



Appendix 7-8 – Hen Harrier Enhancement Plan

Proposed Cahermurphy
West Wind Farm

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1.

INTRODUCTION

1.1

Overview

Cahernurphy Renewables Designated Activity Company, the Applicant, are applying to An Coimisiún Pleanála (ACP) for planning permission for 8 No. turbines with a limited tip height range of 180 metres to 185 metres and all associated infrastructure. The Proposed Wind Farm lies within a non-designated regionally important area for hen harrier in West Clare (Ruddock *et al.*, 2016), designated for hen harrier (*Circus cyaneus*).

This Hen Harrier Enhancement Plan (the HHEP) contains proposed measures to mitigate the identified *likely long-term significant negative effect* to hen harrier as a result of (indirect) habitat loss due to avoidance of turbines during the lifetime of the Proposed Wind Farm. The comprehensive HHEP has been specifically designed to target the two key threats/pressures of *High Importance* of forestry and agricultural intensification to mitigate the potential for impacts associated with the Proposed Wind Farm (*Medium Importance* - as per Article 12 reporting of the Birds Directive (Directive 2009/147/EC)). This document provides supporting information on how the hen harrier habitat loss was calculated, the rationale for selecting the Proposed Lands (the Proposed Lands refers to the enhancement lands outlined within the HHEP) and further discussion on how the management prescriptions of the HHEP will be implemented.

It is noted that this HHEP includes for permanent deforestation to mitigate in large part for a 35-year lifetime of the Proposed Wind Farm. This HHEP will be implemented throughout the 35-year lifetime of the Proposed Wind Farm, which offers considerable conservation benefits and land use certainty to hen harrier in the long term. The Applicant has legal agreements with the landowners of the Proposed Lands that allows them to implement the land management measures outlined within the HHEP.

The key benefit of the HHEP is the permanent felling of 56.3ha of forestry and the planned restoration of the underlying peatland which ensures the ongoing (permanent) availability of optimal foraging, nesting and roosting habitat locally. Forestry is a key threat/pressure of high importance for hen harrier. In the present case, the local area is dominated by commercial forestry which is only of limited value to hen harrier while young and of little to no ecological value once its canopy closes at c.12 years old. It is noted that it is now proposed to provide (near) 1:1 replacement forestry (56.3) that will be permanently felled to mitigate the potential displacement of hen harrier from 62ha of onsite habitat.

In summary, the successful management of 56.3ha of forestry and the enhancement of a further 67.4ha of agricultural land for the benefit of hen harrier, when balanced against the potential loss of 62ha of foraging habitat will result in a residual net gain for hen harrier (net gain of 61.7 ha).

1.2

Background

The Proposed Wind Farm has the potential for the displacement of hen harrier from the Proposed Wind Farm site, and in the absence of enhancement measures there is the potential for an ongoing *likely long-term significant negative* (indirect) habitat loss effect, as detailed in Section 7.5.2.1 of Chapter 7 of the EIAR. Accordingly, a comprehensive enhancement plan is proposed to address this effect. The Proposed Lands are located in Drummin and Doolough, Co. Clare, between 400m (900m from the nearest proposed turbine) and 6km east of the Proposed Wind Farm site and are situated entirely within the non-designated regionally important area for hen harrier (Ruddock *et al.*, 2016).

The hen harrier population in Ireland is in decline (Ruddock *et al.*, 2024). In Ireland hen harrier prefer to hunt within pre-thicket forestry (Wilson *et al.*, 2006; Wilson *et al.*, 2010; Irwin *et al.*, 2012), heath/bog (Wilson *et al.*, 2010) and rough/marginal or low-intensity agricultural grassland habitats (Wilson *et al.*, 2006; Irwin *et al.*, 2012). Passerines are the predominant source of prey for hen harrier in Ireland, with the meadow pipit being the most commonly taken prey species (O'Donoghue, 2010). The factors implicated in the population decline include human-related habitat modification and loss. Such habitat modification includes afforestation, agricultural intensification (e.g. drain blocking) (*High Importance*) and the proliferation of turbines (*Medium Importance*) in

¹ <https://www.npws.ie/status-and-trends-ireland%E2%80%99s-bird-species-%E2%80%93-article-12-reporting>

the upland regions inhabited by breeding hen harrier, as outlined in Article 12 Reporting 2013-2018 (EU, 2022) and reiterated in the Hen Harrier Threat Response². The Proposed Wind Farm is located within the West Clare non-designated regionally important area for hen harrier, where the population is declining.

The EU Biodiversity Strategy's objective is to put EU's biodiversity on the path to recovery by 2030 and that by 2050, all of the EU's ecosystems will be restored, resilient and adequately protected. It is noted that among other things, climate change is a key underlying driver of biodiversity loss. While the Proposed Wind Farm has the potential to negatively impact hen harrier, renewable energy plays a key role in counteracting climate change. It is this dichotomy that necessitates the consideration of reasonable alternatives that limit biodiversity loss while facilitating the construction of renewable energy developments such as the Proposed Wind Farm. To that end, the HHEP aims to ensure that the construction of the Proposed Wind Farm is not at the expense of suitable hen harrier habitats. This opportunity for the wind farm industry to fund the restoration of hen harrier habitat was highlighted in the most recent National Survey of Breeding Hen Harrier (2022) report (Ruddock *et al.*, 2024). Section 4.6.7 states:

“There are opportunities for the wind energy industry to increase levels of land management certainty, and regulation/management of the activities within and surrounding windfarms (e.g. recreational users, dog walkers etc) and identify opportunities for the retention and restoration of habitats suitable for breeding (and wintering) hen harrier within and surrounding renewable energy developments.”

At a national level the Hen Harrier Threat Response Plan identifies a need for innovation and collaboration to achieve the goals of the plan. Section 7 of the Hen Harrier Threat Response Plan sets out the actions that need to be taken to realise the objectives of the plan between 2024 and 2028. Collaboration with non-governmental stakeholders is identified as a key to the delivery of the plan.

This HHEP is based on the best available scientific knowledge. A key premise of the HHEP is that forestry is a net negative for hen harrier. Commercial non-native forestry is generally accepted to be a habitat that is a net negative for hen harrier, as it is only available to hen harrier for a short period while young (i.e. pre thicket). The majority of commercial forestry's lifecycle is spent as close canopy forestry, a habitat type of little to no ecological value to hen harrier. At a national level, as highlighted in Article 12 reporting, afforestation is a threat/pressure of high importance for hen harrier. The forestry proposed for deforestation as part of this HHEP is semi-mature to mature and is therefore not useful to hen harrier. A key element of the HHEP is permanent deforestation to create optimal foraging habitat in its place for the benefit of hen harrier. While hen harrier do nest in forestry, deforestation as part of this HHEP will not significantly reduce the availability of nesting habitat within the non-designated, regionally important area for hen harrier. This non-designated, regionally important area is heavily afforested. Thus, removing forestry to create hen harrier foraging habitat is a net positive.

The Proposed Wind Farm is located at the western edge of a non-designated regionally important area for hen harrier in West Clare (Ruddock *et al.*, 2016). Whilst the dominant habitat across much of the Proposed Wind Farm site is mature forestry; open habitats within and adjacent to the Proposed Wind Farm site were utilised by foraging hen harrier during the breeding season. A hen harrier territory was identified 800m from the Proposed Wind Farm site in 2024. Additionally, another hen harrier territory was recorded during the 2023 and 2024 breeding seasons between 5.5km and 5.8km from the Proposed Wind Farm site. See Confidential Appendix 7-5, Figure 7-5-5 for location details. Furthermore, in the historic data, hen harrier territories were identified in 2017, 2018 and 2019³ breeding seasons to the south of Doo Lough. This Doo Lough territory is located within forestry and peatland. It is to the east and within c.5 kilometres of the Proposed Wind Farm site and adjacent to the Craghnashingaun Bog Natural Heritage Area (NHA).

The potential for significant effects on hen harrier was assessed in full within the Ornithology chapter of the EIAR including potential loss of foraging habitat. It is noted in Section 7.5.2.1 of the EIAR the potential area of displacement/avoidance (i.e. 62ha) is likely to result in a long-term significant negative effect (EPA, 2022). Therefore, taking into consideration this predicted impact and the significance of the study area to foraging hen harrier; a HHEP has been devised to create suitable foraging and breeding habitat for the species within the North and West Clare area. Potential significant effects predicted to result from the Proposed Wind Farm on hen harrier will be mitigated by the permanent removal of forestry (c. 56.3ha) and restoration of the underlying peatland habitats to provide more favourable habitat than will (potentially) be lost within the Proposed Wind Farm site. Furthermore, among other things, the removal of the forestry in Area B will improve connectivity between the hen

² It is noted that this document does not rank the importance of these threats/pressures, although they are listed in the same order as here.

³ In 2019, the pair's breeding attempt failed early in the season.

harrier territories and optimal foraging habitat present within the Craghnashingaun Bog NHA. In addition, it is proposed to manage 67.4 hectares of farmland specifically to improve the value of the habitat for foraging hen harrier.

Following the permanent removal of approximately 56.3ha of forestry and the management of a further 67.4ha of agricultural land for the benefit of hen harrier, residual impacts of no greater than negligible are predicted as a result of the Proposed Wind Farm.

