herbert Place, Dublin 2, D02 DC97

Prepared by:

SLR Environmental Consulting (Ireland) Ltd

Suite 212, Acorn Business Centre, Blackrock, Cork,
T12 K7CV

SLR Project No.: 501.065072.00001

Client Reference No: IR.008820

10 February 2026

Revision: 00

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
00	10 February 2026	Dr Jonathon Dunn	Duncan Watson	Duncan Watson
	Click to enter a date.			
	Click to enter a date.			
	Click to enter a date.			
	Click to enter a date.			

Basis of Report

This document has been prepared by SLR Environmental Consulting (Ireland) Ltd (SLR) with reasonable skill, care and diligence, and taking account of the timescales and resources devoted to it by agreement with FuturEnergy Ireland (the Client) as part or all of the services it has been appointed by the Client to carry out. It is subject to the terms and conditions of that appointment.

SLR shall not be liable for the use of or reliance on any information, advice, recommendations and opinions in this document for any purpose by any person other than the Client. Reliance may be granted to a third party only in the event that SLR and the third party have executed a reliance agreement or collateral warranty.

Information reported herein may be based on the interpretation of public domain data collected by SLR, and/or information supplied by the Client and/or its other advisors and associates. These data have been accepted in good faith as being accurate and valid.

The copyright and intellectual property in all drawings, reports, specifications, bills of quantities, calculations and other information set out in this report remain vested in SLR unless the terms of appointment state otherwise.

This document may contain information of a specialised and/or highly technical nature and the Client is advised to seek clarification on any elements which may be unclear to it.

Information, advice, recommendations and opinions in this document should only be relied upon in the context of the whole document and any documents referenced explicitly herein and should then only be used within the context of the appointment.

Executive Summary

This report presents an assessment of potential foraging habitat loss for breeding hen harrier *Circus cyaneu*s associated with the proposed Lissinagroagh Wind Farm in County Leitrim. The analysis integrates desk-based research, field surveys conducted between 2020 and 2024, and GIS-based habitat modelling to quantify habitat displacement effects and inform compensatory measures.

Hen harrier foraging habitat suitability was assessed using a combination of literature review and field-based habitat mapping. Habitats within 250 m of proposed turbine locations were classified as either potentially suitable or unsuitable for foraging, with further refinement into 'higher' and 'lower' suitability categories. The 250 m distance is a precautionary 'worst-case' scenario based on evidence of statistically significant foraging hen harrier displacement up to that distance, despite no indication of complete avoidance. Closed-canopy forestry within 250 m of proposed turbine locations was generally deemed potentially unsuitable, while open habitats such as blanket bog and wet grassland were considered potentially suitable to varying degrees.

Initial calculations estimate that 109 hectares of currently potentially suitable habitat may be lost due to displacement. When future forestry cycles are accounted for, recognising that some currently unsuitable forestry may become potentially suitable over time, the estimated loss increases to 140 hectares. Of this, approximately 76 hectares are of higher suitability and 64 hectares of lower suitability.

To refine these estimates, two approaches were used to assess functional habitat use by hen harrier: foraging territory mapping based on recorded flight lines and core foraging area buffering around proposed nesting enhancement areas (NEAs), which have been designed to encourage hen harriers to nest away from turbines. Foraging territory mapping showed that foraging areas varied annually, with the worst-case scenario showing that all habitats within 250 m of all turbines formed part of mapped foraging territories. Mean foraging territory-based estimates reduced habitat loss slightly (to c.79 ha based on current potential suitability and c.133 ha based on future potential suitability). The core foraging area method, based on a 2 km buffer around NEAs, resulted in a minor reduction in predicted habitat loss (to c.104 ha based on current potential suitability and c.135 ha based on future potential suitability).

Both functional usage methods have limitations. Foraging territory mapping does not account for future shifts in nesting or habitat preference, while the core foraging area approach assumes exclusive use of NEAs and a fixed foraging radius, which may not reflect actual behaviour. Nonetheless, both methods suggest that the initial habitat loss estimates are precautionary and likely to slightly overestimate actual displacement effects.

In conclusion, the most precautionary estimate of effective foraging habitat loss is 140 hectares (accounting for planned forestry cycles over the lifetime of the Project). This figure should therefore form the basis for compensation planning. Where feasible, compensatory habitats should be targeted to reflect the proportional loss of higher versus lower suitability habitats. This report will inform the Hen Harrier Management Plan for the site, ensuring that mitigation and enhancement measures are ecologically sound and proportionate to predicted impacts.

Table of Contents

Basis of Report ..... **i**
Executive Summary ..... **ii**
Acronyms and Abbreviations ..... **v**
1.0 Introduction **1**
1.1 Brief Description of the Project Site 1
1.2 Brief Description of the Project 1
1.3 Purpose of this Report 2
2.0 Methods **3**
2.1 Project Team 3
2.2 Baseline Data Collection 3
2.2.1 Desk Study 3
2.2.2 Field Survey 4
2.3 Habitat Loss Calculations 4
2.3.1 Current Habitat Suitability 4
2.3.2 Future Habitat Suitability 5
2.3.3 Functional Use of Habitats at Project Site 6
2.4 Limitations 7
3.0 Results **8**
3.1 Desk Study 8
3.2 Field Survey 13
3.2.1 Habitat Types Present Within 250 m of Proposed Turbines 13
3.2.2 Foraging Territories 19
3.3 Calculations 19
3.3.1 Loss of Suitable Current and Future Foraging Habitat 19
3.3.2 Functional Use of Habitats at Project Site 20
4.0 Discussion and Conclusions **22**

Tables in Text

Table 1: Turbine Numbering Key 2
Table 2-1: Literature Review Inclusion Criteria 4
Table 2-2: Habitat Suitability Categories for ‘Habitat Loss – Refined’ Scenario 5
Table 3-1: Results of Desk Study – Foraging Habitat Preferences for Hen Harrier 10
Table 3-2: Habitat Types Currently Present within 250 m of Each Turbine 14
Table 3-3: Details of Flight Lines Used to Define Foraging Territories 19
Table 3-4: Results of Calculations of Potentially Suitable Foraging Habitat Loss 20

Table 3-5: Results of Calculations of Potentially Suitable Foraging Habitat Loss Refined by Functional Usage..... 21

Appendices

Appendix A Figures

A.1 Figure 1: Project Site

A.2 Figure 2: Habitats Currently Present within 250 m of Turbines

A.3 Figure 3: Hen Harrier Foraging Territories

A.4 Figure 4: Functional Habitat Loss – Core Foraging Areas around NEAs

Appendix B Literature Review Screening Process

Appendix C Data for Foraging Habitat Loss Calculations

C.1 Turbine 1

C.2 Turbine 2

C.3 Turbine 3

C.4 Turbine 4

C.5 Turbine 5

C.6 Turbine 6

C.7 Turbine 7

C.8 Turbine 8

C.9 Turbine 9

C.10 Turbine 10

C.11 Turbine 11

C.12 Turbine 12

C.13 Turbine 13

C.14 Turbine 14

Acronyms and Abbreviations

CEnv	Chartered Environmentalist
CIEEM	Chartered Institute of Ecology and Environmental Management
EcIA	Ecological Impact Assessment
EIAR	Environmental Impact Assessment Report
FEI	FuturEnergy Ireland
GIS	Geographic Information Systems
ITM	Irish Transverse Mercator
MCIEEM	Member of the Chartered Institute of Ecology and Environmental Management
NEA	Nesting Enhancement Area
Project	Lissinagroagh Wind Farm
Site	The Project location
SLR	SLR Environmental Consulting (Ireland) Ltd

1.0 Introduction

SLR Environmental Consulting (Ireland) Ltd (hereafter "SLR") was commissioned by FuturEnergy Ireland (hereafter "FEI") to calculate the potential loss of foraging habitat used by breeding hen harrier *Circus cyaneus* as a result of the proposed Lissinagroagh wind farm (hereafter "the Project") based on habitat and bird survey data and a review of relevant literature.

1.1 Brief Description of the Project Site

The Project (hereafter the location of the Project is referred to as "the Site") is located approximately at 592624, 842839 (Irish Transverse Mercator; ITM), c. 3 km northeast of Manorhamilton in Co. Leitrim and is shown in Figure 1, Appendix A.

The Site encompasses an upland landscape with habitats dominated by conifer plantation, improved and wet grasslands and peatland habitats. Numerous eroding, upland watercourses run throughout the Site including tributaries of the Owenmoore [Manorhamilton] fourth order watercourse in the south and the Lattone 35 third order watercourse in the north.

Existing land uses are predominantly commercial agroforestry and grazing by cattle and sheep. The management of land for red grouse *Lagopus lagopus* occurs nearby but outside the Site. The operational Faughary wind farm is located c. 550 m to the west.

Bird surveys conducted between 2020 and 2025[1,2,3,4,5,6,7] showed that there have been between 1-2 nesting hen harrier present within or close to the Site for most survey years with a 'northern' and 'southern' pair present. The southern pair have been present more consistently than the northern pair. There was also a third pair off-site outside the survey area c. 2.8 km to the northeast recorded in 2021. Historical, pre-2020 surveys recorded successful nesting attempts by the 'southern' pair in 2018 and 2019 also.

1.2 Brief Description of the Project

The Project comprises of 14 wind turbines spread over a single array along with ancillary infrastructure. A full description is given in the accompanying Environmental Impact Assessment Report (EIAR). As part of the Project, there will be two nesting enhancement areas created for hen harrier (hereafter "NEAs"). These are lands that will be created and managed to encourage hen harrier to nest away from the turbines, and form part of a compensatory strategy described elsewhere in the EIAR. They are mentioned in the context of the current report because they must be considered in the context of foraging hen harrier also, given that nesting and foraging locations are linked. The Project is shown in Figure 1, Appendix A.

Note that this report was completed prior to the finalisation of the Project description in the EIAR and as a result, turbine numbering in this report differs from that used elsewhere in the

[1] MKO (2025). Lissinagroagh Wind Farm, Co. Leitrim. Winter Season 2020-2021. MKO, Galway, Ireland.
[2] MKO (2025). Lissinagroagh Wind Farm, Co. Leitrim. Breeding Season 2021. MKO, Galway, Ireland.
[3] MKO (2023). Lissinagroagh Wind Farm, Co. Leitrim. Winter Bird Survey Report 2021/22. MKO, Galway, Ireland.
[4] MKO (2023). Lissinagroagh Wind Farm, Co. Leitrim. Breeding Bird Survey Report 2022. MKO, Galway, Ireland.
[5] MKO (2023). Lissinagroagh Wind Farm, Co. Leitrim. Breeding Bird Survey Report 2023. MKO, Galway, Ireland.
[6] MKO (2025). Lissinagroagh Wind Farm, Co. Leitrim. Breeding Bird Survey Report 2024. MKO, Galway, Ireland.
[7] MKO (2025). Lissinagroagh Wind Farm, Co. Leitrim. Breeding Bird Survey Report 2025. MKO, Galway, Ireland.

EIAR. A comparison is provided below in Table 1. The turbine locations themselves are unchanged and, accordingly, the findings and conclusions of this report remain valid.

Table 1: Turbine Numbering Key

Turbine Number in Current Report	Corresponding Turbine Number in EIAR
T1	T12
T2	T10
T3	T8
T4	T7
T5	T9
T6	T6
T7	T5
T8	T2
T9	T1
T10	T4
T11	T3
T12	T11
T13	T13
T14	T14

1.3 Purpose of this Report

The purpose of this report is to:

- Identify habitats considered potentially suitable for foraging hen harrier through desk study;
- Categorise the suitability of the habitats mapped during field survey at the Site for foraging hen harrier;
- Calculate the area of currently available foraging habitats that may effectively be lost due to potential displacement and also consider how those areas may change over the lifetime of the Project as a result of habitat changes;
- Explore how functional usage of foraging habitats by hen harriers, based on bird survey data collected at the site, could affect habitat loss calculations identified in the previous step; and
- Assess the area of compensatory habitats required to offset the predicted loss.

This report informs a hen harrier management plan[8], which outlines mitigation, compensation and enhancement proposed for the benefit of hen harriers at the Site and should be read alongside the current report.

[8] SLR (2025). Lissinagroagh Wind Farm, Co. Leitrim. Hen Harrier Management Plan. SLR Environmental Consulting (Ireland) Ltd.

2.0 Methods

2.1 Project Team

Jonathon Dunn MCIEEM PhD wrote this report and undertook all habitat loss calculations including GIS manipulation. He is an Associate Ornithologist specialising in ornithology and wind farm projects. Jonathon has over a decade of experience in the environmental sector and is skilled in the preparation of ornithological baseline reports, EIAR chapters, Ecological Impact Assessment (EcIA) reports, Natura Impact Statements and collision risk modelling reports. He has worked on numerous wind farm applications in Ireland.

Duncan Watson CEnv MCIEEM MSc reviewed this report and directed the work. He is a Technical Director specialising in ornithology and wind farm projects. Duncan has over 26 years of professional experience and has managed or undertaken assessments at over 90 proposed wind farms, demonstrating significant expertise in the power sector. He has contributed to the revision of the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland serves on various conservation committees.

Details of the Tobin team are included in Appendix 6.13 which accompanies the EIAR. The Tobin team carried out the habitat surveys referred to in this report.

Details of the MKO team are included in Appendices 6.2-6.9 which accompanies the EIAR. The MKO team carried out the bird surveys referred to in this report.

2.2 Baseline Data Collection

2.2.1 Desk Study

To support the assessment of hen harrier foraging habitat loss associated with the Project, an initial desk study was conducted to determine:

1 Whether foraging hen harriers are displaced by wind turbines, and if so, the extent of displacement; and

2 The types of habitats typically used by foraging hen harriers.

This study involved a review of recent scientific literature and academic research, along with any ‘grey literature’ or unpublished governmental and non-governmental reports, as detailed below.

The literature review was implemented based on a framework developed by Arksey and O’Malley (2005)[9] and involved updating a literature review carried out by MKO at an earlier stage of the Project. This involved searching the Web of Science online database and Google Scholar using the search terms given in Table 2-1 below.

This was refined by screening for the following in first the article title and abstract, and then secondly the full text:

- Focused on hen harrier; and
- Evaluated foraging habitat use by hen harrier.

[9] Arksey, H. and O’Malley, L. (2005) Scoping studies: towards a methodological framework. International Journal of Social Research Methodology, 8:1, 19-32.

Table 2-1: Literature Review Inclusion Criteria

Database	Search Terms	No. of Articles Returned	No. Abstracts Screened In	No. Full Text Articles Screened In
Web of Science	('hen harrier' OR 'Circus cyaneus') AND ('forage' OR 'foraging' OR 'hunting') AND 'habitat'	41	15	7
Google Scholar	Hen harrier foraging Ireland	1,050	6	5

A list of sources consulted for review is given in Appendix B.

2.2.2 Field Survey

Habitat mapping was carried out by Tobin in 2024 during the optimal survey period (May 2024) and was focused on folios of land within the Site. All habitats were classified according to Fossitt (2000)[10]. Full details are contained within Appendix 6.13 which accompanies the EIAR.

Ornithological field survey data were collected by MKO between September 2020 and 2024 within at least 2 km of the Site, using NatureScot[11] best-practice guidance in place at that time to inform the scope of bird surveys undertaken. Relevant surveys for hen harrier included flight activity surveys, winter roost and breeding raptor surveys. In the breeding 2023 and 2024 seasons, data were collected on whether the flights were foraging flights and if possible, whether the flights were from the northern or southern pair. Full details are contained within Appendices 6.2-6.9 which accompany the EIAR.

