APPENDIX 7-7

Hen Harrier Offsetting Plan

Planning and Environmental Consultants

Appendix 7-7 - Hen Harrier Offsetting Plan

Taurbeg Wind Farm Extension of Operational Life

DOCUMENT DETAILS

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Planning and Environmental Consultants

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1. INTRODUCTION

1.1 Overview

Taurbeg Limited, the applicant, are applying to Cork County Council (CCC) for planning permission to extend the operational period of the existing Taurbeg Wind Farm (the 'Proposed Lifetime Extension') for an additional 10 years to 2036 after the expiry of its current planning permission in 2026. The existing wind farm development lies within the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (hereafter "the SPA"), designated for Hen harrier (*Circus cyaneus*).

This Hen Harrier Offsetting Plan contains proposed measures to offset the identified *likely medium-term constant significant negative effect* to hen harrier as a result of (indirect) habitat loss due to avoidance of turbines during the Proposed Lifetime Extension. The comprehensive Offsetting Plan has been specifically designed to target the two key threats/pressures of *High Importance* of forestry and agricultural intensification to offset for the potential for impacts associated with the Proposed Lifetime Extension of the wind farm (*Medium Importance* - as per Article 12 reporting of the Birds Directive (Directive 2009/147/EC[1])). This document provides supporting information on how the hen harrier habitat loss was calculated, the rationale for selecting the offsetting lands and further discussion on how the management prescriptions of the Proposed Offsetting Plan will be implemented.

It is noted that this Proposed Offsetting Plan includes for permanent deforestation to offset in large part for a 10-year Proposed Lifetime Extension. In the event of a successful grant of permission, after the 10-year period the wind farm would be decommissioned but the Proposed Offsetting Lands will continue to be managed for the benefit of hen harrier. This offers considerable benefits to hen harrier in the long term.

1.2 Background

The Proposed Lifetime Extension has the potential for the ongoing displacement of hen harrier from the Site, in the absence of offsetting measures there is the potential for an ongoing *likely medium-term constant significant negative* (indirect) habitat loss effect, as detailed in Section 7.5.3.2 of Chapter 7 Birds of the EIAR. Accordingly, a comprehensive offsetting strategy is proposed. The Proposed Offsetting lands are located in Knockatee and Coom, Co. Kerry, approximately 11.5km east from the Taurbeg Wind Farm site and are situated entirely within the SPA.

The hen harrier population in Ireland is in decline[2]. 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[3]. The factors implicated in the population decline include human-related habitat modification and loss. Such habitat modification includes afforestation, agricultural intensification (*High Importance*) and the proliferation of turbines (*Medium Importance*) in the upland regions inhabited by breeding hen harrier, as outlined in Article 12 Reporting 2013-2018 (EU, 2022) and

[1] *https://www.npws.ie/status-and-trends-ireland%E2%80%99s-bird-species-%E2%80%93-article-12-reporting*
[2] *Ruddock, M., Wilson-Parr, R., Lusby, J., Connolly, F., J. Bailey, & O'Toole, L. (2024). The 2022 National Survey of breeding Hen Harrier in Ireland. Report prepared by Irish Raptor Study Group (IRSG), BirdWatch Ireland (BWI), Golden Eagle Trust (GET) for National Parks & Wildlife Service (NPWS). Irish Wildlife Manuals, No. 147. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.*
[3] *O'Donoghue, B. G. (2010) The Ecology and Conservation of Hen Harriers (Circus cyaneus) in Ireland. PhD Thesis submitted to University College Cork.*

reiterated in the Hen Harrier Threat Response[4]. The Existing Taurbeg Wind Farm is located within the Stack's to Mullaghereirk Mountains, West Limerick Hills and Mount Eagle SPA, where the population is declining. The national threats/pressures of afforestation, agricultural intensification and the proliferation of turbines are also evident in these uplands, with afforestation in particular noted during the 2022 national survey as "*a substantial factor affecting the distribution and abundance of hen harrier in this region*".

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 Lifetime Extension 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 retention of renewable energy developments such as the existing Taurbeg Wind Farm. To that end, the Offsetting Plan that accompanies this application aims to ensure that the retention of the existing Taurbeg turbines 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. 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.*"

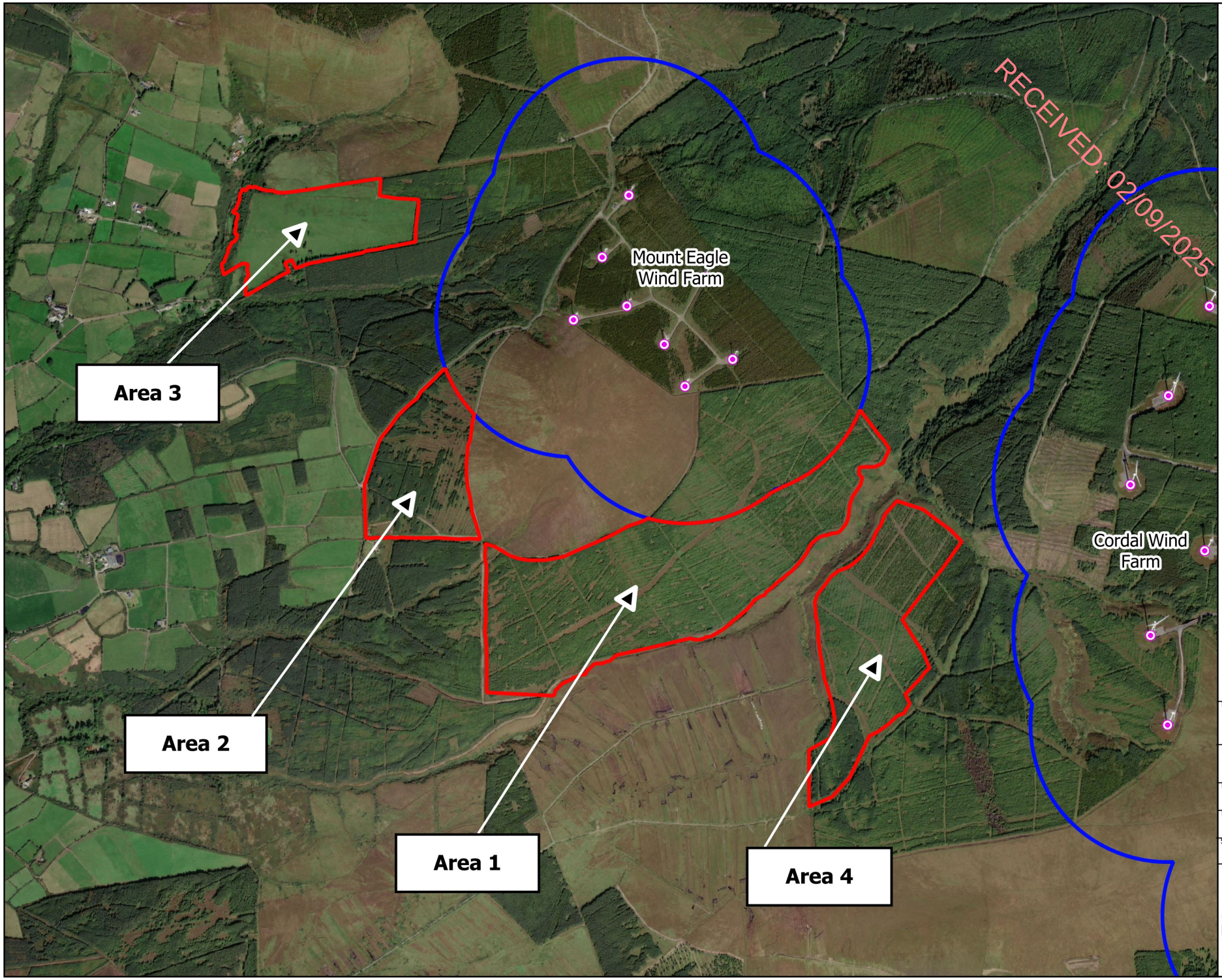
At a national level the Hen Harrier Threat Response Plan (HHTRP) (2024-2028) identifies a need for innovation and collaboration to achieve the goals of the plan. Section 7 of the HHTRP sets out the actions that need to be taken to realise the objectives of the plan between 2024 and 2028. Collaboration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

The following Offsetting Plan is based on the best available scientific knowledge.