2. IDENTIFICATION OF HABITAT ENHANCEMENT AREAS

The following sections outline the methodology used to identify and quantify the quantum of foraging habitat proposed for enhancement.

2.1 Habitat Loss Calculation and Identification of Proposed Lands

2.1.1 Assessment of potential foraging (indirect) habitat loss for Hen Harrier

The habitat loss calculation was undertaken with reference to the suitability of the habitats surrounding the proposed turbine locations and the likely distance turbines will be avoided by hen harrier. The majority of the foraging recorded onsite was recorded during the breeding season and these records are likely associated with hen harrier breeding in the wider area. All turbines within the Proposed Wind Farm site are included in this habitat loss calculation as the location of these turbines overlaps with potential foraging habitat.

The decline in hen harrier populations in Ireland is a result of human-related pressures, in particular habitat modification and loss. Research carried out by the University College Cork identified a 'possible' reduction in breeding success within 1km of turbines (Wilson *et al.*, 2015). That is to say, where turbines occur within the core foraging range of the nest (2km) a habitat loss effect occurs rather than the avoidance itself extending to 1km (Wilson *et al.*, 2015). If it is assumed that hen harrier shows some level of avoidance of turbines with the associated habitat loss, it reasonably follows that avoidance would be more pronounced the closer the hen harrier was to the turbine. This was found to be the case in a multi-site study at twelve wind farms in Britain (Pearce-Higgins *et al.*, 2009). This study investigated the distance turbines were avoided by various species including hen harrier. It was reported for hen harrier that there was a reduction of 52.5% in activity within 500m of operating wind turbines and significant avoidance within 250m. As outlined in Section 7.5.2.1 of the EIAR, the rationale for this was as follows: Pearce-Higgins *et al.* (2009) noted significant avoidance of turbines to 250m. Figure 1 of the 2009 paper shows that the reductions in hen harrier density mainly occur within 250m of a turbine. The statistical model from this paper assumes a linear relationship between bird density and distance from a turbine in 500m distance bands. This means that if the avoidance effect extends for less than 500m the model is likely to overpredict the displacement effect at 500m. There is therefore a sound scientific basis for using a 250m buffer for estimating the hen harrier displacement effect. In this habitat loss calculation, it was assumed that there would be total avoidance of a buffer zone within a 250m radius of the proposed wind turbines (in line with the result of Pearce-Higgins *et al.*, 2009)¹.

Closed canopy forestry does not provide suitable habitat for hen harrier. As such, areas of this habitat within 250m of the existing turbines have not been included in the calculation of habitat loss. As the amount of closed canopy forestry within 250 metres of the existing turbines varies (over time) with the rotational cycle of forestry,

¹ Pearce-Higgins *et al.*, (2009) noted significant avoidance of turbines to 250m. Figure 1 of Pearce-Higgins *et al.*, (2009) shows that the reductions in hen harrier density mainly occur within 250m of a turbine. The statistical model from this paper assumes a linear relationship between bird density and distance from a turbine in 500m distance bands. This means that if the avoidance effect extends for less than 500m the model is likely to overpredict the displacement effect at 500m. There is therefore a sound scientific basis for using a 250m buffer rather than 500m for estimating the hen harrier displacement effect.

calculations have been made using felling plans for the relevant folios as provided by Coillte³ to determine the average amount of potentially available hen harrier habitat that will be unavailable on an annual basis throughout the proposed 35-year operational lifetime of the wind farm.

Based on the precautionary assumption that hen harrier will avoid all areas within 250 metres of a turbine and having calculated the amount of foraging habitat available on an annual basis (taking into account standard forestry management practices for forested areas), the estimated quantum of habitat from which hen harrier will be displaced is **62 hectares**.

Taking into consideration this predicted impact and the Proposed Wind Farm sites significance to foraging hen harrier; a HHEP has been devised to create suitable foraging and breeding habitat for the species within the area, and providing a net gain in hen harrier habitat.

2.1.2 The Rationale for Selecting Proposed Lands

The HHEP aims to provide an increase in the availability of passerine prey (e.g. meadow pipits) within the Proposed Lands to mitigate for the indirect loss of the foraging habitat due to the potential avoidance of the proposed Cahermurphy West Wind Farm. The HHEP aimed to identify forestry plots, occurring on peatland that could be converted to more suitable upland habitats for foraging hen harrier by deforestation, and farmlands that offer opportunities to significantly improve their ecological value to foraging hen harrier.

The two key elements that have been addressed are the proportionality and ecological functionality of the Proposed Lands. The justification for the choice of the Proposed Lands includes the following:

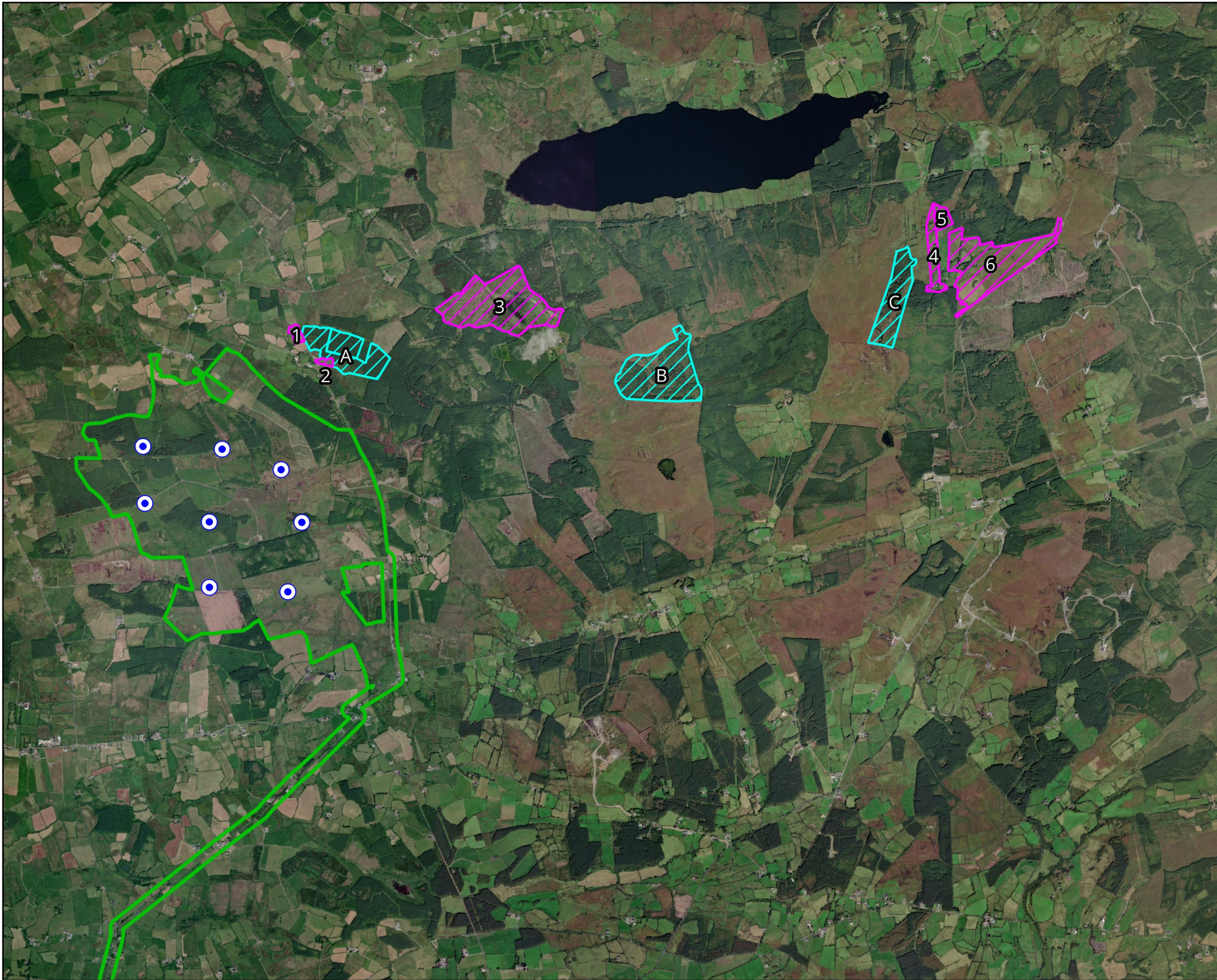
- To address the requirement for proportionality, Proposed Lands have been proposed at a 1:1 ratio. In addition, the approximate 56.3ha of deforested lands will be restored to optimal hen harrier habitat.
- Foraging habitat will be created to replace the foraging habitat indirectly lost through avoidance.
- The north section of the Cragnashingaun Bogs NHA is intersected by a large area of forestry. The proposed permanent felling of this forestry will increase the amount contiguous open habitat available to foraging hen harrier.
- The HHEP ensures the removal of closed-canopy forestry, that would not otherwise have been felled until maturity (and subsequently replanted) without intervention. Noting afforestation as a threat/pressure of high importance (as per Article 12 reporting).
- The removal of forestry will reduce negative edge effects through deforestation, e.g. predation.
- There is a high likelihood of the Proposed Lands being encountered by hen harrier as breeding hen harrier occur locally. As extrapolated from the results of the most recent National Hen Harrier Survey (Ruddock *et al.*, 2024), hen harrier were confirmed to have bred in the 10km grid squares which overlap with the Proposed Lands in 2022 (i.e. R17) in 2022. The remaining Proposed Lands are within the 10km grid square R07, which was not surveyed during the national survey. Previous to this, hen harrier were confirmed to have bred in the 10km grid squares R17 as per the Bird Atlas 2007-11. There is, therefore, longstanding breeding activity locally.
- The selected enhancement areas are located significantly closer to the identified breeding territories than the foraging habitat that will be potentially lost at the Proposed Wind Farm area, i.e. between 800m and 5.8km separation distance between the territories and the Proposed Wind Farm site. Most hunting by males and females is carried out within 2km and 1km, respectively, from nests (Arroyo *et al.*, 2014). There are three areas proposed for permanent felling of forestry, two of which are located c.800m from the 2024 nest location. The third felling area is located within 1km of the hen harrier territory occupied in both 2023 and 2024. The selected farmland enhancement areas are located from immediately adjacent to breeding habitat up to 1.6km from an identified breeding territory. Location details of the hen harrier territories are provided in Figure 7-5-5 in Confidential Appendix 7-5 of the EIAR.