2.3 Habitat Loss Calculations

2.3.1 Current Habitat Suitability

Habitat Categorisation

Habitats identified during the 2024 field survey were initially categorised as either potentially 'suitable' or 'unsuitable' for foraging hen harriers. This classification was based on the mapped Fossitt habitat types, as well as Coillte forestry data provided by FEI, and informed by the literature review outlined in Section 2.2.1.

Following this classification, each habitat parcel was assessed for its proximity to proposed turbine locations. Using QGIS, all habitats were clipped within a 250 m buffer (see Section 3.1 for rationale regarding choice of buffer size) around the central point of each turbine tower (an area of 19.6 ha per turbine). The total area of all clipped, potentially suitable habitats was then calculated to estimate the maximum extent of foraging habitat that could be effectively lost due to displacement by operational wind turbines.

The result of this calculation is referred to as the '*current habitat loss – simple*' scenario, representing the most precautionary assessment based on existing baseline conditions at the Site.

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

[11] NatureScot. (2025). Recommended bird survey methods to inform impact assessment of onshore windfarms. NatureScot, Battleby, Scotland.

To refine this estimate, potentially suitable habitats were further categorised into 'higher' and 'lower' suitability for hen harrier foraging, as detailed in Table 2-2. This refinement was informed by the literature review (see Section 3.1).

The areas of potentially suitable habitats were recalculated. This produced the '*current habitat loss – refined*' scenario, offering a more nuanced estimate of potential habitat loss under current baseline conditions.

Table 2-2: Habitat Suitability Categories for 'Habitat Loss – Refined' Scenario

Suitability Category for Foraging Hen Harrier		Description
0	None	Artificial habitats and/or habitats with no known suitability for foraging hen harrier
1	Lower	Habitats with known suitability for foraging hen harrier but with weaker evidence base for use or evidence habitats not preferentially used
2	Higher	Habitats known to be suitable for foraging hen harrier with stronger evidence base for use or evidence habitats preferentially used

Both calculation methods assumed that all habitats identified in the current baseline would remain unchanged in the future baseline. However, this assumption does not hold true for certain habitat types, such as commercial agroforestry areas. Consequently, the approach to estimating potential habitat suitability was further developed, as detailed below.

2.3.2 Future Habitat Suitability

Commercial agroforestry habitats within the Site will undergo changes throughout the Project's 30-year lifespan[12] due to ongoing forestry management practices. Consequently, the future baseline will vary annually, reflecting the position of each land folio within its respective forestry cycle. To account for this dynamic, we utilized forestry age data and predicted felling dates provided by FEI to estimate the annual availability of pre-thicket conifer plantation habitat, which is potentially suitable for foraging hen harriers (see Section 3.1). These yearly values were then averaged to determine the overall extent of potentially suitable foraging habitat for hen harrier across the duration of the Project.

The process included the following assumptions:

- Only commercial forestry habitats will change with other habitats remaining in current baseline conditions;
- Wind farm operation will start in 2027 and cease in 2057;
- Forestry plantations will remain at pre-thicket stage for the first ten years after planting;

[12] This report assessed projected habitat availability for breeding hen harrier over a 30-year operational lifespan, reflecting the Project parameters available at the time of assessment. The final EIAR adopts a 35-year operational lifespan. The assessment incorporates forestry rotation cycles and calculates the mean annual availability of suitable foraging habitat over the assessment period. Habitat availability is therefore expressed as a long-term average rather than a point-in-time value. Extending the operational lifespan by a further five years would not appreciably alter the proportion of suitable foraging habitat available when expressed as a mean over multi-decadal timescales. Consequently, the findings and conclusions of this report remain valid and robust

- Forestry cycles are 45 years in duration (i.e. total period from planting to felling) unless alternative planting or felling dates were available; and
- Replanting will occur in the same year as felling.

The calculations were repeated using two distinct datasets of non-commercial forestry habitats as described in Section 2.3.1 above. This produced two estimates of potential future habitat loss: one referred to as the '*future habitat loss - simple'* scenario, representing the most precautionary estimate over the Project's lifespan, and the other as the '*future habitat loss - refined'* scenario. The former classified non-forestry habitats as a binary potentially 'suitable' or 'unsuitable' and the latter classified suitable non-forestry habitats as of 'lower' or 'higher' potential suitability, as outlined in Section 2.3.1. For the purposes of these calculations, pre-thicket forestry available over the lifespan of the Project has been classified as potentially 'suitable' and of 'higher' potential suitability.

Full details of these calculations are provided in Appendix C.

2.3.3 Functional Use of Habitats at Project Site

The calculations described above are based on established foraging habitat preferences for hen harrier as documented in the scientific and grey literature. A key limitation of this approach is its lack of consideration for site-specific foraging behaviour of the hen harrier population at the Site. It is possible that, despite apparent suitability, some habitats within 250 m of proposed turbines are not actively used for foraging, meaning that actual habitat loss may be overestimated.

To explore this further, functional habitat use was investigated using two complementary methods.

2.3.3.1 Territory Mapping Based on Foraging Flights

Foraging territories were mapped for each survey year by identifying the maximum extent of foraging activity recorded during bird surveys. This involved plotting all recorded flight lines in QGIS and generating a minimum convex hull to delineate foraging territory boundaries. Behavioural data from flight activity, hen harrier foraging and breeding raptor surveys were used to identify foraging flights where possible.

Due to limitations in the identification of individual birds, flight lines could not be assigned to specific pairs in most survey years, apart from the 2024 survey year. In years where a single recorded pair was present, all flight lines were attributed to that pair. In years with multiple pairs present, flight lines were treated as representing a collective territory.

Any potentially suitable foraging habitat within 250 m of turbines that fell outside these mapped foraging territories was considered not functionally used by foraging hen harrier. Habitat loss figures were calculated based on mapped foraging territories for each survey year. The average habitat loss across all survey years was also calculated. Habitats identified in Sections 2.3.1 and 2.3.2 were excluded from loss estimates if they lay outside these foraging territories.

This method was termed *'functional habitat loss – foraging territories'*.

2.3.3.2 Core Foraging Area Buffering

As explained earlier, two NEAs are proposed as part of compensatory measures for nesting hen harrier. The aim is that these two areas will be managed for the lifespan of the Project to encourage hen harrier to nest away from the turbines. A 2 km buffer was drawn around the two proposed NEAs, based on evidence that 90% of foraging flights by breeding hen harrier

occur within this range (Arroyo et al. (2005)[13]; Arroyo et al. (2006)[14]). Habitats outside this buffer were excluded from analysis, as they are unlikely to represent core foraging areas for birds using the NEAs.

This method was termed *'functional habitat loss – core foraging areas around NEAs'*.

2.4 Limitations

The habitat data were not collected with the specific purpose of identifying potentially suitable foraging habitat for hen harrier; therefore, fine-scale assessments were not possible.

The habitat loss calculations for forestry over the lifespan of the Project are based on Coillte's long-term felling estimates, which may be subject to change.

The estimates of hen harrier foraging territory sizes were predominantly based on data collected during flight activity surveys. As the primary purpose of such surveys was not to estimate foraging territory sizes, it is possible that foraging territories extended beyond the 2 km viewsheds used for the flight activity surveys. As such, the data may underestimate the full size of each foraging territory. This is not considered to represent a key constraint to this study however as viewshed coverage of the 250 m buffers surrounding each turbine was good, notwithstanding a few small gaps in coverage around turbines T3, T5 and T6.

[13] Arroyo, B.E. Leckie, F., Amar, A., Hamilton, J., McCluskie, A. & Redpath, S. (2005). Habitat use and range management on priority areas for hen harriers: 2004 report. CEH report for SNH.

[14] Arroyo, B.E. Leckie, F., & Redpath, S.M. (2006). Habitat use and range management on priority areas for hen harriers: final report. CEH report for SNH.

3.0 Results

3.1 Desk Study

Foraging Displacement Distances

The only peer-reviewed study to demonstrate statistically significant displacement effects on foraging hen harrier in relation to wind turbines is Pearce-Higgins et al. (2009)[15]. In this study, flight activity was analysed in 500 m distance bands, although results were presented in 250 m bands based on the mean transformed proximity to turbines, providing a finer spatial resolution. This relatively coarse resolution reflects the inherent locational uncertainties associated with mapping raptor flight paths.

Pearce-Higgins et al. (2009) reported statistically significant displacement of hen harrier, with avoidance *extending to at least 250 m from the turbines*. By extrapolating the effects of turbine proximity on the distribution of hen harrier, the authors also predicted a 52.5% reduction in flight activity within 500 m of turbines; however, they did not show a statistically significant reduction in flight activity within this distance band (i.e. within 500 m) relative to a control. Importantly, the study does not demonstrate complete displacement of hen harrier within either 250 m or 500 m from wind turbines.

It should also be noted that the Pearce-Higgins et al. study was undertaken on wind farms located in unenclosed upland habitats (moorland, rough grassland or blanket bog) and excluded forested and felled areas. In contrast, the Site is predominantly composed of conifer forest and felled forest, which are likely to screen open habitats from turbines, thereby reducing the potential extent of displacement (see Goodship and Furness[16] for further discussion on screening effects and displacement).

Taking both the statistically significant findings of Pearce-Higgins et al. (2009) and the habitat context of the Site into account, the use of a 250 m displacement distance is considered most appropriate for the Project and represents a reasonable 'worst-case' scenario, as it includes the unrealistic assumption of 100% displacement of foraging hen harrier within 250 m from turbines.

Other studies have also mentioned displacement for hen harrier in the context of wind turbines (e.g. Madders and Whitfield (2006)[17]; Garvin et al. (2011)[18]; Thelander et al. (2003)[19]; Madden and Porter (2007)[20]; Wilson et al., (2015)[21]). These have either not

[15] Pearce-Higgins, J.W., Stephen, L., Langston, R.H.W., Bainbridge, I.P. and Bullman, R. (2009), The distribution of breeding birds around upland wind farms. Journal of Applied Ecology, 46: 1323-1331. https://doi.org/10.1111/j.1365-2664.2009.01715.x

[16] Goodship, N.M. and Furness, R.W. 2022. Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. A report from MacArthur Green to NatureScot.

[17] Madders, M. & Whitfield, D. P. (2006) Upland raptors and the assessment of wind farm impacts. Ibis. 148: 43-56.

[18] Garvin, J. C., Jennelle, C. S., Drake, D. & Grodsky, S. M. (2011) Response of raptors to a windfarm. Journal of Applied Ecology 48: 199-209.

[19] Thelander, C. G., Smallwood, K. S. & Rugge, L. (2003) Bird risk behaviors and fatalities at the Altamont Pass Wind Resource Area. Period of Performance: March 1998 – December 2000. Golden, Colorado: National Renewable Energy Laboratory.

[20] Madden, B. & Porter, B. (2007) Do wind turbines displace Hen Harriers *Circus cyaneus* from foraging habitat? Preliminary results of a case study at the Derrybrien wind farm, County Galway. Irish Birds 8: 231-236

[21] Wilson, M., Fernández-Bellon, D., Irwin, S. & O'Halloran, J. (2015) The interactions between Hen Harriers and wind turbines: WINDHARRIER - Final Project Report. School of Biological Earth & Environmental Sciences (BEES), University College Cork

assessed displacement in a quantitative and statistical manner or have not reported a statistically significant effect.

It is worth also considering the results of the Irish Windharrier project[21] further as this is the most relevant of these studies within the Irish context. Particularly relevant is a journal article arising from this project written by Fernandez-Bellon et al. (2015)[22], which assessed breeding performance of hen harrier in Ireland in relation to wind farm development by analysing the breeding output of 84 nest locations at varying distances from wind farms. No statistically significant relationships were found between breeding parameters and distance to nearest wind turbine; however, non-statistically significant lower nest success rates were observed within 1 km of wind turbines. The authors stated that this putative relationship may be wholly or partly due to the influence of landscape elements, which may be linked to wind farm development (e.g. changes in land use following construction), or it could be due to other unrelated practices (e.g. agricultural intensification, afforestation or peat extraction). The Fernandez-Bellon et al. study did not specifically examine displacement of foraging hen harrier and while it is acknowledged that displacement from foraging habitats could potentially have contributed towards lower nest success rates, it is likely to have been just one of many different factors responsible.

Thus, there is no clear evidence that foraging hen harriers are displaced up to 1 km from operational wind turbines and the distances reported in Pearce-Higgins et al. represent the most conservative estimate of displacement of foraging hen harriers by wind turbines.

Regarding measurement methodology, Pearce-Higgins et al. does not specify whether displacement distances were measured from the turbine tower centre or bladed edge. However, the reference to "*locations of turbines*", strongly suggests that distances were measured from the tower centre. Measurement from blade tip would have required a number of assumptions to be made, which would have needed to be clearly set out within the paper. Furthermore, since the study did not base its analysis on distances to blade edge, it implies that proximity to the tower should therefore be used in displacement calculations.

Although the turbines in Pearce-Higgins et al. had hub heights ranging from 30 to 70 m, compared to the 101 – 110.5 m hubs proposed for the Project, the Pearce-Higgins et al. study found no evidence that hub height influenced displacement. Avoidance distances were modelled across a range of hub heights, indicating that the presence of the turbine itself is the primary factor, rather than its height.

Pearce-Higgins et al. did not assess avoidance of other infrastructure elements. However, they noted a minor avoidance of tracks, which were typically located adjacent to turbines. This suggests that any observed avoidance of tracks was likely a secondary effect of turbine avoidance.

In summary, a 250 m avoidance buffer from each turbine tower should be adopted as a conservative and ecologically sound estimate of displacement for foraging hen harriers within the Project area.

Foraging Habitat Preferences

The scientific literature shows that in Ireland, breeding hen harriers are closely linked to specific habitat types, which provide essential nesting and foraging grounds. Their population dynamics are strongly influenced by habitat quality and availability (Madders,

[22] Fernández-Bellon, D., Irwin, S., Wilson, M. and O'Halloran, M. (2015) Reproductive output of Hen Harriers *Circus cyaneus* in relation to wind turbine proximity. Irish Birds, 10(2), pp.143-150.

2003[23]; Arroyo et al., 2009[24]; Irwin et al, 2012[25]; Caravaggi et al., 2019[26]). Optimal habitat features that provide abundant prey, including small mammals and birds, are crucial for successful breeding (McClure et al., 2018[27]).

Specifically, the results of the desk study show that hen harriers prefer foraging habitats that provide dense cover for abundant prey, such as small mammals and birds, while also not being so dense as to make capture of prey impossible. The full results are shown in Table 3-1.

Table 3-1: Results of Desk Study – Foraging Habitat Preferences for Hen Harrier

Study	Study Location	Habitat Type	Used for Foraging	Suitability Category	Justification
Arroyo et al. 2009[24]	Scotland, UK	Heather / rough grassland mosaic	Yes	Higher	Heather to grass ratio of 2:3 preferentially used by hunting males and females
		Rough grassland	Yes	Lower	Weak, positive relationship
		Improved grassland	No	None	Avoided habitat type
		Dense heather	No	None	Avoided habitat type
Madders 2000[28]	Scotland, UK	Pre-thicket forestry	Yes	Higher	Marked preference for habitat type
		Heath / bog	Yes	Lower	Some level of use
		Acid grassland	Yes	Lower	Some level of use
		Neutral grassland	Yes	Lower	Some level of use
		Closed canopy forestry	No	None	Avoid habitat type
Madders 2003[23]	Scotland, UK	Heather / grass mosaics	Yes	Higher	Preference for habitat type
		Young forestry	Yes	Higher	Preference for habitat type
		Mature forestry	No	None	Avoided habitat type
	Orkney, UK	Unmanaged grassland	Yes	Higher	Preference for habitat (shown for males only)

[23] Madders, M. (2003) Hen Harrier *Circus cyaneus* foraging activity in relation to habitat and prey. Bird Study 50: 55-60.