A key premise of the Offsetting Plan is that forestry is a net negative for hen harrier. 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. Similarly, as per the Natura 2000 Data Form which lists site-specific threats and pressures for the SPA, '*sylviculture, forestry*' is allocated the highest rank. The forestry proposed for deforestation as part of this Offsetting Plan is at thicket stage and is therefore not useful to hen harrier. A key element of the Offsetting Plan 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 Offsetting Plan will not significantly reduce the availability of nesting habitat within the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA. This SPA is heavily afforested. Thus, removing forestry to create hen harrier foraging habitat is a net positive.

Following the permanent removal of approximately 105.5ha of forestry and the restoration of a further 17.8ha of agricultural land for the benefit of hen harrier, residual impacts of no greater than negligible are predicted as a result of the Proposed Lifetime Extension.

[4] *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.*



Map Legend

- Proposed Offsetting Lands
- Existing Turbines
- 500m Radius of Existing Turbines

Drawing Title
Proposed Offsetting Lands

Project Title
Taurbeg Wind Farm Extension of Operational Life

Drawn By	Checked By
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2. IDENTIFICATION OF OFFSETTING LANDS

The following sections outline the methodology used to firstly calculate habitat loss and secondly identify the offsetting lands.

2.1 Habitat Loss Calculation and Identification of Offsetting 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 existing 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 SPA. All turbines within the 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. The conclusion of a 'possible' reduction in breeding success rather than one of greater certainty was due to the analysis of breeding success being found to be statistically non-significant (Wilson *et al.,* 2015). Notwithstanding this, 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 in hen harrier that there was a reduction of 52.5% in activity within 500m of operating wind turbines and significant avoidance within 250m.

In this habitat loss calculation, it was conservatively assumed that there would be total avoidance of a buffer zone within a 250m radius of the existing wind turbines (in line with the result of Pearce-Higgins *et al.*, 2009)[5]. The assumption of 100% avoidance within 250m of wind turbines has been previously proposed in other recent planning permission applications for wind farm developments in the Republic of Ireland, following consultation with the National Parks and Wildlife Service, most notably on an application by DP Energy Ireland Ltd. for a proposed six-turbine wind farm in Buttevant, Co. Cork (Pl. Ref. No. 13/05885) and an application for a six-turbine extension to a previously permitted eight-turbine development by Esk Windfarm Ltd. on a site near Nad, Co. Cork (Pl. Ref. No. 14/05602).

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 with the rotational cycle of forestry, calculations have been made using felling plans for the relevant folios as provided by SWS Forestry to determine the average amount of potentially available hen harrier habitat that will be unavailable on an annual basis throughout the proposed ten-year extension of the wind farm. These calculations are presented in Appendix A.

[5] *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.*

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 **122.43 hectares**.

Taking into consideration this predicted impact and the Site's significance to foraging hen harrier, a habitat Offsetting Plan has been devised to create suitable foraging and breeding habitat for the species within the area.

2.1.2 The Rationale for Selecting Offsetting Lands

The Offsetting Plan aims to provide an increase in the availability of passerine prey (e.g. meadow pipits (please see Section 3.2.1 for further details)) within the Proposed Offsetting Lands to offset for the indirect loss of the foraging habitat due to avoidance through the ongoing operation of the existing Taurbeg Wind Farm. The Offsetting Plan 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 land chosen for offsetting fulfils the requirement to maintain the overall coherence of the Natura 2000 network. The two key elements that have been addressed are the proportionality and ecological functionality of the Proposed Offsetting lands. The justification for the choice of the Proposed Offsetting lands includes the following:

- To address the requirement for proportionality, Proposed Offsetting lands have been proposed at a (slightly greater than) 1:1 ratio. In addition, the approximate 105.5ha of deforested lands will be restored to optimal hen harrier habitat and **permanently** managed as such.
- Offsetting is proposed within the SPA for which the hen harrier is the qualifying interest as this is preferable where ecological coherence and network functionality exist as per C(2021) 6913 part2/2[6] Section 3.3.3. These criteria are fulfilled as follows:
    - There is suitable habitat that runs in a contiguous block between the site of impact (Taurbeg Wind Farm) and the Proposed Offsetting lands. This same area likely hosts a single population with an exchange of individuals.
    - A plan is in place to create optimal hen harrier foraging habitat within the Proposed Offsetting lands. Please see Section 3 of this report for a detailed description of measures.
    - The Proposed Offsetting lands are proposed for the benefit of the SPA hen harrier population and ensure no loss of foraging habitat within the SPA due to the Proposed Lifetime Extension.
- Like-for-like habitat will be created within the SPA (i.e. foraging habitat will replace the foraging habitat indirectly lost through avoidance).
- The conservation objectives of the SPA that relate to forestry concern the maintenance of a diverse age class, therefore the proposed offsetting measures are not already foreseen in the SPA's specific conservation objectives and are thus additional.
- The deforestation in particular will increase the amount of contiguous open habitat and link two areas of optimal (heath/bog) foraging habitat to the north and south, as outlined in Figure 1-1 above and shown in Plate 2-1 below.

[6] *Commission notice: Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC*

- The plan ensures the removal of closed-canopy forestry, that would not otherwise have been felled until maturity (and subsequently replanted) without intervention. Thus increasing '*spatial utilisation*' locally. 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 Offsetting 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 all four 10km grid squares which overlap with the Proposed Offsetting lands in 2022 (i.e. R00, R01, R10 & R11) in 2022. Previous to this, hen harrier were confirmed to have bred in the 10km grid squares R10 and R11 as per the Bird Atlas 2007-11. There is therefore longstanding breeding activity locally.

Plate 2-1. Area 1 of Proposed Offsetting Lands viewed from the south, with open habitat of Mount Eagle summit visible behind and area of existing open habitat in the foreground to be joined into one contiguous area as part of Proposed Offsetting Plan.

2.2 Existing Baseline Condition

Habitat surveys of the Proposed Offsetting Lands were undertaken in October 2024 and January 2025. As shown in Figure 1-1, the Proposed Offsetting lands are divided into 4 areas, referred to as Area 1, Area 2, Area 3 and Area 4. Areas 1, 2 and 4 are dominated by Conifer Plantation (WD4) habitat. Other habitats such as Upland Blanket Bog and Wet Heath are located in small proportions and along the margins of Areas 1, 2 and 4. Area 3 is dominated by wet grassland (GS4) habitat with an area of (Mixed) broadleaved woodland (WD1) present within the western end. Other habitats such as hedgerows (WL1) and treelines (WL2) are present along the periphery of Area 3.

A full description of habitats recorded within the Proposed Offsetting Lands is provided in Section 6.6.2 of Chapter 6 Biodiversity of the EIAR, including a habitat map and location of rhodendron stands recorded.

3. HEN HARRIER OFFSETTING PLAN

The Proposed Offsetting Plan involves a combination of permanent deforestation and restoration of farmland habitat, specifically designed to offset the identified potential *likely medium-term constant significant negative effect* to hen harrier as a result of (indirect) habitat loss due to avoidance of turbines during the Proposed Lifetime Extension. The combined area totals 123.2ha.