³ Some private forestry was included in the calculation and felling years were not available. It was assumed that these lands would be available to hen harrier for ten years during the operational period of the wind farm.

2.2


Existing Baseline Condition

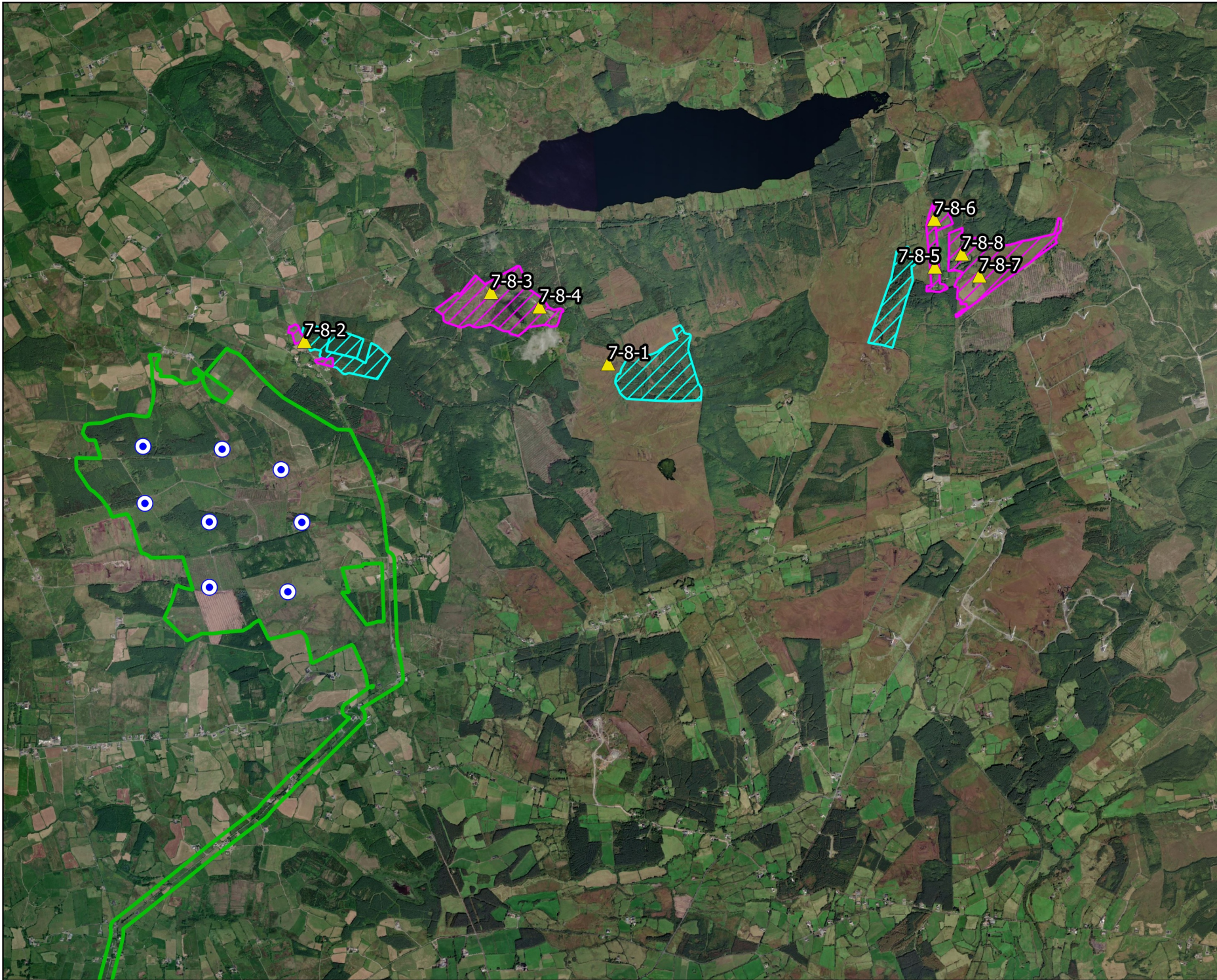
Habitat surveys of the Proposed Lands were undertaken in February 2020, July 2024 and January 2026. As shown in Figure 7-8-1 below, the Proposed Lands are divided into 3 areas of conifer plantation, referred to as Area A, Area B and Area C. Additionally, there are six areas of farmland proposed for enhancement, referred to as Area 1, Area 2, Area 3, Area 4, Area 5 and Area 6. A short description of each of the Proposed Lands is outlined below, please see Chapter 6 Section 6.4.1.4 for further details.








- Map Legend
-  EIAR Site Boundary
 -  Proposed Turbine Layout
- Enhancement Lands
-  Farmland
 -  Forestry



Drawing Title		Hen Harrier Enhancement Areas	
Project Title		Proposed Cahermurphy West Wind Farm	
Drawn By	Checked By	CC	PM
Project No.	Drawing No.	230403	Fig 7-8-1
Scale	Date	1:40,000	04.09.25
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- Map Legend**
-  EIAR Site Boundary
 -  Proposed Turbine Layout
 - Enhancement Lands**
 -  Farmland
 -  Forestry
 -  Plate Locations



Drawing Title	
Plate Locations	
Project Title	
Proposed Cahermurphy West Wind Farm	
Drawn By	Checked By
CC	PM
Project No.	Drawing No.
230403	Fig 7-8-2
Scale	Date
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2.2.1 Forestry Descriptions

It is proposed to permanently fell 56.3 hectares of forestry and to restore the underlying peatland. These Proposed Lands consist of three forestry blocks. Please refer to Figure 7-8-1 above for location details and Figure 7-8-2 above for plate locations. The composition of these forestry blocks is outlined in the table below.

Table 7 - 8 - 1 Composition of forestry blocks.

Forestry	Area (ha)	Description
Area A	16.9	The dominant habitat recorded within these parcels of land is mature commercial forestry. A small segment of Wet Willow Alder Ash Woodland (WN6) was recorded within this parcel, however, this segment of woodland will not be felled as a part of the HHEP.
Area B	25.6	The dominant habitat recorded within this parcel of land is commercial forestry which contained crags with remnant stands of heather. The majority of this block comprises of semi-mature or stunted commercial forestry, see Plate 7 - 8 - 1 below. However, despite the stunted growth, the canopy of this area is closed. The north-west section of this parcel contains crags with remnant stands of heather, consisting of approximately 3.5% of that total area of this forestry block.
Area C	13.8	The dominant habitat recorded within this parcel of land is mature commercial forestry which contained a setback from an overhead power line. Within the setback, there is previously felled forestry (stumps and brash present) which has begun to transition into scrub with patches of heather persisting. The setback area accounts for approximately 30% of this parcel. This forestry is unproductive, with many stands of deadwood present.



Plate 7 - 8 - 1 Forestry Area B showing semi mature and stunted commercial forestry.

2.2.2 Farmland Descriptions

It is proposed to manage the farmland for the benefit of biodiversity generally and hen harrier specifically. Based on the observations of the site visit, each of the six folios of land is described below. Please refer to Figure 7 - 8 - 1 above for reference numbers for each area.

2.2.2.1 Area 1 (1.1ha)

This folio consists of an intensely grazed pasture with very low *Juncus* cover. This folio is surrounded on the north, west and south boundaries by a mature hedgerow with a mix of native and non-native trees. There is no hedgerow along the eastern side, between the field and the road. See Plate 7 - 8 - 2 below.



Plate 7 - 8 - 2 Area 1

2.2.2.2 Area 2 (0.6ha)

This folio consists of a grazed pasture with very high *Juncus* cover (80%+). This field is surrounded by mature forestry to the north and east, and by buildings (houses and farmyard) to the west and south. This folio contains no hedgerows, however, it is adjoined by mature forestry on two boundaries.

2.2.2.3 Area 3 (31.2ha)

The majority of this folio consists of intensely grazed pasture with low to medium *Juncus* cover, see Plate 7 - 8 - 3. *Juncus* cover is low for the majority of the folio, with higher rates of occurrence (30-40%) in the southeastern area surrounding the lake, see Plate 7 - 8 - 4. There is scrub present around the lake, in the southwest corner of the folio and along the margins of the folio where encroachment of seedling conifers from the forestry plantation is present. To the north of the road, the area is comprised mostly of crags with bare rock, with some heather and scrub throughout. There is no evidence of grazing in this area. Additionally, the folio contains a lake and a house and an associated farmyard. There are limited hedgerows within this folio, the majority of the hedgerows are along the road, to the north and along the southeastern boundary of the folio and are of limited height. The entire folio is adjoined by mature forestry plantations.