[24] Arroyo, B., Amar, A., Leckie, F., Buchanan, G.M., Wilson, J. and Redpath, S. (2009). Hunting habitat selection by hen harriers on moorland: Implications for conservation management. Biological Conservation 142: 586-596.

[25] Irwin, S., Wilson, W., O'Donoghue, B., O'Mahony, B., Kelly, T., O'Halloran, J. (2012). Optimum scenarios for hen harrier conservation in Ireland; Final Report 2012. Prepared for the Department of Agriculture, Food and the Marine by the School of Biological, Earth and Environmental Sciences, University College Cork

[26] Caravaggi, A., Irwin, S., Lusby, J., Ruddock, M., Mee, A., Nagle, T., O'Toole, L., O'Neill, S. & O'Halloran, J., (2019). Anthropogenic pressures within the breeding range of the Hen Harrier *Circus cyaneus* in Ireland. Bird Study 66: 461-470

[27] McClure, C. J. W., Westrip, J.R.S., Johnson J. A., Schulwitz, S.E., Virani M.Z., Davies R., Symes A., Wheatley H., Thorstrom R., Amar A. & Buij R., (2018). State of the world's raptors: Distributions, threats, and conservation recommendations. Biological Conservation 227: 390– 402

[28] Madders, M. (2000) Habitat selection and foraging success of Hen Harrier *Circus Cyaneus* in West Scotland. Bird Study, 47:1, 32-40

Study	Study Location	Habitat Type	Used for Foraging	Suitability Category	Justification
Amar and Redpath 2005[29]		Managed grassland	No	None	Avoided habitat type (females only)
Amar et al. 2011[30]	Orkney, UK	Unmanaged grassland	Yes	Higher	Preference for habitat
Tapia et al. 2008[31]	Spain	Scrub / pasture mosaics in high, gently sloping areas with scare human presence	Yes	Higher	Preference for habitat
Wilson et al. 2006[32]	Ireland	Rough grassland	Yes	Higher	Preference for habitat
		Pre-thicket forestry	Yes	Higher	Preference for habitat
		Bogs	Yes	Lower	Some level of use
		Wet grassland	Yes	Lower	Some level of use
		Marginal agricultural habitats	Yes	Lower	Some level of use
		Dry grassland	No	None	Strongly avoided
		Areas at low elevation	No	None	Strongly avoided
		Improved agricultural grassland	No	None	Strongly avoided
		<30% of bog or rough grassland or young forest	No	None	Avoided, especially around nests
Wilson et al. 2010[33]	Ireland	Pre-thicket plantation (especially second rotation)	Yes	Higher	Preference for habitat type
		Closed canopy conifer plantation	No	None	Strongly avoided
		Heath / bog	Yes	Higher	Preference for habitat type
		Improved grassland	No	None	Avoid habitat
		Rough pasture (high intensity managed)	No	None	Avoid habitat

[29] Amar, A. and Redpath, S.M. (2005) Habitat use by Hen Harriers *Circus cyaneus* on Orkney: Implications of land-use change for this declining population. Ibis, 147: 37-47

[30] Amar, A., Davies, J., Meek, E., Williams, J., Knight, A. and Redpath, S. (2011) Long-term impact of change in Sheep *Ovis aries* densities on the breeding output of the Hen Harrier *Circus Cyaneus*. Journal of Applied Ecology, 48: 220-227

[31] Tapia L., Dominguez J. and Lado, L. R. (2008) Hunting habitat preferences of raptors in a mountainous area (Northwestern Spain). Polish Journal of Ecology, 56:2, 323-333.

[32] Wilson, M., Gittings, T., O'Halloran, J., Kelly, T. and Pithon J. (2006) The distribution of Hen Harriers in Ireland in relation to land use cover, particularly forest cover. Environment No. 6. Information note by Coford Connects, Forest Sector Development, Department of Food, Agriculture and the Marine, Johnstown Castle, Wexford.

[33] Wilson, M., Irwin, S., O'Donoghue, B., Kelly, T. and O'Halloran J. (2010) The use of forested landscapes by Hen Harriers in Ireland. Environment No. 10. Information note by Coford Connects,Forest Sector Development, Department of Food, Agriculture and the Marine, Johnstown Castle, Wexford.

Study	Study Location	Habitat Type	Used for Foraging	Suitability Category	Justification
Irwin et al. 2012[34]	Ireland	Pre-thicket forestry (second rotation)	Yes	Higher	Preference for this habitat type
		Low intensity managed grassland	Yes	Higher	Preference for this habitat type
		Field boundaries 3-4 m in width	Yes	Higher	Preference for this habitat type
		Unmanaged grassland	Yes	Lower	Some level of use
		Field boundaries <3 m or 7-8 m in width	No	None	Avoid habitat
		High intensity managed grassland	No	None	Avoid habitat
		Closed canopy forestry	No	None	Avoid habitat

[34] Irwin, S., Wilson, M., O'Donoghue, B., O'Mahony, B., Kelly, T. and O'Halloran, J. (2012) Optimum scenarios for Hen Harrier conservation in Ireland. Department of Agriculture, Food and Marine, Kildare Street, Dublin.

3.2 Field Survey

3.2.1 Habitat Types Present Within 250 m of Proposed Turbines

Habitats currently present within 250 m of each turbine are shown in Table 3-2 and illustrated in Figure 2, Appendix A.

The total area of habitat within 250 m of each turbine is 19.6 ha, which is equivalent to 274.4 ha across all 14 turbines. As the 250 m buffer overlapped slightly between turbines T7 and T8, and turbines T13 and T14, the total area is slightly less than 274.4 ha. In such cases, the area of overlap was bisected and the resulting halves apportioned to the relevant turbines.

Habitats have been broadly classified as being potentially suitable or unsuitable for foraging hen harrier, with potentially suitable habitats subsequently refined further and justified according to the results of the desk study presented in Section 3.1. Where there was any doubt, a precautionary approach was applied so that the highest suitability categorisation was given.

Table 3-2: Habitat Types Currently Present within 250 m of Each Turbine

Turbine No.	Fossitt Habitat Type (Code)	Dimension (area in ha or length in m)	Suitable (Yes / No)	Suitability Category (None, Lower, Higher)	Justification
T1	Upland blanket bog (PB2)	2.425	Yes	Higher	Shown to be a preferred habitat type in Ireland
	Conifer plantation (WD4) x wet heath (HH3) mosaic	2.716	Yes	Higher	Heath component shown to be a preferred habitat type in Ireland; mosaic typing suggests conifer component not currently post-thicket and therefore suitable, and preferred
	Conifer plantation (WD4) post-thicket	13.846	No	None	Shown to avoid the post-thicket habitat type
	Conifer plantation (WD4) pre-thicket	0.613	Yes	Higher	Shown to be a preferred habitat type in Ireland
T2	Wet grassland (GS4)	5.202	Yes	Lower	Shown to have some level of use
	Upland blanket bog (PB2)	0.402	Yes	Higher	Shown to be a preferred habitat type in Ireland
	Conifer plantation (WD4) post-thicket	7.974	No	None	Shown to avoid the post-thicket habitat type
	Conifer plantation (WD4) pre-thicket	6.019	Yes	Higher	Shown to be a preferred habitat type in Ireland
T3	Wet grassland (GS4)	7.154	Yes	Lower	Shown to have some level of use
	Upland blanket bog (PB2)	1.702	Yes	Higher	Shown to be a preferred habitat type in Ireland
	Upland blanket bog (PB2) x wet heath (HH3) mosaic	10.64	Yes	Higher	Both components shown to be preferred habitat types in Ireland
	Conifer plantation (WD4) post-thicket	0.104	No	None	Shown to avoid the post-thicket habitat type
T4	Upland blanket bog (PB2)	3.086	Yes	Higher	Shown to be a preferred habitat type in Ireland
	Upland blanket bog (PB2) x wet heath (HH3) mosaic	0.018	Yes	Higher	Both components shown to be preferred habitat types in Ireland

Turbine No.	Fossitt Habitat Type (Code)	Dimension (area in ha or length in m)	Suitable (Yes / No)	Suitability Category (None, Lower, Higher)	Justification
	Conifer plantation (WD4) post-thicket	10.967	No	None	Shown to avoid the post-thicket habitat type
	Conifer plantation (WD4) pre-thicket	5.529	Yes	Higher	Shown to be a preferred habitat type in Ireland
T5	Upland blanket bog (PB2)	1.335	Yes	Higher	Shown to be a preferred habitat type in Ireland
	Conifer plantation (WD4) post-thicket	17.33	No	None	Shown to avoid the post-thicket habitat type
	Buildings and artificial surfaces (BL3)	0.036	No	None	Artificial habitat type
	Scrub (WS1)	0.795	Yes	Lower	Scrub mosaics shown to be preferred habitat type in Spain; pure habitat type typically too dense for foraging, so some level of usage assumed here
	Spoil and bare ground (ED2)	0.104	No	None	Habitat type lacks vegetation cover for prey
T6	Wet grassland (GS4) x buildings and artificial surfaces (BL3) mosaic	0.222	Yes	Lower	Wet grassland component shown to have some level of use; other component an artificial habitat type
	Wet grassland (GS4)	1.847	Yes	Lower	Shown to have some level of use
	Upland blanket bog (PB2)	3.304	Yes	Higher	Shown to be a preferred habitat type in Ireland
	Conifer plantation (WD4) x scrub (WS1) mosaic	0.131	Yes	Higher	Scrub mosaics shown to be a preferred habitat type in Spain; mosaic typing suggests conifer component not currently post-thicket and therefore suitable, and preferred
	Conifer plantation (WD4) post-thicket	14.006	No	None	Shown to avoid the post-thicket habitat type
	Stone walls and other stone works (BL1)	0.004	No	None	Artificial habitat type

Turbine No.	Fossitt Habitat Type (Code)	Dimension (area in ha or length in m)	Suitable (Yes / No)	Suitability Category (None, Lower, Higher)	Justification
	Buildings and artificial surfaces (BL3)	0.086	No	None	Artificial habitat type
T7	Wet grassland (GS4)	19.136	Yes	Lower	Shown to have some level of use
	Buildings and artificial surfaces (BL3)	0.153	No	None	Artificial habitat type
	Non-marine caves (EU1)	0.009	No	None	Habitat type lacks vegetation cover for prey
T8	Wet grassland (GS4)	6.284	Yes	Lower	Shown to have some level of use
	Wet grassland (GS4) x dry humid acid grassland (GS3) mosaic	0.064	Yes	Lower	Both components shown to have some level of use
	Conifer plantation (WD4) post-thicket	12.809	No	None	Shown to avoid the post-thicket habitat type
	Spoil and bare ground (ED2)	0.001	No	None	Habitat type lacks vegetation cover for prey
T9	Wet grassland (GS4)	16.239	Yes	Lower	Shown to have some level of use
	Upland blanket bog (PB2)	0.224	Yes	Higher	Shown to be a preferred habitat type in Ireland
	Upland blanket bog (PB2) x wet grassland (GS4) mosaic	2.047	Yes	Higher	Bog component shown to be a preferred habitat type in Ireland; wet grassland shown to have some level of use
	Mixed broadleaved x conifer woodland (WD2)	0.524	No	None	Shown to avoid closed canopy habitat type
	Scrub (WS1)	0.482	Yes	Lower	Scrub mosaics shown to be preferred habitat type in Spain; pure habitat type typically too dense for foraging, so some level of usage assumed here
	Buildings and artificial surfaces (BL3)	0.084	No	None	Artificial habitat type
T10	Wet grassland (GS4)	0.46	Yes	Lower	Shown to have some level of use

Turbine No.	Fossitt Habitat Type (Code)	Dimension (area in ha or length in m)	Suitable (Yes / No)	Suitability Category (None, Lower, Higher)	Justification
	Wet grassland (GS4) x wet heath (HH3)	1.994	Yes	Higher	Heath component shown to be a preferred habitat type in Ireland; wet grassland shown to have some level of use
	Wet heath (HH3) x upland blanket bog (PB2)	0.682	Yes	Higher	Both components shown to be preferred habitat types in Ireland
	Wet heath (HH3) x lowland blanket bog (PB3)	<0.01	Yes	Higher	Both components shown to be preferred habitat types in Ireland
	Upland blanket bog (PB2) x wet grassland (GS4) mosaic	0.796	Yes	Higher	Bog component shown to be a preferred habitat type in Ireland; wet grassland shown to have some level of use
	Cutover bog (PB4) x upland blanket bog (PB2) mosaic	1.615	Yes	Higher	Intact bog component shown to be a preferred habitat type in Ireland; cutover bog shown to have some level of use
	Conifer plantation (WD4) post-thicket	14.103	No	None	Shown to avoid the post-thicket habitat type
	Scrub (WS1) x conifer plantation (WD4) mosaic	>0.01	Yes	Higher	Scrub mosaics shown to be a preferred habitat type in Spain; mosaic typing suggests conifer component not currently post-thicket and therefore suitable, and preferred
T11	Wet grassland (GS4)	4.399	Yes	Lower	Shown to have some level of use
	Conifer plantation (WD4) post-thicket	14.776	No	None	Shown to avoid the post-thicket habitat type
	Buildings and artificial surfaces (BL3)	0.425	No	None	Artificial habitat type
	Dry meadows and grassy verges (GS2) x buildings and artificial surfaces (BL3) mosaic	<0.01	No	None	Dry grassland component shown to be strongly avoided in Ireland, and other component artificial habitat type

Turbine No.	Fossitt Habitat Type (Code)	Dimension (area in ha or length in m)	Suitable (Yes / No)	Suitability Category (None, Lower, Higher)	Justification
T12	Mixed broadleaved woodland (WD1)	0.584	No	None	Shown to avoid closed canopy habitat type
	Conifer plantation (WD4) post-thicket	17.837	No	None	Shown to avoid the post-thicket habitat type
	Conifer plantation (WD4) x mixed broadleaved / conifer woodland (WD2) mosaic	0.829	No	None	Shown to avoid the post-thicket habitat type; mixed broadleaved / conifer component closed canopy, making it unsuitable for foraging harrier
	Dry meadows and grassy verges (GS2) x buildings and artificial surfaces (BL3) mosaic	0.35	No	None	Dry grassland component shown to be strongly avoided in Ireland, and other component artificial habitat type
T13	Wet grassland (GS4)	1.589	Yes	Lower	Shown to have some level of use
	Wet grassland (GS4) x scrub (WS1) mosaic	<0.01	Yes	Higher	Wet grassland component shown to have some use; scrub mosaics shown to be preferred habitat type in Spain
	Conifer plantation (WD4) post-thicket	17.221	No	None	Shown to avoid the post-thicket habitat type
	Recently-felled woodland (WS5)	<0.01	Yes	Lower	Not pre-thicket conifer plantation or would have been classified as conifer planation habitat type; assumed some level of use as can provide cover for prey
	Dry meadows and grassy verges (GS2)	<0.01	No	None	Shown to be strongly avoided in Ireland
T14	Conifer plantation (WD4) post-thicket	19.404	No	None	Shown to avoid the post-thicket habitat type
	Conifer plantation (WD4) x wet heath (HH3) mosaic	<0.01	Yes	Higher	Heath component shown to be a preferred habitat type in Ireland; mosaic typing suggests conifer component not currently post-thicket and therefore suitable, and preferred

3.2.2 Foraging Territories

Details of hen harrier flight lines recorded during bird surveys are shown in Table 3-3 below along with the dimensions of any foraging territories defined. It is acknowledged that in some instances, the extent of these territories may reflect the limits of survey coverage rather than their actual size (refer to Section 2.4 for further discussion). However, it is important to note that the current analysis does not focus on foraging territory size. Instead, the primary consideration is whether any part of the defined foraging territories falls within 250 m of individual turbine locations.