3.1 Main Objectives

The main objective of this hen harrier Offsetting Plan 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 Offsetting Plan (following this principle) aims to provide an increase in the availability of passerine prey within the Proposed Offsetting lands to offset for the loss of the foraging habitat due to the ongoing operation of the existing Taurbeg 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 passerines. For example, a monoculture of commercial forestry is likely to be significantly less diverse and hold far fewer passerines than the same area of dry heath. Hen harrier also favours open habitats for foraging over closed canopy forestry, as, among other things, prey is more accessible in open habitats.

Four parcels of land, totalling 123.2ha, are proposed to offset for the predicted (indirect) habitat loss due to avoidance. Please see Figure 1-1 further above for location details. Offsetting Areas 1, 2 and 4 are currently commercial forestry. Area 3 comprises agricultural land, classified as wet agricultural grassland which has evidence of past improvement (please see Section 2.2 above for further details). These areas are currently of low ecological value and all provide opportunities to significantly improve their ecological value to foraging hen harrier. The key points recommending these 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. As previously outlined, afforestation is identified by Article 12 reporting as a key threat/pressure of high importance.
- The wet improved grassland of Area 3, has considerable potential to be restored to a biodiverse meadow with significantly more passerines than are currently present. As previously outlined, 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 Offsetting Plan, 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 wet grassland with signs of improvement.

3.2 Forestry Removal (Areas 1, 2 & 4)

It is proposed to permanently remove c. 105.5 hectares of forestry and to create more biodiverse upland habitats suitable for foraging hen harrier. This measure ensures the provision of high-quality replacement peatland habitat to offset 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 1-1 for location details.

The habitats recorded within these areas are detailed in Section 6.6.2 of Chapter 6 Biodiversity of the EIAR. In summary, much of the Offsetting Areas 1, 2 & 4 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 (WD4) and areas in which the species composition is characteristic of upland blanket bogs (PB2) and wet heath (HH3). Sections within the forestry plantations of the central and southern Proposed Offsetting lands including firebreaks as well as areas in which the forestry failed had species compositions which were characteristic of upland blanket bog (PB2). There are also areas of dense conifer plantations (WD4 – Fossitt habitat codes), with sitka spruce (*Pichea 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 1, 2 & 4 and upslope of these lands (i.e. Mount Eagle summit) will act as the (passive) donor seed bank post-felling. Passerine prey is already abundantly present in the adjacent heath to the north and south of the Proposed Offsetting lands (as noted during site visits in October 2024 and January 2025). There is therefore no foreseen barrier to entry for passerines to populate the Proposed Offsetting lands once created.

3.2.1 Overview

The first task of the Offsetting Plan was to identify the target habitat the Proposed Offsetting lands would be restored to. The target habitat for the currently afforested lands was wet heath due to the nature of the sloping site and the occurrence of the habitat locally. 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 Offsetting Areas 1, 2 and 4, will be to permanently remove the forestry. All three areas are sloping and are likely to transition (following deforestation) into heather-dominated wet heath. To aid this transition to wet heath 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 (Areas 1, 2 and 3).

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.* 2004, Allison & Ausden 2006, Henning *et al.* 2017) and favourably acidic and nutrient-poor soil conditions (Pywell *et al.* 2002, Walker *et al.* 2004). 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 unsuccessful, which include a lack of a seed bank of the target *Calluna* species, the re-encroachment of conifers and tramping/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 *Calluna vulgaris* (ling heather) seed under the forestry of the Offsetting land from the abundant adjoining ling heather upslope, and from the understory of the conifer plantation currently in Areas 1, 2 and 4. 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 tramping and overgrazing.

The forestry of Areas 1 and 4 will be permanently felled to waste owing to the difficulty in removing the timber from the sloping land. A Peat Stability Risk Assessment undertaken at the Proposed Offsetting lands by Gavin and Doherty Geosolutions (GDG) in January 2025 advised against the removal of this timber from these lands. The timber will be piled in windrows at 50m intervals. This practical requirement has been assessed for its implications on the distribution and abundance of avian prey species. The likelihood is that the presence of wood debris piles might change the composition of the passerines present, but the areas will remain of good ecological value to foraging hen harrier. A 2010 study found that wood debris piles benefited avian species (e.g. warbler spp., robin, chaffinch etc.) in burnt and logged Mediterranean pine forests (Rost et al., 2010). The habitat heterogeneity created by the inclusion of the wood debris piles allows for the coexistence of avian species with different habitat requirements, in the present case, this would likely include warbler spp. in the wood piles and more open habitat species in the large areas of open habitat between wood piles, e.g. meadow pipits and skylark.

The timber in Area 2 will be removed from site due to the easy access to the adjoining road network in this location. Optimal habitat locally includes heather-dominated wet heath on sloping ground 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 1 and 4. 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 2 where forestry has failed. These will be retained as part of the proposed measures.

Tables 3-1 to 3-3 provide an outline of the timeline of the works and key responsibilities.

Table 3-1. Area 1 restoration timeline.

Phase	Timing	Habitat	Habitat Value	Actions	Responsibility
Preparation	Immediately Post-Consent	Commercial forestry with wet heath in firebreaks. Sloping ground.	Low ecological value. The good quality dry heath is being devalued by the presence of adjoining forestry, i.e. prey accessibility diminished as hen harrier avoid forestry when foraging.	Permanent felling to waste	Taurbeg Ltd will commission a suitable forestry consultant) to undertake the required deforestation.
	Immediately Post-Consent	Open/bare ground (forestry felled), with good quality dry heath in firebreaks. Sloping ground.	Low-moderate ecological value.	Timber to be stacked in windrows at 50m intervals. Approximately 28 No. plots of 0.2ha patches of scrub planted, scrub species planted at 2m intervals, please see Figure 3-2 for details. Erect livestock-proof fencing to prevent overgrazing.	Taurbeg Ltd will commission a suitable forestry consultant to undertake the required works.
Operation	Within 1 year post-consent	Revegetating dry heath, with a patchwork of scrub. Sloping ground likely to favour ling heather proliferation.	Moderate ecological value.	Passive action: revegetation in progress, the recolonising monitored at a series of relevés.	Taurbeg Ltd will commission an ecologist with relevant experience to undertake the habitat survey.

Phase	Timing	Habitat	Habitat Value	Actions	Responsibility
	For remainder of Extension of Operational Life	Dry heath, with a patchwork of scrub. Sloping ground.	Good ecological value. Heather dominated dry heath (typical of sloping dry heath).	Area revegetated, the evolving species composition will be monitored at a series of relevés. Self-seeded conifers hand-pulled/cut to ground level in year 5 (September to December 2030). Forestry drains were not maintained recently, and no further maintenance is proposed.	Taurbeg Ltd will commission an ecologist with relevant experience to annually undertake the habitat survey.
After decommissioning	Ongoing (permanent)	Dry heath, with a patchwork of scrub. Sloping ground.	Good ecological value	Area revegetated, the evolving species composition will be monitored at a series of relevés.	Taurbeg Ltd will commission an ecologist with relevant experience to undertake the habitat survey at 5-year intervals with a key focus on identifying conifer seedlings for removal.

Table 3-2. Area 2 restoration timeline.