Plate 7-8-3 Area 3 showing intense grazing and low Juncus cover



Plate 7-8-4 Area 3 showing the area surrounding the lake

2.2.2.4 Area 4 (5.1ha)

The majority of this folio consists of ungrazed pasture with a high coverage of *Juncus*. There is no evidence of this area being grazed or managed in any way, see Plate 7 - 8 - 5. The southern end of this folio consists of a house, yard and associated overgrown garden. The northernmost field in this folio is surrounded by a patchy hedge of mainly willow and bramble to the west and south, while there is no hedge on the eastern boundary. The remaining fields are surrounded by mature hedgerows consisting of willow, interspersed with occasional sections of conifer. Additionally, this field has a number of remnant, patchy internal hedges, but none of which bisect the field.



Plate 7 - 8 - 5 Area 4

2.2.2.5 Area 5 (2.1ha)

This folio is made up of pasture and is grazed by horses and contains a high level of *Juncus*. This folio has mature hedgerows on two boundaries, and mature forestry in adjoining folios on the other two boundaries. The hedgerow to the west consists of mature willow, with occasional gaps, see Plate 7 - 8 - 6. The hedgerow to the south consists of a continuous mix of willow, conifer with occasional bramble.



Plate 7 - 8 - 6 Area 5

2.2.2.6 Area 6 (27.3ha)

The majority of this folio is made up of open degraded peatland, with patches of *Juncus*, see Plate 7 - 8 - 7. This folio also includes three small pastures in the northwest of the folio. The coverage of *Juncus* is generally high throughout the open area of this folio, with occasional areas of degraded heather. There is some conifer encroachment from the surrounding commercial forestry. The northwest corner of this folio comprises of three small pastures (c. 0.5ha, 1.9ha and 2.8ha) and an abandoned house, yard and associated overgrown gardens (c. 1.2ha). The small fields in the northwest corner of this folio are surrounded by continuous mature hedges consisting of mostly willow with some bramble and conifers, see Plate 7 - 8 - 8. Additionally, there are some patches of willow scrub within the fields.



Plate 7 - 8 - 7 Area 6 showing the area of open degraded peatland



Plate 7 - 8 - 8 Area 6 showing the pastoral field with scrub patches

3. **HEN HARRIER ENHANCEMENT PLAN**

This HHEP involves a combination of permanent deforestation and restoration of farmland habitat, specifically designed to mitigate the identified pre-mitigation potential *likely long-term significant negative effect* to hen harrier as a result of (indirect) habitat loss due to avoidance of turbines during the operational phase of the Proposed Wind Farm. The combined area totals 123.7ha as outlined in the Table 7 - 8 - 2 below.

Table 7 - 8 - 2 Quantum of lands within the HHEP

Lands	Area (ha)
Habitat loss calculation	62
Enhancement lands (forestry removal)	56.3
Enhancement lands (farmland management)	67.4
Total enhancement lands	123.7
Net gain	61.7

3.1 Main Objectives

The main objective of this HHEP is to create, maintain and improve habitats for the benefit of hen harrier. It is recognised that anything that benefits potential prey species is of benefit to the hen harrier. The HHEP (following this principle) aims to provide an increase in the availability of passerine prey within the Proposed Lands to mitigate for the loss of the foraging habitat due to the operation of the proposed Cahermurphy West Wind Farm. A key principle of the plan is the more diverse the plant species within the restored habitats, the greater the diversity and abundance of passerine species. For example, a monoculture of commercial forestry is significantly less diverse and hold far fewer passerines than the same area of dry heath (Castaño-Villa *et al.*, 2019). Hen harrier also favour open habitats for foraging over closed canopy forestry, as among other things, prey is more accessible in open habitats.

Nine parcels of land, totalling 123.7ha, are proposed to mitigate for the predicted (indirect) habitat loss due to avoidance. Areas A, B and C are currently commercial forestry. Area 1, 2, 3, 4, 5 and 6 comprises agricultural land, the majority of which is classified as wet grassland which has evidence of past improvement or degraded open peatland (please see Section 2.2 above for further details). These areas are currently of low to medium ecological value and all provide opportunities to significantly improve their ecological value to foraging hen harrier. The key points recommending these Proposed Lands for restoration measures are as follows:

- Forestry is a net negative for hen harrier as it is only available to the species while young (>10-12 years typically) and after canopy closure is of no ecological value (from 10-12 years old to felling at approximately 45 years). As previously outlined, afforestation is identified by Article 12 reporting as a key threat/pressure of high importance.
- The farmland areas have considerable potential to be restored to a biodiverse meadow and/or peatland with significantly more passerines than are currently present. As previously outlined, measures associated with agricultural intensification is identified by Article 12 reporting as a key threat/pressure of high importance.

The following text provides an outline of the rationale underpinning the HHEP, what measures are proposed, how and who will implement them and a timeline to their likely success. This is outlined firstly for the forestry land and secondly the farmland.

3.2 Forestry Removal

It is proposed to permanently remove c. 56.3 hectares of low ecological value commercial forestry (Areas A, B and C) and to create more biodiverse upland habitats suitable for foraging hen harrier. This measure ensures the provision of high-quality replacement peatland habitat to mitigate for the loss of onsite habitat through avoidance. Commercial forestry is associated with lower breeding success, is only of limited value to hen harrier while young and is of little to no ecological value once its canopy closes at c.12 years old. Please refer to Figure 7 - 8 - 1 above for location details.

The habitats recorded within these areas are detailed in 2.2.1. In summary, much of the Areas A, B and C are comprised of conifer plantations and include areas which did not take well to the wet, peaty soils resulting in

patchy mosaics of conifer plantations and areas in which the species composition is characteristic of upland blanket bogs and wet heath. There are currently small areas of remnant good habitat within the forestry that would be made significantly more accessible by felling the surrounding forestry. Sections within the forestry plantations of Areas B and C including firebreaks, powerline setbacks, as well as areas in which the forestry failed had species compositions which were characteristic of upland blanket bog. There are also areas of dense conifer plantations, with sitka spruce (*Picea sitchensis*) dominating these areas. Gaps in these dense plantations come in the form of access paths and fire breaks allowing light and in turn more plant growth in some sections.

The small areas of remnant wet heath and upland blanket bog vegetation within Areas B, and adjacent to Areas B and C will act as the (passive) donor seed bank post-felling (i.e., seeds will naturally disperse from these areas into the clearfelled forestry areas). Passerine prey is already abundantly present in the adjacent open habitat to the Proposed Lands (as noted during site visits). There is therefore no foreseen barrier to entry for passerines to populate the Proposed Lands once created.

3.2.1 Overview

The first task of this HHEP was to identify the target habitat the Proposed Lands would be restored to. The target habitat for the currently afforested lands was wet heath and upland blanket bog. Its occurrence nearby was taken to indicate that the habitat could be created within these lands given similar conditions. The first and most important step to facilitate the restoration of the underlying peatland of the Areas A, B and C, will be to permanently remove the forestry. All three areas are likely to transition (following deforestation) into heather-dominated wet heath or upland blanket bog. To aid this transition several key steps are required to promote/avoid inhibiting the growth of the key target species of *Calluna vulgaris* (ling heather). To that end, the following information from a literature review will inform the restoration of the three areas.

A 2023 Norwegian study (Iren Saure *et al.*, 2023) on the restoration of heathland after deforestation found that *Calluna* established immediately after clear-felling. This was considered to be “most likely due to germination from a persistent *Calluna* soil seed bank, facilitated by clear-felling and soil disturbance by forestry machines (Walker *et al.* 2007, Allison & Ausden 2006, Henning *et al.* 2017) and favourably acidic and nutrient-poor soil conditions (Pywell *et al.* 2002, Walker *et al.* 2007). It is known that seed longevity of *Calluna* may exceed 60 years in the soil (Bakker *et al.* 1996).” The literature also states that each restoration project likely needs to be considered on its own merits. Notwithstanding this, there are commonalities among projects that are to be avoided, which include a lack of a seed bank of the target *Calluna* species, the re-encroachment of conifers and trampling/overgrazing. In the present case, conditions are favourable for the establishment of *Calluna vulgaris* (ling heather). As there is likely a vast seed bank of ling heather seed under the forestry of the Proposed Land from the abundant adjoining ling heather, and from the understory of the conifer plantation currently in Areas A, B and C. Forestry will be removed and the machinery involved in the deforestation will provide the necessary soil disturbance to facilitate germination. The soil is likely acidic and nutrient-poor due to the recent cultivation of the commercial forestry on the land. Additionally, the following further interventions are considered necessary - seedling conifers will be removed, and livestock-proof fencing will be installed to prevent trampling and overgrazing from livestock and from the deer population present in the area.

The timber in the Proposed Lands will be removed from site. Optimal habitat locally includes heather-dominated wet heath and upland blanket bog with areas of patchy willow-dominated scrub. To mirror such habitat in the surrounding landscape, it is also proposed to plant a patchwork of scrub within Areas A, B and C. The aim is to increase habitat heterogeneity and thus create more favourable hen harrier habitat. There are existing patches of self-seeded scrub within Area C, within the overhead power line setback area. These will be retained as part of the proposed measures.