The number of hen harrier flight lines varied between years, as did the number and proportion of foraging flight lines vs. non-foraging flights.

Surveyors only assigned flight lines to pairs for the 2024 season, so for all other seasons, all flight lines were treated as one single collective territory.

Table 3-3: Details of Flight Lines Used to Define Foraging Territories

Survey Year	No. of Flight Lines Recorded	No. of Flight Lines Labelled as Foraging Flights	No. of Pairs Thought to be Present	No. of Defined Territories	Percentage of 250 m Buffer Area Around 14 Turbines Within Foraging Territories
2020	66	15	2	1 – treated as single collective territory	55.56%
2021	127	31	3 (one off-site)	1 – treated as single collective territory	89.26%
2022	84	29	1	1	100.00%
2023	310	126	2 (one off-site)	1 – treated as single collective territory	85.92%
2024	119	37	2 (one off-site)	2	81.11% (for both territories treated collectively)

Foraging territories are shown in Figure 3 in Appendix A. Between 55.56 – 100% of the 250 m buffer area around the 14 turbines lies within the foraging territories identified.

3.3 Calculations

3.3.1 Loss of Suitable Current and Future Foraging Habitat

The results of the current and future suitable foraging habitat loss calculations are shown in Table 3-4. When habitat loss is calculated for habitats that are potentially suitable currently, the total amount of loss is less than when future habitat potential suitability is accounted for due to ongoing forestry cycles by approximately one third.

When potentially suitable habitats are classified as ‘lower’ vs. ‘higher’ suitability, there are currently approximately double the amount of lower suitability habitats vs. higher suitability ones. When ongoing forestry cycles are accounted for, the proportion of higher suitability habitats available over the lifespan of the Project increases considerably.

Table 3-4: Results of Calculations of Potentially Suitable Foraging Habitat Loss

Calculation	Description	Total Predicted Loss of Potentially Suitable Foraging Habitats (ha)	Pros	Cons
Current Habitat Loss Simple	All habitats within 250 m of turbines that are currently potentially suitable for foraging hen harrier	• 109.10	• Precautionary estimate	• Ignores levels of suitability • Ignores future baseline • Ignores functional usage
Current Habitat Loss Refined	All habitats within 250 m of turbines that are currently potentially suitable for foraging hen harrier (lower vs. higher suitability)	• Higher suitability: 45.23 • Lower suitability: 63.87	• Considers levels of suitability	• Ignores future baseline • Ignores functional usage
Future Habitat Loss Simple	All habitats within 250 m of turbines potentially suitable for foraging hen harrier across lifespan of Project (mean)	• 140.00	• Precautionary estimate • Accounts for future baseline	• Ignores levels of suitability • Ignores functional usage
Future Habitat Loss Refined	All habitats within 250 m of turbines potentially suitable (lower vs. higher suitability) across lifespan of Project (mean)	• Higher suitability: 76.13 • Lower suitability: 63.87	• Accounts for future baseline • Considers levels of suitability	• Ignores functional usage

3.3.2 Functional Use of Habitats at Project Site

The initial habitat loss results given in Table 3-4 were then refined by functional usage, as described below.

3.3.2.1 Foraging Territory Mapping Based on Foraging Flights

The foraging territories described in Section 3.2.2 were used to clip suitable foraging habitats identified in Sections 2.3.1 and 2.3.2 for every survey year to exclude any potentially suitable foraging habitats within 250 m of turbines located outside of the foraging territories identified.

This was undertaken for every foraging territory for every survey year, with the resulting habitat loss figures averaged. The largest amount of habitat due to be lost across all territories and survey years analysed was also used to reflect a ‘worst case’ scenario (the 2022 foraging territory), and is illustrated in Figure 3.3, Appendix A.

3.3.2.2 Core Foraging Area Buffering around NEAs

The second approach was the ‘core foraging area buffering around NEAs’ approach, which involved clipping foraging habitats identified in Sections 2.3.1 and 2.3.2 to those within a 2 km buffer surrounding the proposed NEAs. The aim of the two NEAs is to encourage hen

harrier to breed away from turbines, and they will be managed for the lifespan of the Project. This 2 km buffer reflects the core foraging area given for breeding hen harrier in the literature.

This is illustrated in Figure 4, Appendix A, and the 2 km buffer around the NEAs comprises an area of 3,247.16 ha.

The only potentially suitable foraging habitats within 250 m of turbines that are located outside the 2 km buffer were 1.96 ha of wet grassland (GS4) and 3.209 ha of upland blanket bog (PB2) near turbine T3. All the other potential foraging habitats within 250 m of the turbine locations were within 2 km or less from the NEAs.

3.3.2.3 Comparison

The results of the two approaches used to assess functional habitat use by hen harrier are summarised in Table 3-5 below.

When the worst-case scenario was applied, assuming a single, large foraging territory encompassing the majority of the Site, all potentially suitable foraging habitats identified in Table 3-4 were considered functionally used by hen harrier. This scenario represents the maximum extent of effective habitat loss due to displacement.

However, when a mean value of effective habitat loss due to displacement was derived from all recorded foraging territories, or when the 'core foraging are buffering around NEAs' method was applied (based on a 2 km radius from assumed nesting locations), the estimated extent of effective habitat loss was reduced. In both cases, the predicted habitat loss was lower than estimates derived without accounting for functional habitat use, although the magnitude of this effect was relatively small.

These findings indicate that incorporating functional usage into habitat loss assessments can refine and, in some cases, reduce the estimated impact of displacement on hen harrier foraging habitats.

Table 3-5: Results of Calculations of Potentially Suitable Foraging Habitat Loss Refined by Functional Usage

Calculation	Description	Total Predicted Loss of Potentially Suitable Foraging Habitats (ha)	Habitat Loss Refined by Functional Usage	
			Foraging Territories	Core Foraging Areas around NEAs
Current Habitat Loss Simple	All habitats within 250 m of turbines currently potentially suitable	109.10	• Max: 109.10 • Mean: 79.07	• 103.93
Current Habitat Loss Refined	All habitats within 250 m of turbines currently potentially suitable (lower vs. higher)	• Higher suitability: 45.23 • Lower suitability: 63.87	• Higher suitability max: 45.23 • Higher suitability mean: 23.97 • Lower suitability max: 63.87 • Lower suitability	• Higher suitability: 42.02 • Lower suitability: 61.91

Calculation	Description	Total Predicted Loss of Potentially Suitable Foraging Habitats (ha)	Habitat Loss Refined by Functional Usage	
			Foraging Territories	Core Foraging Areas around NEAs
			mean: 55.10	
Future Habitat Loss Simple	All habitats within 250 m of turbines potentially suitable across lifespan of Project (mean)	140.00	• Max: 140.00 • Mean: 133.47	• 134.83
Future Habitat Loss Refined	All habitats within 250 m of turbines potentially suitable (lower vs. higher) across lifespan of Project (mean)	• Higher suitability: 76.13 • Lower suitability: 63.87	• Higher suitability max: 76.13 • Higher suitability mean: 58.38 • Lower suitability max: 63.87 • Lower suitability mean: 55.10	• Higher suitability: 72.92 • Lower suitability: 61.91

4.0 Discussion and Conclusions

Potentially suitable hen harrier foraging habitats within the Site were identified through a combination of desk-based analysis and field surveys. Most habitats currently assessed as potentially suitable are open habitat types, whereas most forestry habitats are presently unsuitable due to closed canopy conditions that inhibit understory hunting by hen harriers.

To quantify potential habitat loss due to displacement, we undertook a detailed review of the scientific literature to inform our methodology. Based on this approach, approximately 109 hectares of currently potentially suitable foraging habitat are located within 250 metres of proposed turbine locations so may effectively be lost due to displacement. Of this total, roughly two-fifths comprises habitat types of higher potential suitability for hen harrier foraging, while the remaining three-fifths are of lower potential suitability.

This initial estimate does not account for changes in habitat suitability over time due to forestry cycles. When future habitat conditions are considered and specifically the potential for forestry habitats to become suitable as canopy structures change, the estimated area of potentially suitable foraging habitat affected by displacement over the lifespan of the wind farm increases to approximately 140 hectares. Within this revised figure, over half of the area comprises habitat types that are either currently of higher suitability or are expected to become so in the future.

These calculations are based solely on habitat type and do not incorporate functional usage of the Site by hen harriers. To address this, we applied two complementary approaches to explore functional habitat use:

1. Foraging Territory Mapping Based on Foraging Flights

Hen harrier flight activity and other survey data collected over five years were used to delineate foraging territories. Foraging territory size and location varied annually. When

functional usage was considered, the estimated habitat loss ranged from approximately 80 hectares (based on current potential suitability) to 133 hectares (based on future potential suitability of habitats averaged over the lifespan of the wind farm). These figures represent only minor reductions (c. 30 ha and 7 ha, respectively) compared to estimates based solely on habitat type. Under a worst-case scenario, where a single large foraging territory encompassed all of the turbine buffers in 2022, no reduction in predicted habitat loss was observed.

2. Core Foraging Area Around Proposed Nesting Enhancement Areas

This method assumes nesting will occur within designated NEAs, with most foraging activity taking place within a 2 km radius, as supported by literature. The aim of the two proposed NEAs is to encourage hen harrier to nest away from turbines, and they will be managed for the lifespan of the Project. This ‘core foraging area around proposed NEAs’ approach resulted in a minor reduction in predicted habitat loss (c. 6 ha) compared to the habitat-only assessment.

Both of the other methods have limitations. The foraging territory mapping approach does not account for future shifts in hen harrier activity due to forestry dynamics or changes in nesting locations, particularly given the intention to encourage nesting away from turbines via the NEAs. It also assumes uniform suitability across all habitats where foraging was observed, which may not reflect actual habitat preferences.

Similarly, the core foraging area method assumes exclusive use of NEAs for nesting and a fixed 2 km foraging radius, despite literature and survey data indicating that some foraging flights exceed this distance. This could lead to underestimation of habitat usage across the Site.

These functional assessments do not provide definitive predictions but serve to contextualize the initial habitat loss estimates (Sections 2.3.1 and 2.3.2). Our analysis suggests that any difference in habitat loss estimates depending on whether functional usage is considered or not, is likely to be relatively small. Consequently, the activity-based assessment of functional usage supports the habitat suitability-based findings.

In conclusion, the most precautionary estimate of effective foraging habitat loss due to displacement is 140 hectares, based on the ‘future habitat loss simple’ scenario. Adopting a precautionary approach, this figure should therefore form the basis for compensation measures. Where feasible, compensatory habitats should be targeted to reflect the proportional loss of higher (c.76 ha) versus lower (c.64 ha) potentially suitability habitats.

Appendix A Figures

Hen Harrier Foraging Habitat Loss Report

Lissinagroagh Wind Farm

FuturEnergy Ireland

SLR Project No.: 501.065072.00001

10 February 2026

589000 590000 591000 592000 593000 594000 595000

845000 844000 843000 842000

T11 T9 T8 T10 T6 T7 T5 T4 T12 T2 T3 T1 T13 T14

N

LEGEND

- Site Boundary
- Turbine Base
- Nesting Enhancement Area
- GIS Compound
- Borrow Pit
- Substation
- Cut - Fill Area
- Hardstand
- Oversail Area
- Turning Bay
- Internal Road
- Internal Haul Road
- Met Mast Location

Ireland FutureEnergy

SLR

LISSINAGROAGH WIND FARM

HEN HARRIER FORAGING HABITAT LOSS REPORT

PROJECT SITE

FIGURE 1

Scale 1:20,000 @ A3

Date OCTOBER 2025

0 0.5 1

Kilometres

501.065072.00001.0006.0 Project Site

Aerial imagery (2019):
Maxar, Microsoft, Map data © OpenStreetMap contributors, Microsoft, Facebook, Inc. and its affiliates, Esri Community Maps contributors, Map layer by Esri

589000 590000 591000 592000 593000 594000 595000

845000 844000 843000 842000

T11 T9 T8 T10 T6 T7 T5 T4 T12 T2 T3 T1 T13 T14

62151C 62152U 62150H 62149O 62148T 62146G 62147B 62145L 62129D 62128I 62198M 62132J 62127N 62130T 62122P 62123K 62136M 62207S 62137H 62219C 62222I

N

0 500 1,000

Metres

501.065072.00001.0007.0 Habitats Within 250 m of Turbines

LEGEND

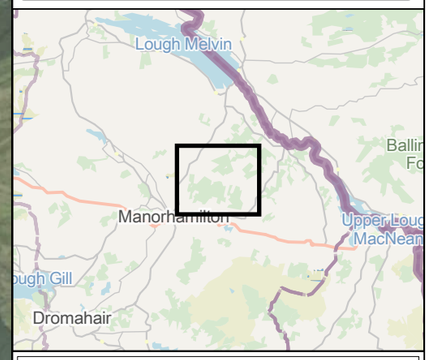
- Site Boundary
- Turbine Base
- Turbine Location 250 m Buffer
- Coillte Forestry Habitat Data

Tobin Fossitt Habitat Data

Fossit Habitat Type

- BL1 - Stone walls and other stone work
- BL3 - Buildings and Artifical Surfaces
- ED2 - Spoil and Bare Ground
- EU1 - Non-Marine Caves
- GS2 - Dry Meadows & Grassy Verges
- GS4 - Wet Grassland
- HH3 - Wet heath
- PB2 - Upland blanket bog
- WD1 - Mixed Broadleaved Woodland
- WD2 - Mixed Broadleaved/Conifer Woodland
- WD4 - Conifer Plantation
- WS1 - Scrub
- WS5 - Recently Felled Woodland

Note: All Coillte forestry habitat data is equivalent to WD4 – Conifer Plantation



Ireland FuturEnergy

SLR

LISSINAGROAGH WIND FARM

HEN HARRIER FORAGING HABITAT LOSS REPORT

HABITATS CURRENTLY PRESENT WITHIN 250 M OF TURBINES

FIGURE 2.1

Scale 1:20,000 @ A3

Date OCTOBER 2025

Aerial imagery (2019):
Maxar, Microsoft, Map data © OpenStreetMap contributors, Microsoft, Facebook, Inc. and its affiliates, Esri Community Maps contributors, Map layer by Esri
Forestry Habitat Data provided by Coilte Forest. Fossitt Habitat Data provided by TOBIN.