Phase	Timing	Habitat	Habitat Value	Action	Responsibility
Preparation	Immediately Post-Consent	Commercial forestry with large areas of failed forestry with patches of	Forestry of low ecological value. Failed forestry includes willow-dominated scrub that is being	Deforestation with timber removed from site.	Taurbeg Ltd will commission SWS (forestry consultant) to

Phase	Timing	Habitat	Habitat Value	Action	Responsibility
		mature scrub and vegetation characteristic of wet heath. Sloping ground.	devalued by the presence of adjoining forestry i.e. prey accessibility diminished as hen harrier avoid forestry when foraging.		undertake the required deforestation.
	Immediately Post-Consent	Open/bare ground (forestry felled), with good quality dry heath with patches of mature scrub. Sloping ground.	Moderate ecological value: with the removal of the forestry the existing mature scrub is opened up/made available to foraging hen harrier.	Timber, brash and stumps removed from area. Erect livestock-proof fencing to prevent overgrazing.	Taurbeg Ltd will commission a suitable forestry consultant to undertake the required works.
Operation	Within 1 year Post-Consent	Revegetating dry heath, with a patchwork of mature scrub. Sloping ground likely to favour ling heather proliferation.	Good ecological value.	Passive action: revegetation in progress, the recolonising monitored at a series of relevés.	Taurbeg Ltd will commission an ecologist with relevant experience to undertake the habitat survey.
	For Remainder of Extension of Operation Life	Dry heath, with a patchwork of scrub. Sloping ground.	Good ecological value. Heather dominated dry heath (typical of sloping dry heath).	Area revegetated, the evolving species composition will be monitored at a series of relevés. Self-seeded conifers hand-pulled/cut to ground level in year 5 (September to December 2030).	Taurbeg Ltd will commission an ecologist with relevant experience to annually undertake the habitat survey.

Phase	Timing	Habitat	Habitat Value	Action	Responsibility
				Forestry drains were not maintained recently, and no further maintenance is proposed.	
After decommissioning	Ongoing (permanent)	Dry heath, with a patchwork of scrub. Sloping ground.	Good ecological value. Heather dominated dry heath (typical of sloping dry heath).	Area revegetated, the evolving species composition will be monitored at a series of relevés.	Taurbeg Ltd will commission an ecologist with relevant experience to undertake the habitat survey at 5-year intervals with a key focus on identifying conifer seedlings for removal.

Table 3-3. Area 4 restoration timeline

Phase	Timing	Habitat	Habitat Value	Action	Responsibility
Preparation	Immediately Post-Consent	Commercial forestry with wet heath in firebreaks. Sloping ground.	Low ecological value. The good quality dry heath is being devalued by the presence of adjoining forestry i.e. prey accessibility diminished as hen harrier avoid forestry when foraging.	Permanent felling to waste	Taurbeg Ltd will commission a suitable forestry consultant) to undertake the required deforestation.
	Immediately Post-Consent	Open/bare ground (forestry felled), with good quality dry heath in firebreaks. Sloping ground.	Low-moderate ecological value	Timber to be stacked in windrows at 50m intervals. Approximately 14 No. plots of 0.2ha patches of scrub planted, scrub	Taurbeg Ltd will commission a suitable forestry consultant to undertake the required works.

Phase	Timing	Habitat	Habitat Value	Action	Responsibility
				species planted at 2m intervals, please see Figure 3-2 for details. Erect livestock-proof fencing to prevent overgrazing.	
Operation	Within 1 year Post-Consent	Revegetating dry heath, with a patchwork of scrub. Sloping ground likely to favour ling heather proliferation.	Moderate ecological value.	Passive action: revegetation in progress, the recolonising monitored at a series of relevés.	Taurbeg Ltd will commission an ecologist with relevant experience to undertake the habitat survey.
	For remainder of Extension of Operational Life	Dry heath, with a patchwork of scrub. Sloping ground.	Good ecological value. Heather dominated dry heath (typical of sloping dry heath).	Area revegetated, the evolving species composition will be monitored at a series of relevés. Self-seeded conifers hand-pulled/cut to ground level in year 5 (September to December 2030). Forestry drains were not maintained recently, and no further maintenance is proposed.	Taurbeg Ltd will commission an ecologist with relevant experience to annually undertake the habitat survey.

Phase	Timing	Habitat	Habitat Value	Action	Responsibility
After decommissioning	Ongoing (permanent)	Dry heath, with a patchwork of scrub. Sloping ground.	Good ecological value	Area revegetated, the evolving species composition will be monitored at a series of relevés.	Taurbeg Ltd will commission an ecologist with relevant experience to undertake the habitat survey at 5-year intervals with a key focus on identifying conifer seedlings for removal.

In practise the Propose Offsetting Measures will be achieved as outlined in the next section.

3.2.2 Deforestation Measures

- The identified areas of existing forestry will be permanently felled, i.e. Areas 1, 2 and 4. These areas will be allowed to revert to heath habitat. A Peat Stability Risk Assessment was undertaken at the Proposed Offsetting Lands by Gavin and Doherty Geosolutions (GDG) in January 2025. The results of this study have informed the forestry removal measures outlined in this plan. Machinery movements within the area will be minimised to limit disturbance to existing heath vegetation and peat soils.

- Forestry drains were not maintained recently, and no further maintenance is proposed (unless required as part of the felling license).

- There are three areas within the Offsetting Plan where deforestation is proposed, i.e. Areas 1, 2 and 4. The timber will be permanently felled to waste in Areas 1 and 4, whereas the timber will be removed from the site in Area 2 due to the easy access to the adjoining road network in this location. All relevant Forest Service Archaeological, Environmental and Water Quality guidelines will be adhered to.

    - **Areas 1 and 4**

        - The timber in Areas 1 and 4 will be permanently felled to waste. The timber and brash emanating from deforestation will be collected and stacked in windrows approximately 50m apart (see Figure 3-1 below). Stumps will be left in situ. This has the benefit of avoiding excessive machinery movements which would be required to remove felled material off-site. The ground will be supported by brash in areas where machinery movements are required to facilitate deforestation. Timber will be cut and stacked and compressed by the tracked machinery to keep the windrows tight and narrow. The windrows will be c. 2-3m wide.

        - A tracked excavator machine with shears/ harvester head (Machine 1) will cut the trees, and following this, the harvesting operator will swing around and drop the entire tree as far as needed (typically up to 12m from where it was cut)

        - From here, the cut tree will be picked up by a second tracked excavator machine (Machine 2) with a dyke/rock bucket or grab.

        - The tracked excavator machine will swing around again (c. 12m away) resulting in a windrow being located *c.*24 meters from where furthest away trees were cut.

        - The process would then be replicated from the other side so that a windrow (c. 2-3 m wide) comprising approximately 50m of crop is created.

        - The tracked excavator machine will, using its attachment, compress the material so as to keep the windrows tight and as narrow as possible.