Tables 7-8-3 to 7-8-5 provide an outline of the timeline of the works and key responsibilities.

Table 7 - 8 - 3 Forestry removal restoration timeline - Area A

Phase	Timing	Habitat	Habitat Value	Actions	Responsibility
Preparation	Immediately post-consent	Commercial forestry.	Low ecological value.	Permanent felling and removal of timber	The Applicant will commission a suitable forestry consultant to undertake the required deforestation.
	Immediately post-consent	Open/bare ground (forestry felled).	Low-moderate ecological value.	Timber, brash and stumps to be removed from the site. Approximately 8 No. plots of 0.2ha patches of scrub planted, scrub species planted at 2m intervals. Erect livestock-proof fencing to prevent overgrazing.	The Applicant will commission a suitable forestry consultant to undertake the required works.
Operation	Within 1-year post-consent	Revegetating peatland habitat, with a patchwork of scrub.	Moderate ecological value.	Passive action: revegetation in progress, the recolonising monitored at a series of relevés.	The Applicant will commission an ecologist with relevant experience to undertake the habitat survey.
	For remainder of operational phase	Upland bog habitat, with a patchwork of scrub.	Good ecological value. Heather dominated.	Area revegetated, the evolving species composition will be monitored at a series of relevés. Self-seeded conifers hand-pulled/cut to	The Applicant will commission an ecologist with relevant experience to annually undertake the habitat survey.



Phase	Timing	Habitat	Habitat Value	Actions	Responsibility
				ground level every five years.	
After decommissioning	Ongoing	Upland bog habitat, with a patchwork of scrub.	Good ecological value	Area revegetated	n/a

Table 7 - 8 - 4 Forestry removal restoration timeline - Area B

Phase	Timing	Habitat	Habitat Value	Actions	Responsibility
Preparation	Immediately post-consent	Commercial forestry which contained crags with remnant stands of heather.	Low ecological value.	Permanent felling and removal of timber	The Applicant will commission a suitable forestry consultant to undertake the required deforestation.
	Immediately post-consent	Open/bare ground (forestry felled).	Low-moderate ecological value.	<p>Timber, brash and stumps to be removed from the site while maintaining the current stands of heather.</p> <p>Approximately 12 No. plots of 0.2ha patches of scrub planted, scrub species planted at 2m intervals.</p> <p>Erect livestock-proof fencing to prevent overgrazing.</p>	The Applicant will commission a suitable forestry consultant to undertake the required works.
Operation	Within 1-year post-consent	Revegetating peatland habitat, with a patchwork of scrub.	Moderate ecological value.	Passive action: revegetation in progress, the recolonising monitored at a series of relevés.	The Applicant will commission an ecologist with relevant experience to undertake the habitat survey.
	For remainder of operational phase	Upland bog habitat, with a patchwork of scrub.	Good ecological value. Heather dominated.	Area revegetated, the evolving species composition will be monitored at a series of relevés.	The Applicant will commission an ecologist with relevant experience to annually undertake the habitat survey.



Phase	Timing	Habitat	Habitat Value	Actions	Responsibility
				Self-seeded conifers hand-pulled/cut to ground level every five years.	
After decommissioning	Ongoing	Upland bog habitat, with a patchwork of scrub.	Good ecological value	Area revegetated	n/a

Table 7 - 8 - 5 Forestry removal restoration timeline - Area C

Phase	Timing	Habitat	Habitat Value	Actions	Responsibility
Preparation	Immediately post-consent	Commercial forestry with powerline setback containing scrub with patches of heather persisting.	Low ecological value.	Permanent felling and removal of timber	The Applicant will commission a suitable forestry consultant to undertake the required deforestation.
	Immediately post-consent	Open/bare ground (forestry felled).	Low-moderate ecological value.	<p>Timber, brash and stumps to be removed from the site while maintaining existing scrub and patches of heather.</p> <p>Approximately 6 No. plots of 0.2ha patches of scrub planted, scrub species planted at 2m intervals.</p> <p>Erect livestock-proof fencing to prevent overgrazing.</p>	The Applicant will commission a suitable forestry consultant to undertake the required works.
Operation	Within 1-year post-consent	Revegetating peatland habitat, with a patchwork of scrub.	Moderate ecological value.	Passive action: revegetation in progress, the recolonising monitored at a series of relevés.	The Applicant will commission an ecologist with relevant experience to undertake the habitat survey.
	For remainder of operational phase	Upland bog habitat, with a patchwork of scrub.	Good ecological value. Heather dominated.	Area revegetated, the evolving species composition will be monitored at a series of relevés.	The Applicant will commission an ecologist with relevant experience to annually undertake the habitat survey.



Phase	Timing	Habitat	Habitat Value	Actions	Responsibility
				Self-seeded conifers hand-pulled/cut to ground level every five years.	
After decommissioning	Ongoing	Upland bog habitat, with a patchwork of scrub.	Good ecological value	Area revegetated	n/a

In practise the HHEP will be achieved as outlined in the next section.

3.2.2 Deforestation Measures

In February 2020 and July 2024, site visits were undertaken of the forestry felling and peatland restoration areas. The site visits involved a walkover of the 56.3 hectares proposed enhancement area. The dominant habitat recorded within the site was commercial forestry which contained crags with remnant stands of heather. Management prescriptions to be implemented by the applicant include:

- The identified area of existing forestry will be permanently removed. The brash will be collected and be removed from the site. The area will be allowed to revert to peatland habitat. This will create suitable foraging habitat for hen harrier and its associated prey species. Pre-mature felling of forestry will be undertaken before the first breeding season of the construction phase of the project programme. This would allow time for the clear-felled site to revegetate in advance of the operational phase. Thereby ensuring replacement habitat would be available should the predicted displacement effect occur.
- There are three areas within the HHEP where deforestation is proposed, i.e. Areas A, B and C. The timber will be permanently felled and removed from the site. All relevant Forest Service Archaeological, Environmental and Water Quality guidelines will be adhered to.
 - The timber in Areas A, B and C will be removed from site. Areas of good quality heath habitat that occurs adjacent to some areas will be avoided by machinery. The machinery entering/exiting the site will make use of the existing tracks to minimise disturbance to the peat soils. The ground will be supported by brash in areas where tracked machinery movements are required to facilitate deforestation. Timber will be stacked at the entrance to dry before being removed from the site.
 - The forestry crop will be cut using shears or a harvesting head on a tracked excavator.
 - A forwarder will then draw all material (whole trees) to a temporary storage area near the existing entrance off the public road network.
 - The forwarder will use temporary brash tracks to support the ground upon which it is travelling, bringing approximately 5 ton loads of entire trees to the storage area at a time.
 - Brash will be replenished as required, should ground conditions disimprove in order to minimise the impact of machinery causing rutting.
- Forestry in the sections of Area B has failed to thrive and is stunted in places. This has allowed heather to persist in this section of the site. In addition, the boundary fencing is dilapidated and is no longer a barrier to livestock. This area is heavily grazed, and the vegetation is trampled. With the reinstatement of livestock proof fencing the existing mature heather would be free of grazing pressure and could re-vegetate. Nesting habitat will therefore be provided in the short term as part of these enhancement measures. Hen harrier nest in mature stands of heather and scrub.
- As previously discussed, heather has persisted within the existing forestry, following the felling of forestry these remnant stands of heather will seed into adjacent newly felled areas. Re-vegetation with native vegetation is therefore expected to occur naturally within the enhancement area.
- Self-seeding conifers originating as windblown seedlings from adjacent and nearby commercial conifer plantations are a threat to the viability of the enhancement area. They gradually take hold, and if unmanaged, would eventually make the area unsuitable for nesting/foraging hen harrier. Habitat maintenance of the enhancement area will involve the eradication of self-seeding conifers, and removal off-site. It is envisaged that the enhancement areas will require maintenance twice during the life of the wind farm, once after approximately 10 and 20 years.

- The monitoring provided for in Section 4 below will monitor the level of encroachment by self-seeding conifers and will bring the scheduled removal forward by a number of years as required.
- Invasive plant species were identified in Area B. Additional areas of invasive plant species were identified in farmland areas 3 and 6. A confirmatory pre-commencement survey for invasive species will be undertaken as part of preparatory work. An invasive species management plan will be put in place to eradicate stands of invasive species already identified or additional stands identified during the pre-commencement survey. See Appendix 6-4 of this EIAR for further details.
 - The felling license for these lands will be applied for prior to any works. The felling license will include management prescriptions for the deforestation. Following deforestation, the Proposed Lands will be managed for the benefit of hen harrier.
 - The Applicant will engage a suitably qualified ornithologist to monitor for nesting hen harrier. If at any point, hen harrier are identified to be nesting on any part of the Proposed Lands, the Applicant will provide for the protection of the nest site.
 - The use of poisons or stupefying baits is not permitted within Proposed Lands. Hen harriers and other birds of prey can fall victim to secondary and direct poisoning.

3.2.3 Creation of Patchy Scrub Habitat

Areas of patchy scrub will be planted within Areas A, B and C (as detailed in Table 7 - 8 - 3 to Table 7 - 8 - 5) in order to create a diversity of vegetation structures to provide cover and resources for hen harrier prey species.