591000

592000

843000

842000

N

147B

T5

T4

T12

T2

T3

T1

62128I

62129D

62130T

62122P

62123K

62198M

62127N

62132J

0 200 400

Metres

LEGEND

Site Boundary

Turbine Base

Turbine Location 250 m Buffer

Coillte Forestry Habitat Data

Tobin Fossitt Habitat Data

Fossit Habitat Type

BL3 - Buildings and Artifical Surfaces

ED2 - Spoil and Bare Ground

EU1 - Non-Marine Caves

GS2 - Dry Meadows & Grassy Verges

GS4 - Wet Grassland

HH3 - Wet heath

PB2 - Upland blanket bog

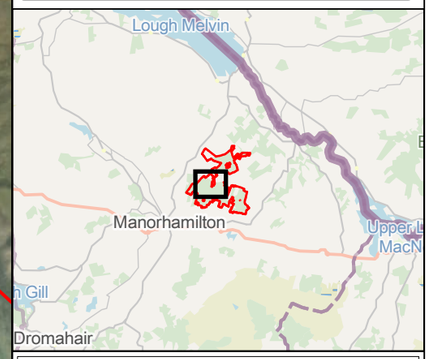
WD1 - Mixed Broadleaved Woodland

WD2 - Mixed Broadleaved/Conifer Woodland

WD4 - Conifer Plantation

WS1 - Scrub

Note: All Coillte forestry habitat data is equivalent to WD4 – Conifer Plantation



Ireland FuturEnergy

SLR

LISSINAGROAGH WIND FARM

HEN HARRIER FORAGING HABITAT LOSS REPORT

HABITATS CURRENTLY PRESENT WITHIN 250 M OF TURBINES

FIGURE 2.2

Scale 1:6,500 @ A3

Date OCTOBER 2025

501.065072.00001.0007.0 Habitats Within 250 m of Turbines

Aerial imagery (2019):
Maxar, Microsoft, Map data © OpenStreetMap contributors, Microsoft, Facebook, Inc. and its affiliates, Esri Community Maps contributors, Map layer by Esri
Forestry Habitat Data provided by Coilte Forest. Fossitt Habitat Data provided by TOBIN.

592000

593000

844000

N

T11

T9

T8

T10

T6

T7

62151C

62152U

62149O

62150H

62148T

62147B

62146G

62145L

0 200 400

Metres

LEGEND

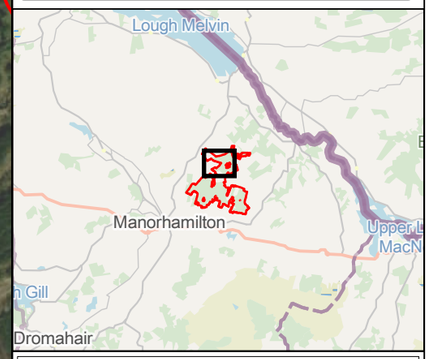
- Site Boundary
- Turbine Base
- Turbine Location 250 m Buffer
- Coillte Forestry Habitat Data

Tobin Fossitt Habitat Data

Fossit Habitat Type

- BL1 - Stone walls and other stone work
- BL3 - Buildings and Artifical Surfaces
- ED2 - Spoil and Bare Ground
- GS4 - Wet Grassland
- PB2 - Upland blanket bog
- WD2 - Mixed Broadleaved/Conifer Woodland
- WD4 - Conifer Plantation
- WS1 - Scrub

Note: All Coillte forestry habitat data is equivalent to WD4 – Conifer Plantation



Ireland FuturEnergy

SLR

LISSINAGROAGH WIND FARM

HEN HARRIER FORAGING HABITAT LOSS REPORT

HABITATS CURRENTLY PRESENT WITHIN 250 M OF TURBINES

FIGURE 2.3

Scale 1:6,500 @ A3

Date OCTOBER 2025

501.065072.00001.0007.0 Habitats Within 250 m of Turbines

Aerial imagery (2019):
Maxar, Microsoft, Map data © OpenStreetMap contributors, Microsoft, Facebook, Inc. and its affiliates, Esri Community Maps contributors, Map layer by Esri
Forestry Habitat Data provided by Coilte Forest. Fossitt Habitat Data provided by TOBIN.

593000

594000

841000

501.065072.00001.0007.0 Habitats Within 250 m of Turbines

N

62136M
62136M
62136M
62136M
T13
62207S
62137H
62137H
62137H
62137H
62136M
62137H
T14
62137H
62219C
62219C
62219C
62222I
62219C

0 200 400

Metres

LEGEND

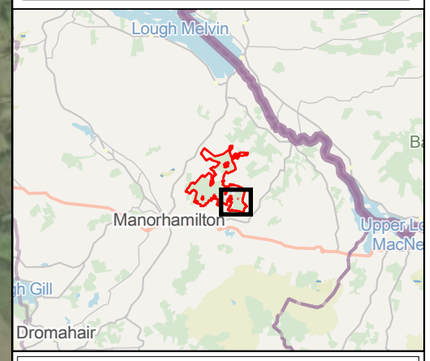
- Site Boundary
- Turbine Base
- Turbine Location 250 m Buffer
- Coillte Forestry Habitat Data

Tobin Fossitt Habitat Data

Fossit Habitat Type

- GS2 - Dry Meadows & Grassy Verges
- GS4 - Wet Grassland
- WD4 - Conifer Plantation
- WS5 - Recently Felled Woodland

Note: All Coillte forestry habitat data is equivalent to WD4 – Conifer Plantation



Ireland FuturEnergy

SLR

LISSINAGROAGH WIND FARM

HEN HARRIER FORAGING HABITAT LOSS REPORT

HABITATS CURRENTLY PRESENT WITHIN 250 M OF TURBINES

FIGURE 2.4

Scale 1:6,500 @ A3

Date OCTOBER 2025

Aerial imagery (2019):
Maxar, Microsoft, Map data © OpenStreetMap contributors, Microsoft, Facebook, Inc. and its affiliates, Esri Community Maps contributors, Map layer by Esri
Forestry Habitat Data provided by Coilte Forest. Fossitt Habitat Data provided by TOBIN.

588000 590000 592000 594000 596000 598000

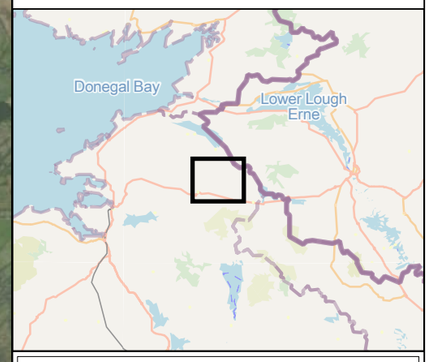
846000
844000
842000

T11 T9 T8 T10 T6 T7 T5 T4 T12 T2 T3 T1 T13 T14

N

LEGEND

- Site Boundary
- Turbine Base
- Turbine Location 250 m Buffer
- Foraging Territory



0 500 1,000
Metres

501.065072.00001.0008.0 Hen Harrier Foraging Territories

Ireland FuturEnergy

SLR

LISSINAGROAGH WIND FARM

HEN HARRIER FORAGING HABITAT LOSS REPORT

HEN HARRIER FORAGING TERRITORIES - 2020

FIGURE 3.1

Scale 1:35,000 @ A3

Date OCTOBER 2025

Aerial imagery (2019):
Earthstar Geographics, Map data © OpenStreetMap contributors, Microsoft, Facebook, Inc. and its affiliates, Esri Community Maps contributors, Map layer by Esri

588000 590000 592000 594000 596000 598000

846000

844000

842000

T11 T9 T8 T10 T6 T7 T5 T4 T12 T2 T3 T1 T13 T14

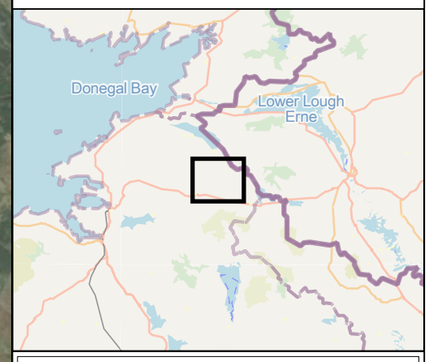
N

0 500 1,000

Metres

LEGEND

- Site Boundary
- Turbine Base
- Turbine Location 250 m Buffer
- Foraging Territory



Ireland FuturEnergy

SLR

LISSINAGROAGH WIND FARM

HEN HARRIER FORAGING HABITAT LOSS REPORT

HEN HARRIER FORAGING TERRITORIES - 2021

FIGURE 3.2

Scale 1:35,000 @ A3

Date OCTOBER 2025

501.065072.00001.0008.0 Hen Harrier Foraging Territories

Aerial imagery (2019):
Earthstar Geographics, Map data © OpenStreetMap contributors, Microsoft, Facebook, Inc. and its affiliates, Esri Community Maps contributors, Map layer by Esri

588000 590000 592000 594000 596000 598000

846000

844000

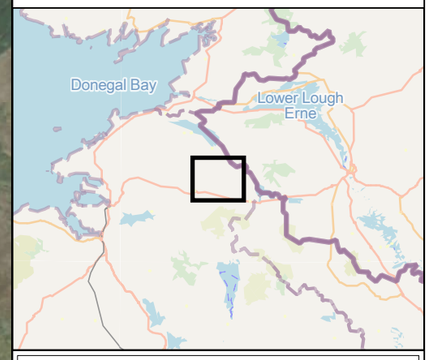
842000

N

LEGEND

- Site Boundary
- Turbine Base
- Turbine Location 250 m Buffer
- Foraging Territory

T11 T9 T8 T10 T6 T7 T5 T4 T12 T2 T3 T1 T13 T14



0 500 1,000

Metres

Ireland FuturEnergy

SLR

LISSINAGROAGH WIND FARM

HEN HARRIER FORAGING HABITAT LOSS REPORT

HEN HARRIER FORAGING TERRITORIES - 2022

FIGURE 3.3

Scale 1:35,000 @ A3

Date OCTOBER 2025

501.065072.00001.0008.0 Hen Harrier Foraging Territories

Aerial imagery (2019):
Earthstar Geographics, Map data © OpenStreetMap contributors, Microsoft, Facebook, Inc. and its affiliates, Esri Community Maps contributors, Map layer by Esri

586000 588000 590000 592000 594000 596000

848000 846000 844000 842000

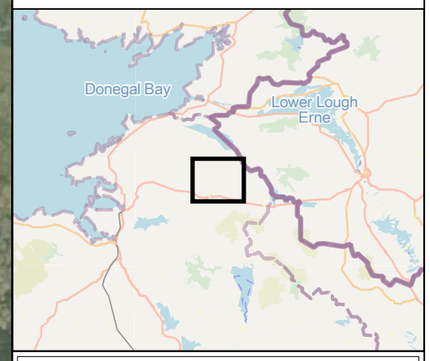
T11 T9 T8 T10 T6 T7 T5 T4 T12 T2 T3 T1 T13 T14

N

0 500 1,000
Metres

LEGEND

- Site Boundary
- Turbine Base
- Turbine Location 250 m Buffer
- Foraging Territory



Ireland FuturEnergy

SLR

LISSINAGROAGH WIND FARM

HEN HARRIER FORAGING HABITAT LOSS REPORT

HEN HARRIER FORAGING TERRITORIES - 2023

FIGURE 3.4

Scale 1:35,000 @ A3

Date OCTOBER 2025

501.065072.00001.0008.0 Hen Harrier Foraging Territories

Aerial imagery (2019):
Earthstar Geographics, Map data © OpenStreetMap contributors, Microsoft, Facebook, Inc. and its affiliates, Esri Community Maps contributors, Map layer by Esri

588000 590000 592000 594000 596000

848000 846000 844000 842000

T11 T9 T8 T10 T6 T7 T5 T4 T3 T12 T2 T1 T13 T14

Northern Pair and Southern Pair Territories

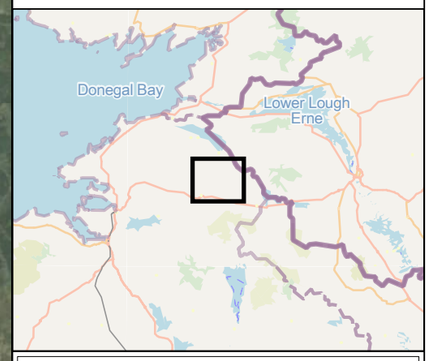
N

0 500 1,000

Metres

LEGEND

- Site Boundary
- Turbine Base
- Turbine Location 250 m Buffer
- Foraging Territory



Ireland FuturEnergy

SLR

LISSINAGROAGH WIND FARM

HEN HARRIER FORAGING HABITAT LOSS REPORT

HEN HARRIER FORAGING TERRITORIES - 2024

FIGURE 3.5

Scale 1:35,000 @ A3

Date OCTOBER 2025

501.065072.00001.0008.0 Hen Harrier Foraging Territories

Aerial imagery (2019):
Earthstar Geographics, Map data © OpenStreetMap contributors, Microsoft, Facebook, Inc. and its affiliates, Esri Community Maps contributors, Map layer by Esri

588000 590000 592000 594000 596000

846000 844000 842000

N

T11 T9 T8 T10 T6 T7 T5 T4 T12 T2 T3 T1 T13 T14

62152U 62150H 62151C 62149O 62148T 62146G 62147B 62145L 62129D 62128I 62130T 62198M 62132J 62123K 62127N 62122P 62136M 62207S 62137H 62222I 62219C

0 1 2

Kilometres

501.065072.00001.0010.0 Functional Habitat Loss Core Foraging

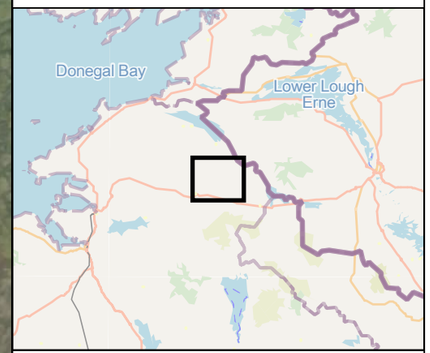
LEGEND

- Site Boundary
- Turbine Base
- Turbine Location 250 m Buffer
- Nesting Enhancement Area
- Core Foraging Area around Nesting Enhancement Areas
- Coillte Forestry Habitat Data

Tobin Fossitt Habitat Data

Fossit Habitat Type

- BL1 - Stone walls and other stone work
- BL3 - Buildings and Artifical Surfaces
- ED2 - Spoil and Bare Ground
- EU1 - Non-Marine Caves
- GS2 - Dry Meadows & Grassy Verges
- GS4 - Wet Grassland
- HH3 - Wet heath
- PB2 - Upland blanket bog
- WD1 - Mixed Broadleaved Woodland
- WD2 - Mixed Broadleaved/Conifer Woodland
- WD4 - Conifer Plantation
- WS1 - Scrub
- WS5 - Recently Felled Woodland



Ireland FuturEnergy

SLR

LISSINAGROAGH WIND FARM

HEN HARRIER FORAGING HABITAT LOSS REPORT

FUNCTIONAL HABITAT LOSS - CORE FORAGING AREAS

FIGURE 4

Scale 1:30,000 @ A3

Date OCTOBER 2025

Aerial imagery (2019):
Maxar, Microsoft, Map data © OpenStreetMap contributors, Microsoft, Facebook, Inc. and its affiliates, Esri Community Maps contributors, Map layer by Esri
Forestry Habitat Data provided by Coilte Forest. Fossitt Habitat Data provided by TOBIN.