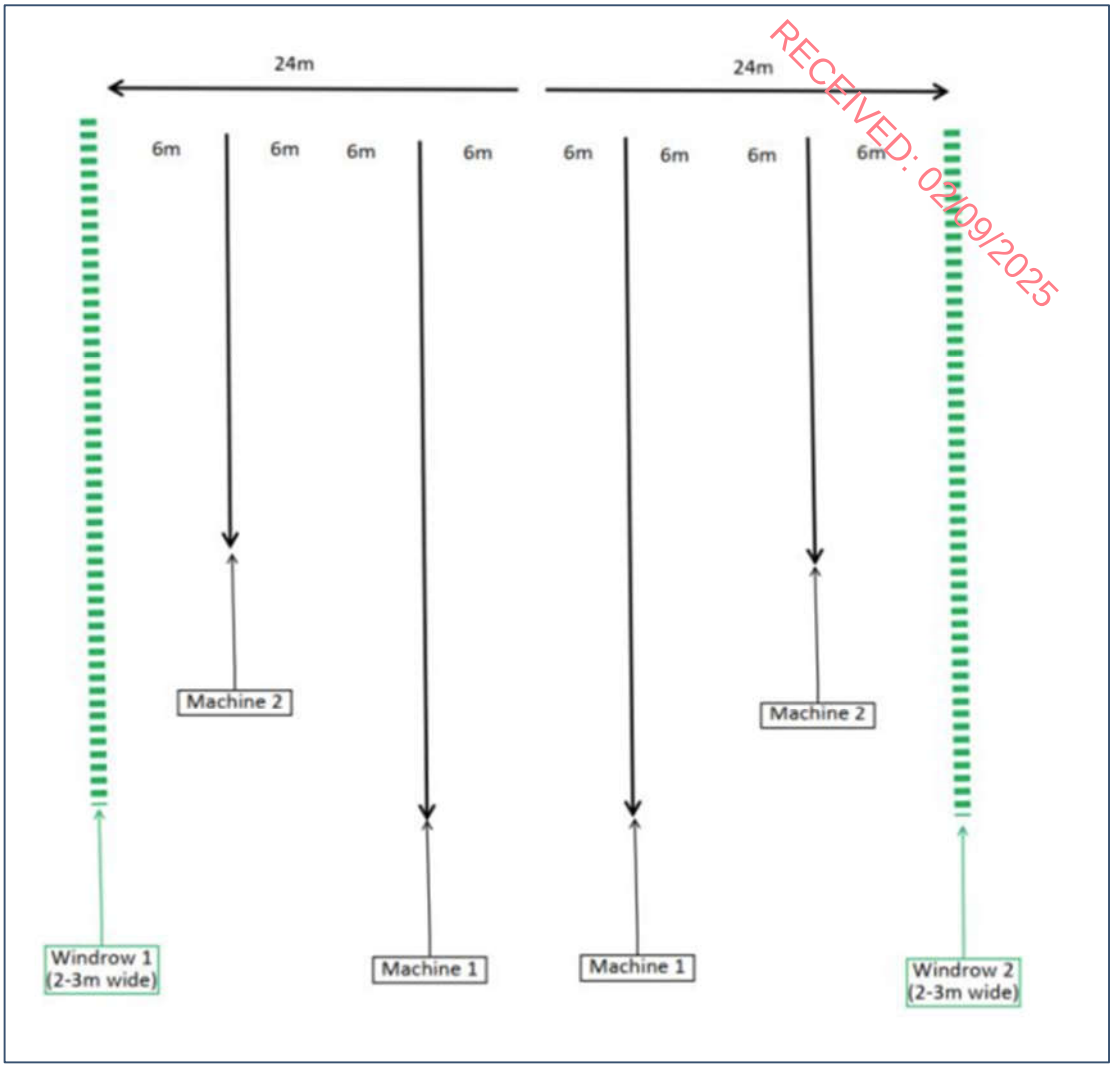


Figure 3-1. Windrows proposed at the Proposed Offsetting lands.

- **Area 2**

  - The timber in Area 2 will be removed from site. The stands of timber are adjacent to the road network and as such the existing good quality heath habitat that occurs on the opposite side of this site at the Mount Eagle summit 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 (L10750).

  - 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.
- Permanently felled forestry (estimated total volume c. 2,000 ton) will be left on site at the storage area for 4-6 months to dry out.
- Following this, a chipping machine will be brought on site, with the felled trees being chipped and blown into lorries for onward delivery to biomass plants.

- The existing areas dominated by remnant heath vegetation within firebreaks and along access tracks will be preserved by cordoning them off as 'no go' zones for machinery by a suitably qualified Ecological Clerk of Works (ECoW). No vehicle movements will take place within the existing large central firebreak of Area 1 (see Figure 3-2). This area comprises conifer plantation with some remnant wet heath habitat in the understory and failed areas of forestry. These areas will be retained as part of the Offsetting Plan. Vehicle movements will be restricted within the small north-south existing firebreaks.

- Self-seeding conifers originating as windblown seedlings from adjacent and nearby commercial conifer plantations, are a threat to the viability of the Proposed Offsetting. They gradually take hold, and if unmanaged, would eventually make the area unsuitable for nesting/foraging hen harrier. Habitat maintenance of the area will involve the eradication of self-seeding conifers, and removal off-site. It is envisaged that the Proposed Offsetting lands will require maintenance twice during the Proposed Lifetime Extension period, once after approximately 5 and 10 years. Similarly should birch spp. self-seed into these Proposed Offsetting lands they will be coppiced during the same visits. The monitoring outlined in Section 5 below will monitor the level of encroachment by self-seeding conifers and will bring the scheduled removal forward as required.

- Some small stands of rhododendron (*Rhododendron Ponticum)* were recorded within Areas 1, 2 & 4 of the Proposed Offsetting Lands during site visits in January 2025 (see Section 6.6.2 of Chapter 6 Biodiversity of the EIAR for locations). Measures for the management of rhododendron within the Proposed Offsetting Lands are outlined below.

    - A pre-commencement survey for Rhododendron will be carried out within Areas 1, 2 and 4 of the Proposed Offsetting Lands to determine the extent and locations of Rhododendron prior to the Proposed Offsetting Measures taking place.
    - All Rhododendron plants will be geolocated.
    - A cut will be made at the base of each stem of each Rhododendron plant, after which a herbicide (glyphosate) will be applied to cut.
    - Plants will be left in place and revisited for repeat treatment after 6 months.
    - Rhododendron plants will not be interfered with during the deforestation operations in Areas 1, 2 and 4.
    - After 1 year all, Rhododendron plants will be revisited to assess the effectiveness of treatment.
    - If Rhododendron plants are dead, they will be cut at the base and left on site to decompose.
    - If Rhododendron plants are alive then another treatment cycle as outlined above will be undertaken.

- An invasive species survey of Areas 1, 2 and 4 of the Proposed Offsetting Lands will be carried out each year following the Proposed Offsetting Measures for 10 years (2026-2036). This survey will be carried out by a competent ecologist. Any new areas of Rhododendron will be geolocated and subject to treatment.
- If seedling Rhododendron are identified during the yearly invasive species surveys, hand removal of emerging seedlings can be conducted in order to deal with any residual rhododendron.
- After 2036, the Applicant will commission an ecologist with the relevant experience to undertake invasive species surveys at 5-year intervals with a key focus on identifying Rhododendron seedlings or plants for removal.

- Due to soil conditions within Areas 1, 2 & 4, as informed by the Peat Stability Risk Assessment, deforestation will be carried out when ground conditions are dry. It is therefore anticipated that deforestation works will commence in August, in order to both avoid the core bird nesting season (i.e. March – July[7]) and coincide with suitable ground conditions. The works are anticipated to be undertaken over a period of one to two months. Surveys are currently on-going of the Proposed Offsetting Lands in breeding season 2025, and results from these surveys will inform these works. Pre-commencement monitoring is also included as part of this plan, detailed in Appendix 7-8 Bird Monitoring Programme. In summary, surveys will include a thorough walkover survey within a 500m radius of the works areas, where access allows, in addition to breeding raptor surveys undertaken at two vantage points overlooking the Proposed Offsetting Lands. If breeding activity of birds of high conservation concern is identified, no works shall be undertaken within a species-specific buffer in line with best practice (Forestry Commission Scotland, 2006; Goodship and Furness 2022; Ruddock and Whitfield, 2007), until it can be demonstrated that the nest is no longer occupied.
- 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 Offsetting 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 Offsetting Lands, the Applicant will provide for the protection of the nest site.
- The use of poisons or stupefying baits is not permitted within Proposed Offsetting 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 1 and 4 (as detailed in Tables 3-1 and 3-2) 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 1, 2, or 4. The scrub will be distributed throughout the deforestation areas.