- Scrub patches will be planted using a mix of bare-root saplings and 2-3 year old potted trees to provide some structural diversity and to maximise establishment success.
- Areas for planting will measure approximately 0.2ha in size and not exceed 10% of the total area of Areas A, B or C. The scrub will be distributed throughout the deforestation areas.
- Patches of existing native scrub remaining post- deforestation will be targeted for reinforced through planting.

The following species, which are present locally and are suitable for the upland exposed location with peat soils, will be used:

- Grey willow (*Salix cinerea*)
- Birch (*Betula pendula*)
- Alder (*Alnus glutinosa*)
- Hawthorn (*Crataegus monogyna*)
- Blackthorn (*Prunus spinosa*)
- Holly (*Ilex aquifolium*)
- Hazel (*Corylus avellana*)
- Elder (*Sambucus nigra*)
- Rowan (*Sorbus aucuparia*)

3.3 Restoration of Farmland for Hen Harrier

In addition to the forestry removal areas, local landowners have been engaged and signed legal agreements and letters of consent allowing the applicant to manage their land for the benefit of hen harrier. In the event that a farmland landowner withdraws from their relevant legal agreement for any particular reason, similar replacement lands will be locally sourced and acquired through legal agreement. The farmland is predominantly wet grassland with evidence of past improvement with frequent stands of rushes (*Juncus spp.*), gorse and scrub. In addition to the areas of wet grassland, there are also areas of peatland. A full description of existing habitats in Areas 1, 2, 3, 4, 5 and 6 is provided in Section 0.

The restoration of the farmland to good quality hen harrier foraging habitat will be achieved by diversifying the range and extent of habitats within the identified Proposed Lands, with a particular focus on habitats that support prey species. This guiding principle will be achieved as detailed in the tables below for each farmland area. In practice the HHEP will be achieved as outlined in this section.

Table 7 - 8 - 6 Farmland restoration timeline - Area 1

Phase	Year	Habitat	Habitat Value	Action	Responsibility
Preparation	Immediately post-consent	This folio consists of an intensely grazed pasture with very low <i>Juncus</i> cover. This folio is surrounded on the north, west and south boundaries by a mature hedgerow with a mix of native and non-native trees. There is no hedgerow along the eastern side, between the field and the road.	Low-moderate ecological value.	<ol style="list-style-type: none"> Hedgerow species planted Removal of non-native trees 	The Applicant will commission a contractor to undertake the required actions.
	Immediately post-consent	There will be little change to the habitat as the sward will not have had time to recover.	Low-moderate ecological value.	<ol style="list-style-type: none"> Rotational grazing regime. Wildlife crop sowing Cease fertilising Hedgerow maintenance 	The Applicant will commission a contractor to plant the wildlife crop. The contractor / tenant will implement a rotational grazing regime and cease the application of fertiliser.
Operation	Within 1-year post-consent	Wet grassland with good sward structure. Sward structure responds well to management and significant progress can be made in a single growing season. Integrity of hedgerows restored. Wildlife seed crop significantly increasing the abundance and accessibility of passerine prey.	Moderate ecological value. Sward structure restored	<ol style="list-style-type: none"> Rotational grazing regime. Annual wildlife crop sowing. Cease fertilising Hedgerow maintenance 	The Applicant will commission a contractor to plant the wildlife crop. The contractor / tenant will implement a rotational grazing regime and cease the application of fertiliser.
	For remainder of the operational phase	Wet grassland with good sward diversity and structure. Integrity of hedgerows restored and maturing. Wildlife seed crop significantly increasing the abundance and accessibility of passerine prey.	Good ecological value. Sward diversity and structure restored	<ol style="list-style-type: none"> Rotational grazing regime. Annual wildlife crop sowing. Cease fertilising Hedgerow maintenance 	The Applicant will commission a contractor to plant the wildlife crop. The contractor / tenant will implement a rotational grazing regime and cease the application of fertiliser.

Table 7 - 8 - 7 Farmland restoration timeline - Area 2

Phase	Year	Habitat	Habitat Value	Action	Responsibility
Preparation	Immediately post-consent	This folio consists of a grazed pasture with very high <i>Juncus</i> cover (80%+). This folio contains no hedgerows, however, it is adjoined by mature forestry on two boundaries.	Low ecological value.	<ol style="list-style-type: none"> Hedgerow species planted Management of <i>Juncus</i> to establish a mixed sward height 	The Applicant will commission a contractor to undertake the required actions.
	Immediately post-consent	There will be little change to the habitat as the sward will not have had time to recover.	Low-moderate ecological value.	<ol style="list-style-type: none"> Rotational grazing regime. Wildlife crop sowing Cease fertilising Hedgerow maintenance 	The Applicant will commission a contractor to plant the wildlife crop. The contractor / tenant will implement a rotational grazing regime and cease the application of fertiliser.
Operation	Within 1-year post-consent	Wet grassland with good sward structure. Sward structure responds well to management and significant progress can be made in a single growing season. Hedgerows established. Wildlife seed crop significantly increasing the abundance and accessibility of passerine prey.	Moderate ecological value. Sward structure restored	<ol style="list-style-type: none"> Rotational grazing regime. Annual wildlife crop sowing. Cease fertilising Hedgerow maintenance 	The Applicant will commission a contractor to plant the wildlife crop. The contractor / tenant will implement a rotational grazing regime and cease the application of fertiliser.
	For remainder of the operational phase	Wet grassland with good sward diversity and structure. Hedgerows established and maturing. Wildlife seed crop significantly increasing the abundance and accessibility of passerine prey.	Good ecological value. Sward diversity and structure restored	<ol style="list-style-type: none"> Rotational grazing regime. Annual wildlife crop sowing. Cease fertilising Hedgerow maintenance 	The Applicant will commission a contractor to plant the wildlife crop. The contractor / tenant will implement a rotational grazing regime and cease the application of fertiliser.

Table 7 - 8 - 8 Farmland restoration timeline - Area 3

Phase	Year	Habitat	Habitat Value	Action	Responsibility
Preparation	Immediately post-consent	Intensely grazed pasture with low to medium <i>Juncus</i> cover. <i>Juncus</i> cover is low for the majority of the folio. There is scrub present around the lake, in the southwest corner of the folio and along the margins of the folio where encroachment of seedling conifers from the forestry plantation is present. To the north of the road, the area is comprised mostly of crags with bare rock, with some heather and scrub throughout.	Low-moderate ecological value.	<ol style="list-style-type: none"> 1. Hedgerow species planted 2. Removal of encroaching conifer seedlings 3. Removal of non-native trees within hedgerows 4. Good habitat to the north of the road (with heather and scrub throughout) to be fenced from livestock 	The Applicant will commission a contractor to undertake the required actions.
	Immediately post-consent	There will be little change to the habitat as the sward will not have had time to recover.	Low-moderate ecological value.	<ol style="list-style-type: none"> 1. Rotational grazing regime. 2. Wildlife crop sowing 3. Cease fertilising 4. Hedgerow maintenance 5. Existing scrub and heather to be maintained as required. 	The Applicant will commission a contractor to plant the wildlife crop. The contractor / tenant will implement a rotational grazing regime and cease the application of fertiliser.
Operation	Within 1-year post-consent	Wet grassland with good sward structure. Sward structure responds well to management and significant progress can be made in a single growing season. Integrity of hedgerows restored and new hedgerows established. Wildlife seed crop significantly increasing the abundance and accessibility of passerine prey.	Moderate ecological value. Sward structure restored	<ol style="list-style-type: none"> 1. Rotational grazing regime. 2. Annual wildlife crop sowing. 3. Cease fertilising 4. Hedgerow maintenance 	The Applicant will commission a contractor to plant the wildlife crop. The contractor / tenant will implement a rotational grazing regime and cease the application of fertiliser.

Phase	Year	Habitat	Habitat Value	Action	Responsibility
	For remainder of the operational phase	Wet grassland with good sward diversity and structure. Hedgerows established and maturing. Wildlife seed crop significantly increasing the abundance and accessibility of passerine prey.	Good ecological value. Sward diversity and structure restored	<ol style="list-style-type: none"> 5. Rotational grazing regime. 6. Annual wildlife crop sowing. 7. Cease fertilising 8. Hedgerow maintenance 9. Management of encroaching conifer seedlings 	<p>The Applicant will commission a contractor to plant the wildlife crop.</p> <p>The contractor / tenant will implement a rotational grazing regime and cease the application of fertiliser.</p>

Table 7 - 8 - 9 Farmland restoration timeline - Area 4

Phase	Year	Habitat	Habitat Value	Action	Responsibility
Preparation	Immediately post-consent	Ungrazed pasture with a high coverage of <i>Juncus</i> . The southern end of this folio consists of a house, yard and associated overgrown garden. Some mature hedgerows consisting of willow and bramble, interspersed with occasional sections of conifer.	Low-moderate ecological value.	<ol style="list-style-type: none"> Hedgerow species planted Removal of non-native trees within hedgerows 	The Applicant will commission a contractor to undertake the required actions.
	Immediately post-consent	There will be little change to the habitat as the sward will not have had time to recover.	Low-moderate ecological value.	<ol style="list-style-type: none"> Rotational grazing regime. Wildlife crop sowing Cease fertilising Hedgerow maintenance 	The Applicant will commission a contractor to plant the wildlife crop. The contractor / tenant will implement a rotational grazing regime and cease the application of fertiliser.
Operation	Within 1-year post-consent	Wet grassland with good sward structure. Sward structure responds well to management and significant progress can be made in a single growing season. Integrity of hedgerows restored. Wildlife seed crop significantly increasing the abundance and accessibility of passerine prey.	Moderate ecological value. Sward structure restored	<ol style="list-style-type: none"> Rotational grazing regime. Annual wildlife crop sowing. Cease fertilising Hedgerow maintenance 	The Applicant will commission a contractor to plant the wildlife crop. The contractor / tenant will implement a rotational grazing regime and cease the application of fertiliser.
	For remainder of the operational phase	Wet grassland with good sward diversity and structure. Hedgerows established and maturing. Wildlife seed crop significantly increasing the abundance and accessibility of passerine prey.	Good ecological value. Sward diversity and structure restored	<ol style="list-style-type: none"> Rotational grazing regime. Annual wildlife crop sowing. Cease fertilising Hedgerow maintenance 	The Applicant will commission a contractor to plant the wildlife crop. The contractor / tenant will implement a rotational grazing regime and cease the application of fertiliser.