Appendix B Literature Review Screening Process

Hen Harrier Foraging Habitat Loss Report

Lissinagroagh Wind Farm

FuturEnergy Ireland

SLR Project No.: 501.065072.00001

10 February 2026

Table A-1: Literature Review Screening

Article	Country	Abstract Screening	Full Text Screening	Reason for Exclusion
Arroyo, B., Amar, A., Leckie, F., Buchanan, G.M., Wilson, J.D. and Redpath, S., 2009. Hunting habitat selection by hen harriers on moorland: implications for conservation management. Biological conservation, 142(3), pp.586-596.	Scotland	Include	Include	-
Madders, M., 2000. Habitat selection and foraging success of Hen Harriers *Circus cyaneus* in west Scotland. Bird Study, 47(1), pp.32-40.	Scotland	Include	Include	-
Arroyo, B., Leckie, F., Amar, A., McCluskie, A. and Redpath, S., 2014. Ranging behaviour of Hen Harriers breeding in special protection areas in Scotland. Bird Study, 61(1), pp.48-55.	Scotland	Include	Exclude	Discussed home range, not habitats
Madders, M., 2003. Hen Harrier *Circus cyaneus* foraging activity in relation to habitat and prey. Bird study, 50(1), pp.55-60.	Scotland	Include	Include	-
Guixé, D. and Arroyo, B., 2011. Appropriateness of Special Protection Areas for wide-ranging species: the importance of scale and protecting foraging, not just nesting habitats. Animal Conservation, 14(4), pp.391-399.	-	Exclude	-	Discussed Montagu's harrier not hen harrier
Caravaggi, A., Irwin, S., Lusby, J., Ruddock, M., Mee, A., Nagle, T., O'Toole, L., O'Neill, S. and O'Halloran, J., 2019. Anthropogenic pressures within the breeding range of the Hen Harrier *Circus cyaneus* in Ireland. Bird Study, 66(4), pp.461-470.	Ireland	Include	Exclude	Discussed anthropogenic impacts, not habitats
Redpath, S., Amar, A., Madders, M., Leckie, F. and Thirgood, S., 2002. Hen harrier foraging success in relation to land use in Scotland. Animal Conservation, 5(2), pp.113-118.	Scotland	Include	Exclude	Discussed foraging success, not habitats
Wilson, M.W., Irwin, S., Norriss, D.W., Newton, S.F., Collins, K., Kelly, T.C. and O'Halloran, J., 2009. The importance of pre-thicket conifer plantations for nesting Hen Harriers *Circus cyaneus* in Ireland. Ibis, 151(2), pp.332-343.	Ireland	Include	Exclude	Discussed nest location, not foraging habitat
Amar, A. and Redpath, S.M., 2005. Habitat use by Hen Harriers *Circus cyaneus* on Orkney: implications of land-use change for this declining population. Ibis, 147(1), pp.37-47.	Scotland	Include	Include	-

Article	Country	Abstract Screening	Full Text Screening	Reason for Exclusion
Amar, A., Davies, J., Meek, E., Williams, J., Knight, A. and Redpath, S., 2011. Long-term impact of changes in sheep *Ovis aries* densities on the breeding output of the hen harrier *Circus cyaneus*. Journal of Applied Ecology, 48(1), pp.220-227.	Scotland	Include	Include	-
Mirski, P., Krupiński, D., Szulak, K. and Żmihorski, M., 2016. Seasonal and spatial variation of the Montagu's Harrier's *Circus pygargus* diet in Eastern Poland. Bird Study, 63(2), pp.165-171.	Poland	Exclude	-	Discussed Montagu's harrier not hen harrier
Thirgood, S.J., Redpath, S.M. and Graham, I.M., 2003. What determines the foraging distribution of raptors on heather moorland?. Oikos, 100(1), pp.15-24.	Scotland	Include	Exclude	Did not go into detail on foraging habitat types
Liminana, R., Arroyo, B.E., Surroca, M., Urios, V. and Reig-Ferrer, A., 2011. Influence of habitat on nest location and reproductive output of Montagu's Harriers breeding in natural vegetation. Journal of Ornithology, 152(3), pp.557-565.	Spain	Exclude	-	Discussed Montagu's harrier not hen harrier
O'Donoghue, B.G., 2020. Hen Harrier *Circus cyaneus* ecology and conservation during the non-breeding season in Ireland. Bird Study, 67(3), pp.344-359.	Ireland	Include	Exclude	Discussed roosting habitats only
Vukovich, M. and Ritchison, G., 2008. Foraging behavior of Short-eared Owls and Northern Harriers on a reclaimed surface mine in Kentucky. Southeastern Naturalist, 7(1), pp.1-10.	USA	Exclude	-	Discussed northern harrier not hen harrier
Massey, B.H., Griffin, C.R. and McGarigal, K., 2009. Habitat use by foraging northern harriers on Nantucket Island, Massachusetts. The Wilson Journal of Ornithology, pp.765-769.	USA	Exclude	-	Discussed northern harrier not hen harrier
Clarke, R., Combridge, M. and Combridge, P., 1997. A comparison of the feeding ecology of wintering Hen Harriers *Circus cyaneus* centred on two heathland areas in England. Ibis, 139(1), pp.4-18.	England	Include	Exclude	Discussed wintering habitat use
Amar, A., Arroyo, B., Redpath, S. and Thirgood, S., 2004. Habitat predicts losses of red grouse to individual hen harriers. Journal of Applied Ecology, 41(2), pp.305-314.	Scotland	Include	Exclude	Discussed heather cover vs red grouse deliveries

Article	Country	Abstract Screening	Full Text Screening	Reason for Exclusion
Bobola, E., Goutner, V. and Liordos, V., 2018. Foraging habitat selection and differentiation among coexisting raptors across an estuarine landscape (Evros Delta, northern Greece). Estuarine, Coastal and Shelf Science, 213, pp.108-114.	Greece	Include	Exclude	Discussed raptors at a road network; habitats for hen harrier not relevant in the Irish context
Hayhow, D.B., Eaton, M.A., Bladwell, S., Etheridge, B., Ewing, S.R., Ruddock, M., Saunders, R., Sharpe, C., Sim, I.M. and Stevenson, A., 2013. The status of the Hen Harrier, *Circus cyaneus*, in the UK and Isle of Man in 2010. Bird Study, 60(4), pp.446-458.	UK	Exclude	-	Did not analyse habitats
Tapia, L., Dominguez, J. and Rodriguez, L., 2008. Hunting habitat preferences of raptors in a mountainous area (Northwestern Spain). Polish Journal of Ecology, 56(2), pp.323-333.	Spain	Include	Include	-
Littlefield, C.D. and Johnson, D.H., 2005. Habitat preferences of migrant and wintering Northern Harriers in northwestern Texas. The Southwestern Naturalist, 50(4), pp.448-452.	USA	Exclude	-	Discussed northern harrier not hen harrier
Curtis, O., Simmons, R.E. and Jenkins, A.R., 2004. Black Harrier *Circus maurus* of the Fynbos biome, South Africa: a threatened specialist or an adaptable survivor?. Bird Conservation International, 14(4), pp.233-245.	South Africa	Exclude	-	Discussed black harrier not hen harrier
Kitowski, I., Jakubas, D., Mirski, P., Pitucha, G. and Markowska, K., 2021. Changes in the Montagu's Harrier *Circus pygargus* diet in Eastern Poland across decades promote insects and reptilians, but not birds and rodents. Ecology and evolution, 11(10), pp.5265-5280.	Poland	Exclude	-	Discussed Montagu's harrier not hen harrier
Terraube, J. and Arroyo, B., 2011. Factors influencing diet variation in a generalist predator across its range distribution. Biodiversity and Conservation, 20(10), pp.2111-2131.	-	Exclude	-	Discussed Montagu's harrier not hen harrier
Williams, C.K., Applegate, R.D., Lutz, R.S. and Rusch, D.H., 2000. A comparison of raptor densities and habitat use in Kansas cropland and rangeland ecosystems.	USA	Exclude	-	Discussed northern harrier not hen harrier
Bright, J., Langston, R., Bullman, R., Evans, R., Gardner, S. and Pearce-Higgins, J., 2008. Map of bird sensitivities to wind farms in Scotland: a tool to aid planning and conservation. Biological Conservation, 141(9), pp.2342-2356.	Scotland	Exclude	-	Did not analyse habitats

Article	Country	Abstract Screening	Full Text Screening	Reason for Exclusion
Mustin, K., Arroyo, B., Beja, P., Newey, S., Irivine, R.J., Kestler, J. and Redpath, S.M., 2018. Consequences of game bird management for non-game species in Europe. Journal of Applied Ecology, 55(5), pp.2285-2295.	Europe	Exclude	-	Discussed game bird management
Amar, A., Court, I.R., Davison, M., Downing, S., Grimshaw, T., Pickford, T. and Raw, D., 2012. Linking nest histories, remotely sensed land use data and wildlife crime records to explore the impact of grouse moor management on peregrine falcon populations. Biological Conservation, 145(1), pp.86-94.	Scotland	Exclude	-	Discussed peregrine not hen harrier
Calladine, J., Critchley, C.N.R., Baker, D., Towers, J. and Thiel, A., 2014. Conservation management of moorland: a case study of the effectiveness of a combined suite of management prescriptions which aim to enhance breeding bird populations. Bird Study, 61(1), pp.56-72.	Scotland	Exclude	-	Not related to hen harrier
Francksen, R.M., Whittingham, M.J., Ludwig, S.C., Roos, S. and Baines, D., 2017. Numerical and functional responses of Common Buzzards *Buteo buteo* to prey abundance on a Scottish grouse moor. Ibis, 159(3), pp.541-553.	Scotland	Exclude	-	Discussed buzzard not hen harrier
Peters, K.A. and Otis, D.L., 2005. Using the risk-disturbance hypothesis to assess the relative effects of human disturbance and predation risk on foraging American Oystercatchers. The Condor, 107(3), pp.716-725.	USA	Exclude	-	Discussed American oystercatcher not hen harrier
Thirgood, S. and Redpath, S., 2008. Hen harriers and red grouse: science, politics and human–wildlife conflict. Journal of Applied Ecology, 45(5), pp.1550-1554.	UK	Exclude	-	Did not analyse habitats
Wolff, J.O., Fox, T., Skillen, R.R. and Wang, G., 1999. The effects of supplemental perch sites on avian predation and demography of vole populations. Canadian Journal of Zoology, 77(4), pp.535-541.	USA	Exclude	-	Discussed voles/northern harrier
Meunier, F.D., Verheyden, C. and Jouventin, P., 2000. Use of roadsides by diurnal raptors in agricultural landscapes. Biological Conservation, 92(3), pp.291-298.	France	Exclude	-	Discussed raptors and roads generally only
Schueck, L.S., Marzluff, J.M. and Steenhof, K., 2001. Influence of military activities on raptor abundance and behavior. The Condor, 103(3), pp.606-615.	USA	Exclude	-	Discussed military activity and raptors

Article	Country	Abstract Screening	Full Text Screening	Reason for Exclusion
Estrada, A., Delibes-Mateos, M., Caro, J., Viñuela, J., Díaz-Fernández, S., Casas, F. and Arroyo, B., 2015. Does small-game management benefit steppe birds of conservation concern? A field study in central S pain. Animal Conservation, 18(6), pp.567-575.	Spain	Exclude	-	Discussed red legged partridge not hen harrier
Atuo, F.A. and O'Connell, T.J., 2017. The landscape of fear as an emergent property of heterogeneity: Contrasting patterns of predation risk in grassland ecosystems. Ecology and Evolution, 7(13), pp.4782-4793.	USA	Exclude	-	Discussed prey behaviour patterns
Smart, J. and Amar, A., 2018. Diversionary feeding as a means of reducing raptor predation at seabird breeding colonies. Journal for Nature Conservation, 46, pp.48-55.	Scotland	Exclude	-	Discussed seabirds not hen harrier
Wilson, M., Gittings, T., O'Halloran, J., Kelly, T. and Pithon, J., 2006. The distribution of Hen Harriers in Ireland in relation to land use cover, particularly forest cover. COFORD Connects Note, Dublin.	Ireland	Include	Include	-
Wilson, M., Irwin, S., O'Donoghue, B., Kelly, T. and O'Halloran, J., 2010. The use of forested landscapes by Hen Harriers in Ireland. COFORD: Dublin, Ireland.	Ireland	Include	Include	-
Irwin, S., Wilson, M., O'Donoghue, B., O'Mahony, B., Kelly, T. and O'Halloran, J., 2012. Optimum scenarios for Hen Harrier conservation in Ireland. Cork: Department of Agriculture, Food and the Marine by the School of Biological, Earth and Environmental Sciences, University College Cork.	Ireland	Include	Include	-
Wilson, M.W., O'Donoghue, B., O'Mahony, B., Cullen, C., O'Donoghue, T., Oliver, G., Ryan, B., Troake, P., Irwin, S., Kelly, T.C. and Rotella, J.J., 2012. Mismatches between breeding success and habitat preferences in Hen Harriers *Circus cyaneus* breeding in forested landscapes. Ibis, 154(3), pp.578-589.	Ireland	Include	Exclude	Discussed nesting success in forestry
Caravaggi, A., Irwin, S., Lusby, J., Ruddock, M., O'Toole, L., Mee, A., Nagle, T., O'Neill, S., Tierney, D., McCarthy, A. and O'Halloran, J., 2019. Factors influencing Hen Harrier *Circus cyaneus* territory site selection and breeding success. Bird Study, 66(3), pp.366-377.	Ireland	Include	Exclude	Discussed nest/territory selection, not foraging
Moran, P. and Wilson-Parr, R., 2015. Hen Harrier Special Protection Area (SPA) habitat mapping project 2014. National Parks and Wildlife Service.	Ireland	Include	Exclude	Discussed habitat classifications; did not define foraging habitats

Appendix C Data for Foraging Habitat Loss Calculations

Hen Harrier Foraging Habitat Loss Report

Lissinagroagh Wind Farm

FuturEnergy Ireland

SLR Project No.: 501.065072.00001

10 February 2026

C.1 Turbine 1

Table A-2: Habitat Data Used for Calculations – Turbine T1

Fossitt Habitat Type	Coillte Block	Forestry (Y if within Coillte dataset and N if non-woodland type in Tobin dataset)	Felling Year	Available	Currently Suitable?	Current Suitability Category	Suitable at some point in future?	Maximum suitability category at some point in future	Current area (ha)	Future area (ha)																														Mean area (ha)
										2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	
PB2 - Upland blanket bog		N		Yes	Yes	Higher	Yes	Higher	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425	2.425
WD4 - Conifer plantation x HH3 - Wet heath		Y	2046	Assumed to be part of 62152U-4 - 10y	Yes	Higher	Yes	Higher	2.716	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.716	2.716	2.716	2.716	2.716	2.716	2.716	2.716	2.716	2.716	2.716	0	0.905333333
WD4 - Conifer plantation		Y	2046	Assumed to be part of 62152U-4 - 10y	No	None	Yes	Higher	0.158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0	0.052666667
CHF	62150H	Y	2039	10y	No	None	Yes	Higher	3.82	0	0	0	0	0	0	0	0	0	0	0	0	0	3.82	3.82	3.82	3.82	3.82	3.82	3.82	3.82	3.82	0	0	0	0	0	0	0	0	0	1.273333333
CHF	62150H	Y	2047	10y	No	None	Yes	Higher	0.687	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.687	0.687	0.687	0.687	0.687	0.687	0.687	0.687	0.687	0.687	0.687	0.687	0.229
CHF	62150H	Y	2046	10y	No	None	Yes	Higher	0.411	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.411	0.411	0.411	0.411	0.411	0.411	0.411	0.411	0.411	0.411	0.411	0	0.137
CHF	62152U	Y	2047	10y	No	None	Yes	Higher	2.454	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.454	2.454	2.454	2.454	2.454	2.454	2.454	2.454	2.454	2.454	2.454	0.818
CHF	62152U	Y	2042	10y	No	None	Yes	Higher	0.514	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.514	0.514	0.514	0.514	0.514	0.514	0.514	0.514	0.514	0.514	0	0	0	0	0	0.171333333
CHF	62152U	Y	2046	10y	No	None	Yes	Higher	4.606	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.606	4.606	4.606	4.606	4.606	4.606	4.606	4.606	4.606	4.606	4.606	0	1.535333333
FELLED	62152U	Y	2069	10y	No	None	Yes	Higher	0.466	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHF	62149O	Y	2047	10y	No	None	Yes	Higher	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.000666667
CHF	62149O	Y	2053	10y	No	None	Yes	Higher	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.7	0.7	0.7	0.7	0.7	0.09333333
CHF	62150H	Y	2062	10y	No	None	Yes	Higher	0.613	0.613	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.02043
CHF	62151C	Y	2042	10y	No	None	Yes	Higher	0.028	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0	0	0	0	0	0.009333333