[7] *Irwin* et al. *(2011). The breeding biology of Hen Harriers Circus cyaneus in Ireland over a five year period. Irish Birds 9: 165-172.*

- 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)*

3.2.4 Permanent Predator Exclusion Fencing

Overview

Hen harrier nests are prone to predation by mammalian and avian predators (Baines & Richardson, 2013[8]). The predation of nests has been identified as a threat/pressure to hen harrier in Ireland as per the Hen Harrier Threat Response Plan (*Medium* ranking), with a total of 20% of breeding failures being attributed to predation during the 2015 National Hen Harrier Survey. As such, this Offsetting Plan includes measures to protect potential nesting hen harrier from predation by ground predators. This is to be achieved by the installation of a permanent predator exclusion fence surrounding the identified highest quality nesting habitat within the Offsetting lands. This identified area comprises the entirety of the existing central firebreak within Area 1 (as outlined in Figure 3-2 further below). A representative image of the existing habitat within this area is shown in Plate 3-1 below.

The following measures will be undertaken:

- The Applicant will engage a suitably experienced contractor to supply and install the fence to the specifications detailed in the following section.
- The fence will be installed immediately post- deforestation.
- A monitoring visit will be carried out each year to assess the condition of the fence and identify any areas for repair / replacement, in addition to assessing the habitat within the fenced area. These monitoring visits will inform the need for habitat management (e.g. tree removal, thinning etc,) to ensure the habitat within the fenced area remains viable as nesting habitat for hen harrier.

[8] *Baines, D. & Richardson, M. 2013. Hen harriers on a Scottish grouse moor: multiple factors predict breeding density and productivity. J. Appl. Ecol. 50: 1397–1405*

Plate 3-1. Representative picture of existing central firebreak within Area 1 where permanent predator exclusion fencing is proposed.

Specification

The fence specification has been chosen in order to successfully exclude ground predators potentially present in this area (e.g. Red Fox, Badger, Otter, American Mink, Irish Stoat and Pine Marten). The NPWS, as part of recent conservation measures within the Termoncarragh Lake and Annagh Marsh SPA, have provided detailed specifications for permanent predator exclusion fencing for this specific purpose[9]. The proposed permanent predator exclusion fencing within the offsetting lands has therefore been designed based on these specifications, as detailed below. Images of example permanent predator exclusion fencing to a comparable specification are provided in Plates 3-2 and 3-3 further below for illustrative purposes.

Construction of the proposed fence structure will be to the following specifications:

- Strainer posts shall be a minimum of 3.5m long, have a minimum diameter of 15cm and shall be driven a minimum of 90cm into the ground. Strainers shall be placed at the beginning and end of every length of fencing and at ever change of direction where the angle is greater than 30°. Strainers must also be used to accommodate any significant change in gradient and be strutted in the line of the fence. Strainers on 90° corners must be H framed and strutted. Maximum distance between strainer posts shall not exceed 100m. Strainers shall be incised (posts to be treated in accordance with IS 436);
- Intermediate posts shall be around 2.5m long, have a minimum diameter of 10cm and shall be driven a minimum of 60cm into the ground.
- Intermediate posts shall be spaced at no more than 2.5m intervals and be H framed on every change of direction. Posts shall be incised (posts to be treated in accordance with IS 436);

[9] *NPWS (2023). Screening for Appropriate Assessment. Adoption of necessary conservation measures within Termoncarragh Lake and Annagh Marsh Special Protection Area in accordance with Regulation 42A EC (Birds and Natural) Habitats Regulations 2011-2021. Available at https://assets.gov.ie/static/documents/2023-11-07-eau-adoption-of-ncm-termoncarragh-lake-23-134.pdf*

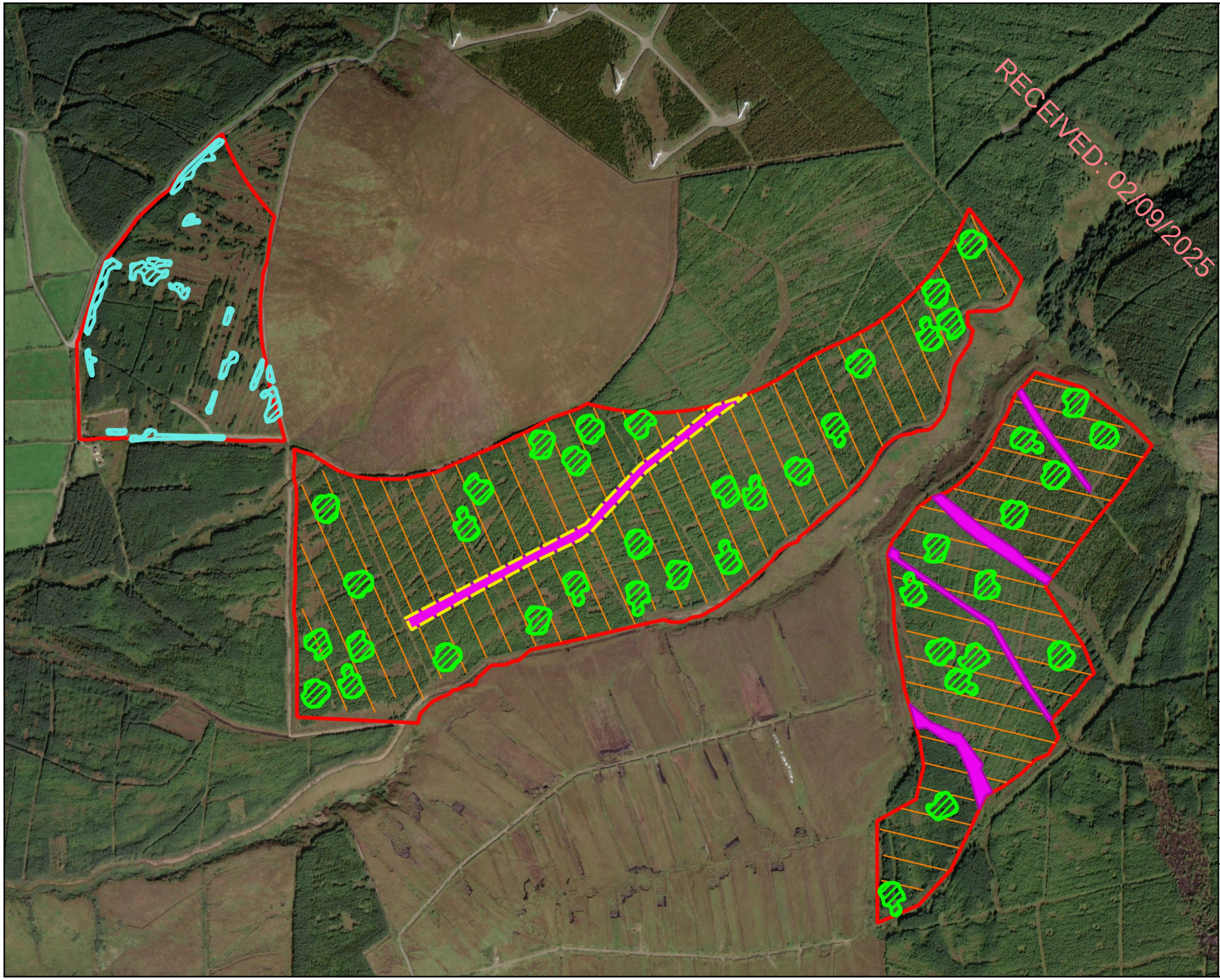
- High tensile 1580mm Tornado badger wire R15/158/5, to a height of 130cm off the ground forms the main body of the fence; the bottom 28cm is to be buried;
- The Tornado badger wire is to be overlain with 16-gauge, hot dipped galvanised 25mm square weld mesh (clipped to the top of the badger wire using hog rings) and both are to be dug in (by pulling back and relaying the sod) to prevent animals digging under the fence.
- Four strands of high tensile 12-gauge electric wire, tensioned and placed along the outside of the fence at 3cm, 15 cm and 25cm height above the top of the badger wire using UV resistant screw insulators. A fourth strand to be attached above these via 20cm UV resistant offset insulators to give total fence height of around 170cm. All strands connected to a single circuit although the second line at 15cm is an Earth wire. An additional live wire, connected to the single circuit, to be attached using UV resistant screw insulators on the inside of the fence at around 100cm to stop stock rubbing on posts;
- All wire to be connected using Gripple wire joiners;
- All access gates should be a minimum of 3.6m wide and at least 1.2 m high. All steel gates shall be hot dip galvanised in accordance with EN 1461 and 12 be overlain with 16-gauge, hot dipped galvanised 25mm square weld mesh, square cornered at bases and with hot dipped galvanised 45° angled brackets attached at top and overlain with same hot dipped galvanised weld mesh. Hot dipped galvanised gate post, concreted in, to be used and these to be independent of any strainer / fence post (two gates already have galvanised gate posts, and these can remain and be used). Gates to be hung using suitably sized proprietary gate hangers and the gate base shall be around 3cm above the ground. The gates also must be fitted with an adequate system which shall securely keep the gate closed. Handle openings must be secured against predators. Each gate to have a poured concrete apron buried (25-30cm) under the gate to prevent digging;
- Insulated underground cable (IB5) is to be buried under each gate, connecting the electric wires either side and ensuring the fence remains live when gates are opened;
- There are no watercourse flow points within the proposed predator exclusion fence area. However, at any gullies or other similar depressions where deemed required, dams to prevent otter / mink access whilst maintaining flow through will be installed. To use a 300mm twin wall corrugated unperforated drainage pipe and 10-15cm or similar crushed rock. Ensure to incorporate buried Tornado badger wire above. At each pipe ends use hot dipped galvanised 25mm square weld mesh in a frame secured to the pipe to prevent animals gaining access but at same time allows for the mesh to be removed easily to clear debris. In addition, fix a section of Tornado badger wire across the watercourse width, around 5m upstream of the drainage pipe to act as a catch point to keep most debris away from the 25mm square weld mesh panel at the pipe end; and,
- Supply and installation of a solar panelled fencer (PEL Unigizers - High Power Solar Fencers - PE406S or similar) and 4 x 1.5m earth bars.