Table 7 - 8 - 10 Farmland restoration timeline - Area 5

Phase	Year	Habitat	Habitat Value	Action	Responsibility
Preparation	Immediately post-consent	Grazed pasture with high level of <i>Juncus</i> . Mature hedgerows on two boundaries, and mature forestry in adjoining folios on the other two boundaries.	Low-moderate ecological value.	<ol style="list-style-type: none"> Hedgerow species planted Removal of non-native trees within hedgerows 	The Applicant will commission a contractor to undertake the required actions.
	Immediately post-consent	There will be little change to the habitat as the sward will not have had time to recover.	Low-moderate ecological value.	<ol style="list-style-type: none"> Rotational grazing regime. Wildlife crop sowing Cease fertilising Hedgerow maintenance 	The Applicant will commission a contractor to plant the wildlife crop. The contractor / tenant will implement a rotational grazing regime and cease the application of fertiliser.
Operation	Within 1-year post-consent	Wet grassland with good sward structure. Sward structure responds well to management and significant progress can be made in a single growing season. Integrity of hedgerows restored. Wildlife seed crop significantly increasing the abundance and accessibility of passerine prey.	Moderate ecological value. Sward structure restored	<ol style="list-style-type: none"> Rotational grazing regime. Annual wildlife crop sowing. Cease fertilising Hedgerow maintenance 	The Applicant will commission a contractor to plant the wildlife crop. The contractor / tenant will implement a rotational grazing regime and cease the application of fertiliser.
	For remainder of the operational phase	Wet grassland with good sward diversity and structure. Hedgerows established and maturing. Wildlife seed crop significantly increasing the abundance and accessibility of passerine prey.	Good ecological value. Sward diversity and structure restored	<ol style="list-style-type: none"> Rotational grazing regime. Annual wildlife crop sowing. Cease fertilising Hedgerow maintenance 	The Applicant will commission a contractor to plant the wildlife crop. The contractor / tenant will implement a rotational grazing regime and cease the application of fertiliser.

Table 7 - 8 - 11 Farmland restoration timeline - Area 6

Phase	Year	Habitat	Habitat Value	Action	Responsibility
Preparation	Immediately post-consent	Open degraded peatland, with patches of <i>Juncus</i> with three small pastures. The coverage of <i>Juncus</i> is generally high throughout the open area of this folio, with occasional areas of degraded heather. There is some conifer encroachment from the surrounding commercial forestry. The small fields in the northwest corner of this folio are surrounded by continuous mature hedges consisting of mostly willow with some bramble and conifers.	Low-moderate ecological value.	<ol style="list-style-type: none"> Hedgerow species planted Removal of non-native trees within hedgerows Removal of encroaching conifer seedlings 	The Applicant will commission a contractor to undertake the required actions.
	Immediately post-consent	There will be little change to the habitat as the sward will not have had time to recover.	Low-moderate ecological value.	<ol style="list-style-type: none"> Rotational grazing regime to encourage heather regrowth. Wildlife crop sowing in the small pastures Cease fertilising Hedgerow maintenance 	The Applicant will commission a contractor to plant the wildlife crop. The contractor / tenant will implement a rotational grazing regime and cease the application of fertiliser.
Operation	Within 1-year post-consent	Wet grassland with good sward structure within the small pastures. Recovery of heather within the open peatland areas. Sward structure responds well to management and significant progress can be made in a single growing season. Integrity of hedgerows restored. Wildlife seed crop significantly increasing the abundance and accessibility of passerine prey.	Moderate ecological value. Sward structure restored, heather reestablishing	<ol style="list-style-type: none"> Rotational grazing regime. Annual wildlife crop sowing. Cease fertilising Hedgerow maintenance 	The Applicant will commission a contractor to plant the wildlife crop. The contractor / tenant will implement a rotational grazing regime and cease the application of fertiliser.
	For remainder of the operational phase	Wet grassland with good sward diversity and structure in pastures. Heather restored in open peatland area. Hedgerows established and maturing. Wildlife seed crop significantly increasing the abundance and accessibility of passerine prey.	Good ecological value. Sward diversity and structure restored, heather reestablishing	<ol style="list-style-type: none"> Rotational grazing regime. Annual wildlife crop sowing. Cease fertilising 	The Applicant will commission a contractor to plant the wildlife crop. The contractor / tenant will implement a rotational grazing

Phase	Year	Habitat	Habitat Value	Action	Responsibility
				4. Hedgerow maintenance 5. Removal of encroaching conifer seedlings	regime and cease the application of fertiliser.

3.3.1 Grazing Regime

The hen harrier project field guidance⁶ states “*Sward structure is an important contributor to both prey numbers and prey accessibility. Rush tussocks create foraging and nesting opportunities for small rodents along with meadow pipits and other ground nesting birds. Sward structure responds well to management and significant progress can be made in a single growing season*”. The overall aim of the grassland management will be to create foraging and nesting opportunities for hen harrier prey species through changes to the grazing regime by changes to the length of time lands are grazed, and reduction or increase in stocking density as deemed appropriate to restore foraging habitat for hen harrier. The following measures will be carried out as part of the grazing regime:

- A rotational grazing regime.
- In practice, this will mean that the grassland will be allowed to rest between periods of grazing. This measure ensures a diverse sward has a chance to regrow rather than what occurs during a continuous grazing practice where only the most robust and vigorous plant species survive, i.e. avoids ryegrass dominance. How this will be achieved would be to split the pastures into smaller paddocks with the use of two electric fences. Once the first paddock is grazed animals are moved on to the second paddock and so on.
- As recommended by the Hen Harrier Project, animals will not be in a paddock for more than 4 days. After the fourth day, animals are moved between paddocks. Each vacated paddock will then be rested for 40 days minimum.

3.3.2 Wildlife Seed Crops

Establishing linear strips of wildlife cover to increase the availability of foraging habitat for hen harrier locally. This measure will involve the sowing/planting of a wildlife seed crop.

Wildlife seed crops will be sown by May 31st each year. Recommended crop species include linseed, rye, and triticale. These species have been selected to attract hen harrier passerine prey species. The crop will be planted in a 9-metre-wide strip along the sheltered side of existing hedges. The crop will be left in situ until March 15th the following year, but its location can alternate between years. Crop strip will be a minimum of 100 metres in length and fenced to prevent livestock grazing. The seedbed will need to be tilled once annually with a power harrow on a tractor. A contractor will be hired to undertake this work. A fine firm till is required, this usually takes one to two runs of the machine over the area. The rest of the management measures will be carried out by hand, e.g. seed sowing, fertiliser, and lime application. No herbicide or fungicide application is required. The costs of these measures will be borne by the Applicant.

3.3.3 Scrub and Hedgerows

Hen harrier show a strong preference for foraging in dense hedgerows ideally 3 to 4 metres wide. The individual farm plan will include for the restoration of suitable hedgerows to these conditions. Hedgerows will be widened by parallel planting of native hedgerow species. Restoring hedgerows, where possible, will increase the availability of foraging habitat locally and establish connectivity between otherwise discrete land parcels. To ensure biodiversity; restored hedgerows will contain a minimum of two (woody plant) species per 10 metres. Suggested woody plant species include hawthorn, blackthorn, willow spp., and holly. Existing vegetation will not be cleared to plant the new hedgerow and under no circumstance will herbicides be used. New hedges will be protected from grazing. Habitat management prescriptions for scrub and hedgerows are outlined below:

- Retain existing areas of scrub and hedgerows;
- Where there is evidence of scrub or hedgerow removal these habitats will be reinstated as part of individual farm plans;

⁶ Hen Harrier Programme Field Guidance for scoring Species Rich Grassland Ver. 2 June 2021
<http://www.henharrierproject.ie/IHPSRG:Guidance.pdf> (last accessed 9th May 2024)

- Hedgerow/liner strips of scrub that occur will be widened to 3-4 metres by parallel planting of native hedgerow species;
- Trim established areas of gorse or willow scrub as the only means of preventing further encroachment onto grassland or access paths and tracks. Repeat annually as necessary;
- Prevent any removal, burning or herbicide use on areas of established scrub;
- If deemed necessary for road safety reasons, cut roadside hedgerows outside of the bird nesting season (March 1st - August 31st);
- If deemed necessary for the protection of overhead electricity lines, cut hedgerows outside of the bird nesting season (March 1st - August 31st);
- Hedgerow maintenance is permitted to prevent the hedge “escaping”. In such cases, hedgerow trees should be left uncut, and the remainder of the hedgerow cut into an “A” shape, i.e. wider at the base than at the top;
- Encroachment of scrub onto grassland can be controlled by cutting on an annual basis if required. Cutting in this case should not come closer than 1 metre from the base of the hedge;
- Herbicides and pesticides will not be used; and
- Hedge cuttings will be piled into heaps and left to decay naturally.