C.2 Turbine 2

Table A-3: Habitat Data Used for Calculations – Turbine T2

Fossitt Habitat Type	Coillte Block	Forestry (Y if within Coillte dataset and N if non-woodland type in Tobin dataset)	Felling Year	Available	Currently Suitable?	Current Suitability Category	Suitable at some point in future?	Maximum suitability category at some point in future	Current area (ha)	Future area (ha)																														Mean area (ha)
										2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	
GS4 - Wet grassland		N		Yes	Yes	Lower	Yes	Lower	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202	5.202
PB2 - Upland blanket bog		N		Yes	Yes	Higher	Yes	Higher	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402	0.402
WD4 - Conifer plantation		Y	2056	Assumed to be part of 62151C-8 and	No	None	Yes	Higher	1.131	1.131	1.131	1.131	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.131	0.1131

Fossitt Habitat Type	Coillte Block	Forestry (Y if within Coillte dataset and N if non-woodland type in Tobin dataset)	Felling Year	Available	Currently Suitable?	Current Suitability Category	Suitable at some point in future?	Maximum suitability category at some point in future	Current area (ha)	Future area (ha)																																Mean area (ha)
										2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	
				62152U-19 - 10y																																						
CHF	62151C	Y	2042	10y	No	None	Yes	Higher	1.351	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.351	1.351	1.351	1.351	1.351	1.351	1.351	1.351	1.351	0	0	0	0	0	0.450333333
CHF	62151C	Y	2038	10y	No	None	Yes	Higher	6.47	0	0	0	0	0	0	0	0	0	0	0	6.47	6.47	6.47	6.47	6.47	6.47	6.47	6.47	6.47	6.47	0	0	0	0	0	0	0	0	0	2.156666667
CHF	62151C	Y	2056	10y	No	None	Yes	Higher	3.173	3.173	3.173	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.173	0.3173
CHF	62151C	Y	2032	10y	No	None	Yes	Higher	0.156	0	0	0	0	0	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.052
CHF	62152U	Y	2056	10y	No	None	Yes	Higher	1.715	1.715	1.715	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.715	0.1715

C.3 Turbine 3

Table A-4: Habitat Data Used for Calculations – Turbine T3

Fossitt Habitat Type	Coillte Block	Forestry (Y if within Coillte dataset and N if non-woodland type in Tobin dataset)	Felling Year	Available	Currently Suitable?	Current Suitability Category	Suitable at some point in future?	Maximum suitability category at some point in future	Current area (ha)	Future area (ha)																																Mean area (ha)
										2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	
GS4 - Wet grassland		N		Yes	Yes	Lower	Yes	Lower	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154	7.154
PB2 - Upland blanket bog x HH3 - Wet heath		N		Yes	Yes	Higher	Yes	Higher	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64
PB2 - Upland blanket bog		N		Yes	Yes	Higher	Yes	Higher	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702	1.702
WD4 - Conifer plantation		Y	2038	Assumed to be part of 62151C-1 - 10y	No	None	Yes	Higher	0.011	0	0	0	0	0	0	0	0	0	0	0	0	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0	0	0	0	0	0	0	0	0	0.003666667
CHF	62151C	Y	2038	10y	No	None	Yes	Higher	0.093	0	0	0	0	0	0	0	0	0	0	0	0	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0	0	0	0	0	0	0	0	0	0.031

C.4 Turbine 4

Table A-5: Habitat Data Used for Calculations – Turbine T4

Fossitt Habitat Type	Coillte Block	Forestry (Y if within Coillte dataset and N if non-woodland type in Tobin dataset)	Felling Year	Available	Currently Suitable?	Current Suitability Category	Suitable at some point in future?	Maximum suitability category at some point in future	Current area (ha)	Future area (ha)																																Mean area (ha)
										2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	
PB2 - Upland blanket bog x HH3 -		N		Yes	Yes	Higher	Yes	Higher	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018

Fossitt Habitat Type	Coillte Block	Forestry (Y if within Coillte dataset and N if non-woodland type in Tobin dataset)	Felling Year	Available	Currently Suitable?	Current Suitability Category	Suitable at some point in future?	Maximum suitability category at some point in future	Current area (ha)	Future area (ha)																													Mean area (ha)
										2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	
Wet heath																																								
PB2 - Upland blanket bog		N		Yes	Yes	Higher	Yes	Higher	3.086	3.086	3.086	3.086	3.086	3.086	3.086	3.086	3.086	3.086	3.086	3.086	3.086	3.086	3.086	3.086	3.086	3.086	3.086	3.086	3.086	3.086	3.086	3.086	3.086	3.086	3.086	3.086	3.086	3.086	3.086
WD4 - Conifer plantation		Y	2062	No	No	None	No	None	3.596	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHF	62146G	Y	2047	10y	No	None	Yes	Higher	3.436	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.436	3.436	3.436	3.436	3.436	3.436	3.436	3.436	3.436	3.436	1.145333333
CHF	62148T	Y	2038	10y	No	None	Yes	Higher	0.108	0	0	0	0	0	0	0	0	0	0	0	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0	0	0	0	0	0	0	0	0	0.036
CHF	62149O	Y	2047	10y	No	None	Yes	Higher	0.053	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.017666667
CHF	62149O	Y	2053	10y	No	None	Yes	Higher	3.417	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.417	3.417	3.417	3.417	0.4556
CHF	62150H	Y	2062	10y	No	None	Yes	Higher	0.278	0.278	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00927
CHF	62146G	Y	2032	10y	No	None	Yes	Higher	0.357	0	0	0	0	0	0.357	0.357	0.357	0.357	0.357	0.357	0.357	0.357	0.357	0.357	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.119
CHF	62149O	Y	2062	10y	No	None	Yes	Higher	5.251	5.251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.17503

C.5 Turbine 5

Table A-6: Habitat Data Used for Calculations – Turbine T5

Fossitt Habitat Type	Coillte Block	Forestry (Y if within Coillte dataset and N if non-woodland type in Tobin dataset)	Felling Year	Available	Currently Suitable?	Current Suitability Category	Suitable at some point in future?	Maximum suitability category at some point in future	Current area (ha)	Future area (ha)																													Mean area (ha)
										2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	
PB2 - Upland blanket bog		N		Yes	Yes	Higher	Yes	Higher	1.335	1.335	1.335	1.335	1.335	1.335	1.335	1.335	1.335	1.335	1.335	1.335	1.335	1.335	1.335	1.335	1.335	1.335	1.335	1.335	1.335	1.335	1.335	1.335	1.335	1.335	1.335	1.335	1.335	1.335	1.335
WD4 - Conifer plantation		Y	2047	Assumed to be part of 62146G-6 - 10 y	No	None	Yes	Higher	0.322	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.322	0.322	0.322	0.322	0.322	0.322	0.322	0.322	0.322	0.322	0.107333333
WS1 - Scrub		Y		Yes	Yes	Lower	Yes	Lower	0.795	0.795	0.795	0.795	0.795	0.795	0.795	0.795	0.795	0.795	0.795	0.795	0.795	0.795	0.795	0.795	0.795	0.795	0.795	0.795	0.795	0.795	0.795	0.795	0.795	0.795	0.795	0.795	0.795	0.795	0.795
BL3 - Buildings and artificial surfaces		N		No	No	None	No	None	0.036	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ED2 - Spoil and bare ground		N		No	No	None	No	None	0.104	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHF	62147B	Y	2045	10y	No	None	Yes	Higher	4.343	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.343	4.343	4.343	4.343	4.343	4.343	4.343	4.343	4.343	0	0	1.447666667
CHF	62145L	Y	2052	10y	No	None	Yes	Higher	5.08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.08	5.08	5.08	5.08	5.08	0.846666667
CHF	62145L	Y	2046	10y	No	None	Yes	Higher	3.416	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.416	3.416	3.416	3.416	3.416	3.416	3.416	3.416	3.416	0	1.138666667
CHF	62146G	Y	2043	10y	No	None	Yes	Higher	0.012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0	0	0	0	0.004
CHF	62146G	Y	2047	10y	No	None	Yes	Higher	4.157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.157	4.157	4.157	4.157	4.157	4.157	4.157	4.157	4.157	4.157	1.385666667

C.6 Turbine 6

Table A-7: Habitat Data Used for Calculations – Turbine T6

Fossitt Habitat Type	Coillte Block	Forestry (Y if within Coillte dataset and N if non-woodland type in Tobin dataset)	Felling Year	Available	Currently Suitable?	Current Suitability Category	Suitable at some point in future?	Maximum suitability category at some point in future	Current area (ha)	Future area (ha)																																Mean area (ha)
										2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	
GS4 - Wet grassland x BL3 - Buildings and artificial surfaces		N		Yes	Yes	Lower	Yes	Lower	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222
GS4 - Wet grassland		N		Yes	Yes	Lower	Yes	Lower	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847	1.847
PB2 - Upland blanket bog		N		Yes	Yes	Higher	Yes	Higher	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304	3.304
WD4 - Conifer plantation x WS1 - Scrub		Y	2044	Assumed to be part of 62148T-1-10y	Yes	Higher	Yes	Higher	0.131	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.131	0.131	0.131	0.131	0.131	0.131	0.131	0.131	0.131	0.131	0	0	0	0.043666667
WD4 - Conifer plantation		Y	2044	Assumed to be part of 62148T-1-10y	No	None	Yes	Higher	0.579	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.579	0.579	0.579	0.579	0.579	0.579	0.579	0.579	0.579	0.579	0	0	0	0.193
BL1 - Stone walls and other stone work_		N		No	No	None	No	None	0.004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BL3 - Buildings and artificial surfaces		N		No	No	None	No	None	0.086	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHF	62148T	Y	2044	10y	No	None	Yes	Higher	8.478	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.478	8.478	8.478	8.478	8.478	8.478	8.478	8.478	8.478	8.478	0	0	0	2.826
CHF	62148T	Y	2048	10y	No	None	Yes	Higher	2.956	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.956	2.956	2.956	2.956	2.956	2.956	2.956	2.956	2.956	0.8868
CHF	62147B	Y	2045	10y	No	None	Yes	Higher	1.993	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.993	1.993	1.993	1.993	1.993	1.993	1.993	1.993	1.993	1.993	0	0	0.664333333

C.7 Turbine 7

Table A-8: Habitat Data Used for Calculations – Turbine T7

Fossitt Habitat Type	Coillte Block	Forestry (Y if within Coillte dataset and N if non-woodland type in Tobin dataset)	Felling Year	Available	Currently Suitable?	Current Suitability Category	Suitable at some point in future?	Maximum suitability category at some point in future	Current area (ha)	Future area (ha)																																Mean area (ha)
										2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	
GS4 - Wet grassland		N		Yes	Yes	Lower	Yes	Lower	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136	19.136
BL3 - Buildings and		N		No	No	None	No	None	0.153	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Fossitt Habitat Type	Coillte Block	Forestry (Y if within Coillte dataset and N if non-woodland type in Tobin dataset)	Felling Year	Available	Currently Suitable?	Current Suitability Category	Suitable at some point in future?	Maximum suitability category at some point in future	Current area (ha)	Future area (ha)																																Mean area (ha)
										2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	
artificial surfaces																																									
EU1 - Non-Marine Caves		N		No	No	None	No	None	0.009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

C.8 Turbine 8

Table A-9: Habitat Data Used for Calculations – Turbine T8

Fossitt Habitat Type	Coillte Block	Forestry (Y if within Coillte dataset and N if non-woodland type in Tobin dataset)	Felling Year	Available	Currently Suitable?	Current Suitability Category	Suitable at some point in future?	Maximum suitability category at some point in future	Current area (ha)	Future area (ha)																																Mean area (ha)
										2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	
GS4 - Wet grassland_GS3 x Dry humid acid grassland		N		Yes	Yes	Lower	Yes	Lower	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064
GS4 - Wet grassland		N		Yes	Yes	Lower	Yes	Lower	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284	6.284
WD4 - Conifer plantation		Y	2026	Assumed to be part of 62198M-10 - 10 y	No	None	Yes	Higher	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0.436	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.116266667
ED2 - Spoil and bare ground		N		No	No	None	No	None	0.001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHF	62132J	Y	2046	10y	No	None	Yes	Higher	0.527	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.527	0.527	0.527	0.527	0.527	0.527	0.527	0.527	0.527	0.527	0	0.175666667
CHF	62198M	Y	2026	10y	No	None	Yes	Higher	7.906	7.906	7.906	7.906	7.906	7.906	7.906	7.906	7.906	7.906	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.3718
CHF	62198M	Y	2029	10y	No	None	Yes	Higher	1.833	0	0	1.833	1.833	1.833	1.833	1.833	1.833	1.833	1.833	1.833	1.833	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.611
CHF	62198M	Y	2054	10y	No	None	Yes	Higher	2.107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.107	2.107	2.107	0.2107

C.9 Turbine 9

Table A-10: Habitat Data Used for Calculations – Turbine T9

Fossitt Habitat Type	Coillte Block	Forestry (Y if within Coillte dataset and N if non-woodland type in Tobin dataset)	Felling Year	Available	Currently Suitable?	Current Suitability Category	Suitable at some point in future?	Maximum suitability category at some point in future	Current area (ha)	Future area (ha)																																Mean area (ha)
										2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	
GS4 - Wet grassland		N		Yes	Yes	Lower	Yes	Lower	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239	16.239
PB2 - Upland blanket bog x GS4 - Wet grassland		N		Yes	Yes	Higher	Yes	Higher	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047	2.047

Fossitt Habitat Type	Coillte Block	Forestry (Y if within Coillte dataset and N if non-woodland type in Tobin dataset)	Felling Year	Available	Currently Suitable?	Current Suitability Category	Suitable at some point in future?	Maximum suitability category at some point in future	Current area (ha)	Future area (ha)																																Mean area (ha)
										2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	
PB2 - Upland blanket bog		N		Yes	Yes	Higher	Yes	Higher	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224
WD2 - Mixed broadleaved / conifer woodland		Y		Won't be felled as not forestry	No	None	No	None	0.524	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WS1 – Scrub		N		Yes	Yes	Lower	Yes	Lower	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482
BL3 - Buildings and artificial surfaces		N		No	No	None	No	None	0.007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BL3 - Buildings and artificial surfaces		N		No	No	None	No	None	0.077	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