Plate 3-2. Example predator-proof fencing broadly in-line with proposed specifications (for illustrative purposes only)[10].

Plate 3-3. Example predator-proof fencing and access gate broadly in-line with proposed specifications (for illustrative purposes only. source - as per above).

Note: Figure 3-2 overleaf shows the indicative plan of measures for Areas 1, 2 & 4. This is purely for illustrative purposes only in order to broadly present the suite of proposed measures within the context of the Proposed Offsetting Lands. The placement of some of these measures (e.g. proposed scrub patches and windrow placement) will be subject to site-specific assessment prior to implementation and will therefore be subject to change.

[10] *Source* - https://www.fencingpeople.com/gwts-gallery/predator-proof-fencing-buncrana-co-donegal/


RECEIVED: 02/09/2025
Map Legend
Proposed Offsetting Lands
Existing Firebreaks to be Retained
Existing Areas of Scrub to be Retained
Scrub Patches to be Planted
Predator Exclusion Fence
Windrows
Microsoft product screen shots reprinted with permission from Microsoft Corporation
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Drawing Title
Indicative Plan of Measures for Areas 1, 2 & 4
Project Title
Taurbeg Wind Farm Extension of Operational Life
Drawn By
D. Woods
Checked By
P. Cregg
Project No.
231030
Drawing No.
Fig. 3-2
Scale
1:10,000
Date
10.04.2025
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3.3 Restoration of Farmland for Hen Harrier (Area 3)

In addition to the forestry removal areas, local landowners have been engaged to manage their land for the benefit of hen harrier. The farmland is predominantly wet grassland (GS4) 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 which grade in to dry-humid acid grassland (GS3). A full description of existing habitats in Area 3 is provided in Chapter 6 Biodiversity, Section 6.6.2.

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 Offsetting lands, with a particular focus on habitats that support prey species. This guiding principle will be achieved as detailed in Table 3-4.

Table 3-4. Area 3 restoration timeline

Phase	Year	Habitat	Habitat Value	Action	Responsibility
Preparation	Immediately Post-Consent	Wet grassland with evidence of past improvement. The area has been managed for grazing under a typical continuous grazing regime. Continuous grazing regimes favour vigour species like ryegrass which can dominate at the expense of sward diversity and structure. Hedgerows gappy particularly on the northern boundary.	Low ecological value.	1. Hedgerow species planted	Taurbeg Ltd 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 ecological value	1. Rotational grazing regime. 2. Wildlife crop sowing 3. Cease fertilising	Taurbeg Ltd 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	1. Rotational grazing regime. 2. Annual wildlife crop sowing. 3. Cease fertilising	Taurbeg Ltd 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 Extension of Operational Life	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	1. Rotational grazing regime. 2. Annual wildlife crop sowing. 3. Cease fertilising	Taurbeg Ltd will commission a contractor to plant the wildlife crop. The contractor / tenant will implement a rotational grazing regime and cease the application of fertiliser.

After decommissioning	Ongoing (permanent)	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	1. Rotational grazing regime. 2. Annual wildlife crop sowing. 3. Cease fertilising	Taurbeg Ltd will commission a contractor to plant the wildlife crop. The contractor / tenant will implement a rotational grazing regime and cease the application of fertiliser. Taurbeg Ltd will commission an ecologist with relevant experience to undertake the habitat survey at 5-year intervals.

In practice the Proposed Offsetting Measures will be achieved as outlined in the next section.

3.3.1 Grazing Regime

The hen harrier project field guidance[11] 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 would be a requirement of the grazing regime:

- A rotational grazing regime.
- In practice, this would mean that the grassland would 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 would be achieved would be to split the c. 17ha of pasture 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 should not be in a paddock for more than 4 days. After the fourth day, animals are moved between paddocks. Each vacated paddock must then be rested for 40 days minimum.
- Solar electric fencing can be useful if a mains supply is not available.

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 must be left in situ until March 15th the following year, but its location can alternate between years. Crop strip must 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 can 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 can be carried out by hand, e.g. seed sowing, fertiliser, and lime application. No herbicide or fungicide application is required.

The wildlife crop is proposed to be planted along the entirety of the western edge of the existing agricultural field in Area 3, on the sheltered side of the existing woodland strip.

The costs of these measures will be borne by the Applicant.

3.3.3 Scrub and Hedgerows

Hen harrier shows 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

[11] *Hen Harrier Programme Field Guidance for scoring Species Rich Grassland Ver. 2 June 2021* http://www.henharrierproject.ie/HHPSRGGuidance.pdf *(last accessed 9th May 2024)*

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 should contain a minimum of two (woody plant) species per 10 metres. Suggested woody plant species could 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;
- 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. The entirety of the northern boundary hedgerow of Area 3 is proposed for this intervention.

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.

At present the area is not being dominated by rushes and as such no management is proposed in the short term but this situation will be monitored throughout the period. If rush cover exceeds 70% management will be implemented.

3.3.5 Cessation of Fertiliser Application

This area is currently used for grazing. The requirements for cessation of the application of fertilisers (if an would aim 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 Proposed Offsetting Plan will be implemented prior to the commencement the Proposed Lifetime Extension. The Proposed Offsetting Lands have been bought by the applicant. The Proposed Offsetting Plan measures will be implemented as follows.

Areas 1, 2 & 4

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 Offsetting Plan for Areas 1,2 & 4.
3. Site-specific felling methods have been devised between SWS Forestry and MKO. Deforestation works within Areas 1, 2 & 4 are anticipated to take approximately one to two months. Due to soil conditions at the site, as informed by the Peat Stability Risk Assessment, deforestation will be carried out when ground conditions are dry. It is therefore anticipated that deforestation works will commence in August, in order to avoid the core bird nesting season (i.e. March – July).