New foraging habitat will not be created at the expense of existing supporting habitat, e.g. those habitats that are likely to support the highest density of prey species: including brambles, bilberry and heather.

3.3.4 Rush Management

The objective in managing rushes is to maintain rough grassland in the optimal condition for hen harrier. Optimal condition constitutes as dense a covering of rushes as feasible, but not to the point where rushes are falling over or matting the ground. Rush cover in the 30 - 70% range is ideal. Habitat management prescriptions to be included in the farm management plan for managing rushes on wet grassland are outlined below:

- In general, rush management will not be required unless the rushes are completely dominating the field.
- Where large areas are being dominated by rushes (> 12 hectares), active rush management can be employed through topping.
- The planned rush management will be reviewed on an annual basis to determine if it is having the desired effect. If it is found during an annual inspection that rush recovery has been stronger or weaker than had been originally anticipated, the farm plan will be changed to adjust the cutting sequence for future years and provisions for these amendments will be included in the farm plan management agreements. These details have been consented to by the relevant landowners.

3.3.5 Cessation of Fertiliser Application

The majority of areas are currently used for grazing. The requirements for cessation of the application of fertilisers aims to increase the species and structure diversity of the grassland sward through reduced nitrate application. Nitrate application provides an advantage to the few most vigorous species at the expense of a diverse sward. This measure would also assist in meeting the requirements of the Nitrates Directive and improve the quality of surface water run-off to streams and drains locally.

4. IMPLEMENTATION

As previously discussed, this HHEP will be implemented prior to the commissioning of the Proposed Wind Farm. The HHEP measures will be implemented as follows.

Forestry Areas

1. The Applicant will employ a suitably qualified contractor(s) to carry out the measures as detailed in Section 3.2.
2. A meeting will be held with the contractor to outline the general aims, objectives and requirements of the HHEP for Areas A, B and C.
3. Site-specific felling methods will be devised between the Applicant and their forestry consultant.

Farmland Areas

1. The Applicant will engage a suitably qualified contractor to carry out the measures as detailed in Section 3.3.
2. A meeting will be held with the contractor to outline the general aims, objectives and requirements of the HHEP for Areas 1, 2, 3, 4, 5 and 6.
3. A farm plan will be prepared which will outline the individual prescriptions required to ensure the implementation of this plan. The plan will include a map of the landholding, and a prescriptive list of actions to be undertaken, and the time of year when the necessary works and management measures are to be undertaken. It is proposed that a suitably qualified environmental scientist or ornithologist/ecologist will be engaged by the Applicant to oversee the implementation of this plan generally and the farm management plan in particular. The implementation will likely require the input of agricultural advisors including with regard to appropriate stocking levels.

4.2 Responsibility for Implementing the Measures

The Applicant has legal agreements with the landowners of the Proposed Lands that allows the implementation of the land management measures to benefit the hen harrier by providing foraging habitat, and additional habitats with increased and improved biodiversity in general in order to support to benefit passerine species, thereby increasing prey for the hen harrier. As mentioned in Section 3.3 above, in the event that a farmland landowner withdraws from their relevant legal agreement for any particular reason, similar replacement lands will be locally sourced and acquired through legal agreement.

The Applicant will be responsible for overseeing the preparation of the farm/landholding level plans which will be in strict accordance with measures outlined in Sections 3.2 and 3.3. The Applicant will be responsible for providing the landowner with an agricultural consultant and ecologist.

The Applicant will be responsible for preparing and overseeing the preparation of the farm plans and a specific suite of measures for the areas of forestry. The Applicant will also be responsible for auditing the land holdings, determining if the measures are achieving the desired results and, where necessary, amending the plan to achieve the required results. The farm plan and auditing programme will be in place for the lifetime of the Proposed Wind Farm.

The Applicant or their agents will also be responsible for ensuring compliance with planning conditions and engaging with statutory bodies and advisory agencies as required.

4.3 Next Steps

Assuming that the Proposed Project receives a grant of planning permission the next steps from the perspective of implementation of the HHEP are as follows:

1. Prepare the tender documents and issue tender notice for the agricultural and ecological specialists to administrate and implement the HHEP.
2. Appoint the successful tenderer and agree final terms including scope of work.
3. Apply for felling licence for forestry in Areas A, B and C.
4. Appoint forestry company to carry out deforestation upon receipt of licence.
5. Toolbox talk with forestry operators prior to any works to ensure all personnel are fully informed of the methodologies required for operation within the Proposed Lands.
6. Meeting with the appointed tenant / contractor of the farmland areas (Area 1, 2, 3, 4, 5 and 6) to detail required measures under the HHEP.

5. MONITORING

The HHEP will be the subject of ongoing monitoring to assess the effectiveness of the measures proposed and to contribute to advances in habitat management methods, which can be applied to future similar projects. The monitoring can also aid adaption and implementation of improved methods and measures as they emerge, or the intensification of successful measures.

Full details on the proposed monitoring measures are provided in Appendix 7-7 of this EIAR. In summary, the annual monitoring measures at the Proposed Lands will include:

- **Breeding raptor surveys:** The Proposed Lands will be the subject of ongoing bird monitoring during the lifetime of the Proposed Wind Farm to ensure it is offering supporting habitat for breeding hen harrier. The ongoing monitoring will take place during the breeding bird season. The monitoring will seek to identify whether hen harrier are utilising the areas under active management for foraging and will be conducted by way of vantage point surveys. These surveys will be undertaken monthly from March to August, following Hardey *et al.* (2013), each year.
- **Passerine monitoring surveys** will be undertaken over two visits between April to June, following CBS methodology, annually at the Proposed Lands. The monitoring aims to investigate to what extent measures e.g. seed crops, increase the availability of prey species for hen harrier.
- **Habitat mapping:** the Proposed Lands will be accurately mapped and monitored annually to check that the areas so covered have not altered in size and that the grazing regime that is in place is maintaining the current state of these habitats (i.e. neither poaching nor overgrowth of open areas is occurring). As well as mapping, this monitoring will be recorded by means of fixed-point photography.
- **Habitat scoring:** The Proposed Lands will be scored based on the Hen Harrier Project scorecards for Bog and Heath (Areas A, B, C and 6) and Wet Grassland (Areas 1, 2, 3, 4 and 5). Scoring will be carried out based on the methods outlined in the Hen Harrier Project guidance documents⁷ for each habitat type. Scoring will be carried out between May 15th and August 31st as per these methods.
- **Vegetation sampling:** A number of fixed relevé sites (i.e. permanent quadrats) will be set up in the Proposed Lands. Data will be recorded prior to the commencement of the HHEP activities. The character of each relevé will be recorded (e.g. species proportions present using Domin scale, vegetation structure) and photographs will be taken of each relevé from a fixed point. These relevés will then be re-examined annually following the commencement of the HHEP in place to establish the extent of habitat improvement resulting from management practices.

⁷Wet grassland - Hen Harrier Programme Field Guidance for scoring Wet Grasslands ver 2, June 2021
Bog and heath - Hen Harrier Programme Field Guidance for scoring Bog and Heath ver 2, June 2021

The efficacy of the HHEP measures employed will be reviewed annually following the commencement of the HHEP. Analysis of the data collected will be the basis for a review of the measures and techniques employed. Should any adjustments to the HHEP be deemed necessary or advisable, these will be undertaken in consultation with the NPWS prior to any alterations to the HHEP.

Reports detailing the monitoring works carried out, the results obtained and a review of their success, along with any suggestions for amendments to the HHEP will be prepared and submitted to the planning authority annually following commencement of the HHEP.

5.1 Auditing

The Applicant will ultimately be responsible for the implementation of the management measures and audits. Audits will be required to ensure the effectiveness of the HHEP. They are essential to ensure adequate plan quality, compliance, and control. Audits will be based on a field inspection and the assessment of the farm plans and forestry lands.

The farm plan will be audited each year. The audit will assess:

- > Objectives of the farm plan;
- > Implementation of the plan; and
- > Adherence to requirements of the farm plan.

The farm plans and forestry lands will be reviewed annually.

6. CONCLUSION

The successful implementation of the measures outlined above will produce more favourable foraging habitat for local hen harrier than is currently available within the Proposed Wind Farm site. The Proposed Lands for the permanent felling of forestry and the farmland management areas are located significantly closer to the hen harrier territories identified than the habitat that will be (potentially) lost within the Proposed Wind Farm site. In addition, the removal of the forestry will improve connectivity within the Craghnashingaun Bog NHA. The dynamic management approach proposed will be monitored to both ensure as much benefits as possible are provided for hen harrier and to contribute to advances in habitat management methods. The proposed enhancement measures are not only proposed for hen harrier but also for peatland habitat restoration.

And most significantly the implementation of the proposed enhancement measures will safeguard a significant resource for biodiversity and ensure land use certainty for the proposed 35-year lifespan of the Proposed Wind Farm.

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