C.10 Turbine 10

Table A-11: Habitat Data Used for Calculations – Turbine T10

Fossitt Habitat Type	Coillte Block	Forestry (Y if within Coillte dataset and N if non-woodland type in Tobin dataset)	Felling Year	Available	Currently Suitable?	Current Suitability Category	Suitable at some point in future?	Maximum suitability category at some point in future	Current area (ha)	Future area (ha)																																Mean area (ha)
										2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	
GS4 - Wet grassland x HH3 - Wet heath		N		Yes	Yes	Higher	Yes	Higher	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944
GS4 - Wet grassland		N		Yes	Yes	Lower	Yes	Lower	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46
HH3 - Wet heath x PB2 - Upland blanket bog		N		Yes	Yes	Higher	Yes	Higher	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682
HH3 - Wet heath x PB3 - Lowland blanket bog		N		Yes	Yes	Higher	Yes	Higher	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PB2 - Upland blanket bog x GS4 - Wet grassland		N		Yes	Yes	Higher	Yes	Higher	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796	0.796
PB4 - Cutover bog x PB2 - Upland blanket bog		N		Yes	Yes	Higher	Yes	Higher	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615	1.615
WD4 - Conifer plantation		Y	2029	Assumed to be part of 62198M-10 - 10y	No	None	Yes	Higher	0.091	0	0	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.030333333

Fossitt Habitat Type	Coillte Block	Forestry (Y if within Coillte dataset and N if non-woodland type in Tobin dataset)	Felling Year	Available	Currently Suitable?	Current Suitability Category	Suitable at some point in future?	Maximum suitability category at some point in future	Current area (ha)	Future area (ha)																														Mean area (ha)
										2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	
WS1 – Scrub x WD4 - Conifer plantation		N		Yes	Yes	Higher	Yes	Higher	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHF	62129D	Y	2052	10y	No	None	Yes	Higher	1.634	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.634	1.634	1.634	1.634	1.634	0.272333333
CHF	62128I	Y	2031	10y	No	None	Yes	Higher	5.579	0	0	0	0	5.579	5.579	5.579	5.579	5.579	5.579	5.579	5.579	5.579	5.579	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.859666667
CHF	62127N	Y	2048	10y	No	None	Yes	Higher	1.443	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.443	1.443	1.443	1.443	1.443	1.443	1.443	1.443	1.443	0.4329
CHF	62128I	Y	2042	10y	No	None	Yes	Higher	4.823	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.823	4.823	4.823	4.823	4.823	4.823	4.823	4.823	4.823	4.823	0	0	0	0	0	1.607666667
CHF	62198M	Y	2029	10y	No	None	Yes	Higher	0.533	0	0	0.533	0.533	0.533	0.533	0.533	0.533	0.533	0.533	0.533	0.533	0.533	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.177666667

C.11 Turbine 11

Table A-12: Habitat Data Used for Calculations – Turbine T11

Fossitt Habitat Type	Coillte Block	Forestry (Y if within Coillte dataset and N if non-woodland type in Tobin dataset)	Felling Year	Available	Currently Suitable?	Current Suitability Category	Suitable at some point in future?	Maximum suitability category at some point in future	Current area (ha)	Future area (ha)																														Mean area (ha)
										2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	
GS4 - Wet grassland		N		Yes	Yes	Lower	Yes	Lower	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399	4.399
WD4 - Conifer plantation		Y	2043	Assumed to be part of 62130T-6 - 10 y	No	None	Yes	Higher	0.389	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.389	0.389	0.389	0.389	0.389	0.389	0.389	0.389	0.389	0	0	0	0	0.129666667
BL3 – Buildings and artificial surfaces		N		No	No	None	No	None	0.425	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GS2 - Dry meadows and grassy verges x BL3 - Buildings and artificial surfaces		N		No	No	None	No	None	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MHF	62129D	Y	2038	10y	No	None	Yes	Higher	2.318	0	0	0	0	0	0	0	0	0	0	0	2.318	2.318	2.318	2.318	2.318	2.318	2.318	2.318	2.318	2.318	0	0	0	0	0	0	0	0	0	0.772666667
CHF	62129D	Y	2052	10y	No	None	Yes	Higher	5.184	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.184	5.184	5.184	5.184	5.184	0.864
CHF	62128I	Y	2031	10y	No	None	Yes	Higher	3.477	0	0	0	0	3.477	3.477	3.477	3.477	3.477	3.477	3.477	3.477	3.477	3.477	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.159
CHF	62130T	Y	2043	10y	No	None	Yes	Higher	3.408	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.408	3.408	3.408	3.408	3.408	3.408	3.408	3.408	3.408	0	0	0	0	1.136

C.12 Turbine 12

Table A-13: Habitat Data Used for Calculations – Turbine T12

Fossitt Habitat Type	Coillte Block	Forestry (Y if within Coillte dataset and N if non-woodland type in Tobin dataset)	Felling Year	Available	Currently Suitable?	Current Suitability Category	Suitable at some point in future?	Maximum suitability category at some point in future	Current area (ha)	Future area (ha)																																Mean area (ha)
										2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	
WD1 - (Mixed) broadleaved woodland		Y	2043	Assumed to be part of 62130T-6 - 10y	No	None	Yes	Higher	0.584	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.584	0.584	0.584	0.584	0.584	0.584	0.584	0.584	0.584	0.584	0	0	0	0	0.194666667
WD4 - Conifer plantation x WD2 - Mixed broadleaved/ conifer woodland		Y	2045	Assumed to be part of 62123K-1 - 10y	No	None	Yes	Higher	0.829	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.829	0.829	0.829	0.829	0.829	0.829	0.829	0.829	0.829	0.829	0	0	0.276333333
WD4 - Conifer plantation		Y	2057	No	No	None	No	None	0.163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GS2 - Dry meadows and grassy verges x BL3 Buildings and artificial surfaces		N		No	No	None	No	None	0.35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHF	62122P	Y	2037	10y	No	None	Yes	Higher	2.311	0	0	0	0	0	0	0	0	0	0	0	2.311	2.311	2.311	2.311	2.311	2.311	2.311	2.311	2.311	0	0	0	0	0	0	0	0	0	0	0.770333333
FELLED	62122P	Y	2069	10y	No	None	Yes	Higher	0.752	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHF	62122P	Y	2025	10y	No	None	Yes	Higher	2.305	2.305	2.305	2.305	2.305	2.305	2.305	2.305	2.305	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.614666667
CHF	62123K	Y	2045	10y	No	None	Yes	Higher	3.776	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.776	3.776	3.776	3.776	3.776	3.776	3.776	3.776	3.776	3.776	0	0	1.258666667
CHF	62123K	Y	2040	10y	No	None	Yes	Higher	0.737	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.737	0.737	0.737	0.737	0.737	0.737	0.737	0.737	0.737	0.737	0	0	0	0	0	0	0.245666667
CHF	62123K	Y	2031	10y	No	None	Yes	Higher	0.245	0	0	0	0	0.245	0.245	0.245	0.245	0.245	0.245	0.245	0.245	0.245	0.245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.081666667
CHF	62130T	Y	2057	10y	No	None	Yes	Higher	6.726	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHF	62130T	Y	2043	10y	No	None	Yes	Higher	0.822	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.822	0.822	0.822	0.822	0.822	0.822	0.822	0.822	0.822	0.822	0	0	0	0	0.274

C.13 Turbine 13

Table A-14: Habitat Data Used for Calculations – Turbine T13

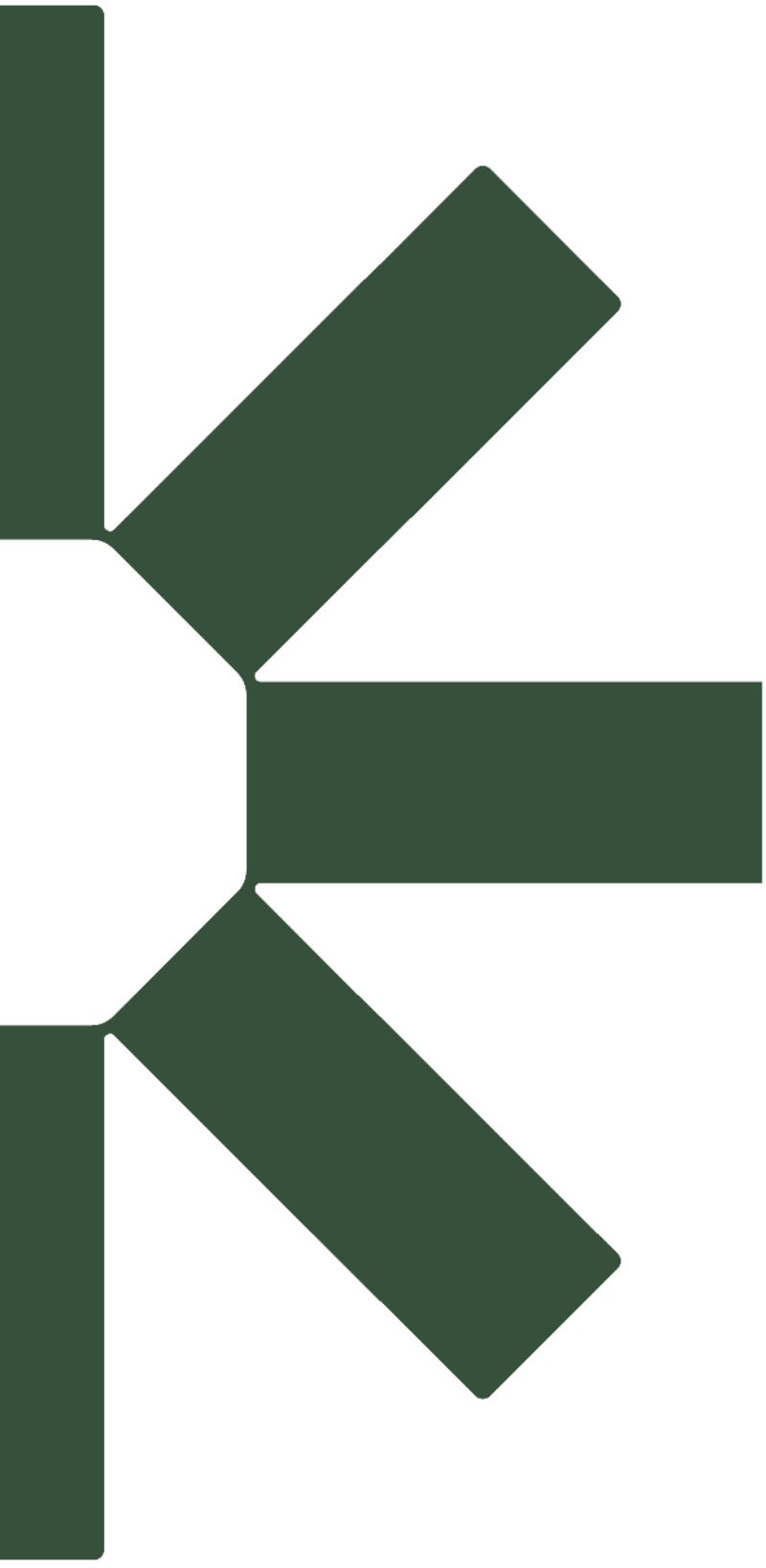
Fossitt Habitat Type	Coillte Block	Forestry (Y if within Coillte dataset and N if non-woodland type in Tobin dataset)	Felling Year	Available	Currently Suitable?	Current Suitability Category	Suitable at some point in future?	Maximum suitability category at some point in future	Current area (ha)	Future area (ha)																																Mean area (ha)
										2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	
GS4 - Wet grassland x WS1_Scrub		N		Yes	Yes	Higher	Yes	Higher	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GS4 - Wet grassland		N		Yes	Yes	Lower	Yes	Lower	1.589	1.589	1.589	1.589	1.589	1.589	1.589	1.589	1.589	1.589	1.589	1.589	1.589	1.589	1.589	1.589	1.589	1.589	1.589	1.589	1.589	1.589	1.589	1.589	1.589	1.589	1.589	1.589	1.589	1.589	1.589	1.589
WD4 - Conifer plantation		Y	2046	Assumed to be part of 62136M-1 - 10y	No	None	Yes	Higher	0.008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0	0.002666667

Fossitt Habitat Type	Coillte Block	Forestry (Y if within Coillte dataset and N if non-woodland type in Tobin dataset)	Felling Year	Available	Currently Suitable?	Current Suitability Category	Suitable at some point in future?	Maximum suitability category at some point in future	Current area (ha)	Future area (ha)																																Mean area (ha)
										2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	
WS5 - Recently felled woodland		Y		No as too small	Yes	Lower	Yes	Higher	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GS2 - Dry meadows and grassy verges		N		No	No	None	No	None	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHF	62136M	Y	2046	10y	No	None	Yes	Higher	7.382	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.382	7.382	7.382	7.382	7.382	7.382	7.382	7.382	7.382	7.382	0	2.460666667
CHF	62136M	Y	2042	10y	No	None	Yes	Higher	0.086	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0	0	0	0	0	0.028666667
CHF	62136M	Y	2048	10y	No	None	Yes	Higher	0.153	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.153	0.153	0.153	0.153	0.153	0.153	0.153	0.153	0	0.0459
CHF	62136M	Y	2036	10y	No	None	Yes	Higher	5.68	0	0	0	0	0	0	0	0	0	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	0	0	0	0	0	0	0	0	0	0	0	1.893333333
FELLED	62136M	Y	2069	10y	No	None	Yes	Higher	1.932	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHF	62207S	Y	2069	10y	No	None	Yes	Higher	1.98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

C.14 Turbine 14

Table A-15: Habitat Data Used for Calculations – Turbine T14

Fossitt Habitat Type	Coillte Block	Forestry (Y if within Coillte dataset and N if non-woodland type in Tobin dataset)	Felling Year	Available	Currently Suitable?	Current Suitability Category	Suitable at some point in future?	Maximum suitability category at some point in future	Current area (ha)	Future area (ha)																																Mean area (ha)
										2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	
WD4 - Conifer plantation x HH3 - Wet heath		Y		No as too small	Yes	Higher	No	None	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WD4 - Conifer plantation		Y		No as too small	No	None	No	None	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHF	62137H	Y	2037	10y	No	None	Yes	Higher	5.708	0	0	0	0	0	0	0	0	0	0	5.708	5.708	5.708	5.708	5.708	5.708	5.708	5.708	5.708	0	0	0	0	0	0	0	0	0	0	0	0	1.902666667
CHF	62137H	Y	2043	10y	No	None	Yes	Higher	1.04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	0	0	0	0	0.346666667
CHF	62137H	Y	2034	10y	No	None	Yes	Higher	5.963	0	0	0	0	0	0	0	5.963	5.963	5.963	5.963	5.963	5.963	5.963	5.963	5.963	5.963	5.963	0	0	0	0	0	0	0	0	0	0	0	0	0	1.987666667
CHF	62137H	Y	2041	10y	No	None	Yes	Higher	3.92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	0	0	0	0	0	0	1.306666667
CHF	62219C	Y	2060	10y	No	None	Yes	Higher	1.864	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHF	62219C	Y	2031	10y	No	None	Yes	Higher	0.063	0	0	0	0	0.063	0.063	0.063	0.063	0.063	0.063	0.063	0.063	0.063	0.063	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.021
CHF	62219C	Y	2040	10y	No	None	Yes	Higher	0.462	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0.462	0	0	0	0	0	0	0.154
CHF	62219C	Y	2039	10y	No	None	Yes	Higher	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHF	62222I	Y	2051	10y	No	None	Yes	Higher	0.384	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.384	0.384	0.384	0.384	0.384	0.384	0.384	0.0768



Making Sustainability Happen