Area 3

1. The Applicant will engage a suitably qualified tenant / contractor to carry out the measures as detailed in Section 3.3.
2. A meeting will be held with the tenant / contractor to outline the general aims, objectives and requirements of the Offsetting Plan for Area 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

Applicant has bought the Offsetting lands that allows them to implement 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).

The applicant (Taurbeg Ltd) will appoint a group/body to oversee 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 appointed group/body will operate independently of the developer and will be responsible for providing the landowner with an agricultural consultant and ecologist.

The agents/group appointed by Taurbeg Ltd will be responsible for preparing and overseeing the preparation of the Farm Plan and a specific suite of measures for the areas of forestry. The agents/group will also assume responsibility 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 Proposed Lifetime Extension.

Taurbeg Ltd will assume overall responsibility for the implementation of the proposed measures through appointing agents/group that includes agricultural and ecological specialists. All of which will be in strict accordance with measures outlined in Sections 3.2 and 3.3. Taurbeg Ltd will be responsible for agreed payments of specialist agents / group and payment for provision of materials etc. as set out in the lease options. Taurbeg Ltd 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 Lifetime Extension receives a grant of planning permission the next steps from the perspective of implementation of the Offsetting Plan are as follows:

1. Prepare the tender documents and issue tender notice for the agricultural and ecological specialists to administrate and implement the Proposed Offsetting Measures.
2. Appoint the successful tenderer and agree final terms including scope of work.
3. Apply for felling licence for forestry in Areas 1, 2 & 4.
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 Offsetting lands.
6. Meeting with the appointed tenant / contractor of Area 3 to detail required measures under the plan.

5. MONITORING

The plans will be the subject of ongoing monitoring to assess the effectiveness of the measures proposed and employed 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 7-8 Bird Monitoring Programme. In summary, the monitoring measures at the Proposed Offsetting Lands will include:

- **Breeding raptor surveys**: The Proposed Offsetting Lands will be the subject of ongoing bird monitoring during Proposed Lifetime Extension 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, in each monitoring year at the Proposed Offsetting 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**: Areas 1, 2, 3 & 4 of the Offsetting lands should be accurately mapped and should be 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 lands will be scored based on the Hen Harrier Project scorecards for Bog and Heath (Areas 1, 2 & 4) and Wet Grassland (Area 3). Scoring will be carried out based on the methods outlined in the Hen Harrier Project guidance documents[12] 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 Offsetting Lands. Data will be recorded prior to the commencement of the Offsetting Plan 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 yearly following the commencement of the plan in place to establish the extent of habitat improvement resulting from management practices.

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

[12] *Wet 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

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

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 Offsetting Plan. 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 create favourable foraging habitat for hen harrier. The removal of the forestry will improve connectivity between hen harrier foraging habitats present within the SPA. The dynamic management approach proposed will be monitored to both ensure as many benefits as possible are provided for hen harrier and to contribute to advances in habitat management methods.

BIBLIOGRAPHY

Allison, M. and Ausden, M. 2006. Effects of removing the litter and humic layers on heathland establishment following plantation removal. – *Biol. Conserv.* **127**: 177–182.

Andrén H (1994) Effects of habitat fragmentation on birds and mammals in landscapes with different proportions of suitable habitat: a review. *Oikos* 71:355–366.

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: 48-55.

Bakker, J., Poschlod, P., Strykstra, R., Bekker, R. and Thompson, K. 1996. Seed banks and seed dispersal: important topics in restoration ecology. – *Acta Bot. Neerl.* **45**: 461–490.

Batary, P. and Baldi, A. (2004) Evidence of an edge effect on avian nest success. *Conservation Biology* 18: 389–400.

Council Directive 92/43/EEC 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

Council Directive 2009/147/EC 30 November 2009 on the conservation of wild birds.

Council Directive 2014/52/EU 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment.

EPA (2022). Guidelines on the information to be contained in Environmental Impact Statement reports. Environmental Protection Agency, Johnstown Castle Estate, Wexford.

Forestry Commission Scotland (2006). Forest operations and birds in Scottish forests – the law and good practice. Forestry Commission Scotland, Scotland.

Goodship, N.M. and Furness, R.W. (2022) Disturbance distances review: an updated literature review of disturbance distances of selected bird species. Research Report 1283, NatureScot, Inverness, Scotland.

Hen Harrier Programme Field Guidance for scoring Bog and Heath Ver. 2 June 2021

Hen Harrier Programme Field Guidance for scoring Species Rich Grassland Ver. 2 June 2021

Henning, K., Oheimb, G., Härdtle, W., Fichtner, A. and Tischew, S. 2017. The reproductive potential and importance of key management aspects for successful *Calluna vulgaris* rejuvenation on abandoned continental heaths. – *Ecol. Evol.* **7**: 2091–2100.

Iren Saure, H., Reidar Vetaas, O., Hassel, K. and Vandvik, V. (2024), Restoring heathlands after afforestation on two islands in western Norway. Nordic Journal of Botany, 2024.

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.

Manolis., J. C., Andersen, D. E. and Cuthbert, F. J. (2002). Edge effect on nesting success of ground nesting birds near regenerating clearcuts in a forest dominated landscape. *The Auk* 119(4): 955-970.

Mazgajski TD and Rejt L (2005) Forest fragment size affects edge effect in nest predation– experiment with artificial nests. *Polish Journal of Ecology* 53: 233–242.

NPWS (2023). Screening for Appropriate Assessment. Adoption of necessary conservation measures within Termoncarragh Lake and Annagh Marsh Special Protection Area in accordance with Regulation 42A EC (Birds and Natural) Habitats Regulations 2011-2021.

NPWS (2024). Hen Harrier Threat Response Plan 2024-2028. Department of Housing, Local Government and Heritage.

O'Donoghue, B. G. (2010) The Ecology and Conservation of Hen Harriers (Circus cyaneus) in Ireland: PhD Thesis submitted to University College Cork.

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.

Pywell, R. F., Pakeman, R. J., Allchin, E. A., Bourn, N. A. D., Warman, E. A. and Walker, K. J. 2002. The potential for lowland heath regeneration following plantation removal. – *Biol. Conserv.* **108**: 247–258.

Ruddock, M., Mee, A., Lusby, J., Nagle, T., O'Neill, S. & O'Toole, L. (2016). 2015 Hen Harrier post hoc analyses. A report prepared for National Parks & Wildlife Service of the Department of Arts, Heritage & the Gaeltacht

Ruddock, M., Wilson-Parr, R., Lusby, J., Connolly, F., J. Bailey, & O'Toole, L. (2024). The 2022 National Survey of breeding Hen Harrier in Ireland. Report prepared by Irish Raptor Study Group (IRSG), BirdWatch Ireland (BWI), Golden Eagle Trust (GET) for National Parks & Wildlife Service (NPWS). Irish Wildlife Manuals, No. 147. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.

SNH (2009). Monitoring the impact of onshore wind farms on birds. Scottish Natural Heritage, Inverness, Scotland.

Scottish Natural Heritage (2016). Assessing Connectivity with Special Protection Areas (SPAs) Version 3.

Walker, K. J., Warman, E. A., Bhogal, A., Cross, R. B., Pywell, R. F., Meek, B. R., Chambers, B. J. and Pakeman, R. 2007. Recreation of lowland heathland on ex-arable land: assessing the limiting processes on two sites with contrasting soil fertility and pH. – *J. Appl. Ecol.* **44**: 573–582.

Wilson, M., Gittings, T., O'Halloran, J., Kelly, T., & Pithon, J. (2006). The distribution of Hen Harriers in Ireland in relation to land use cover, particularly forest cover. *COFORD Connects Note, Dublin*

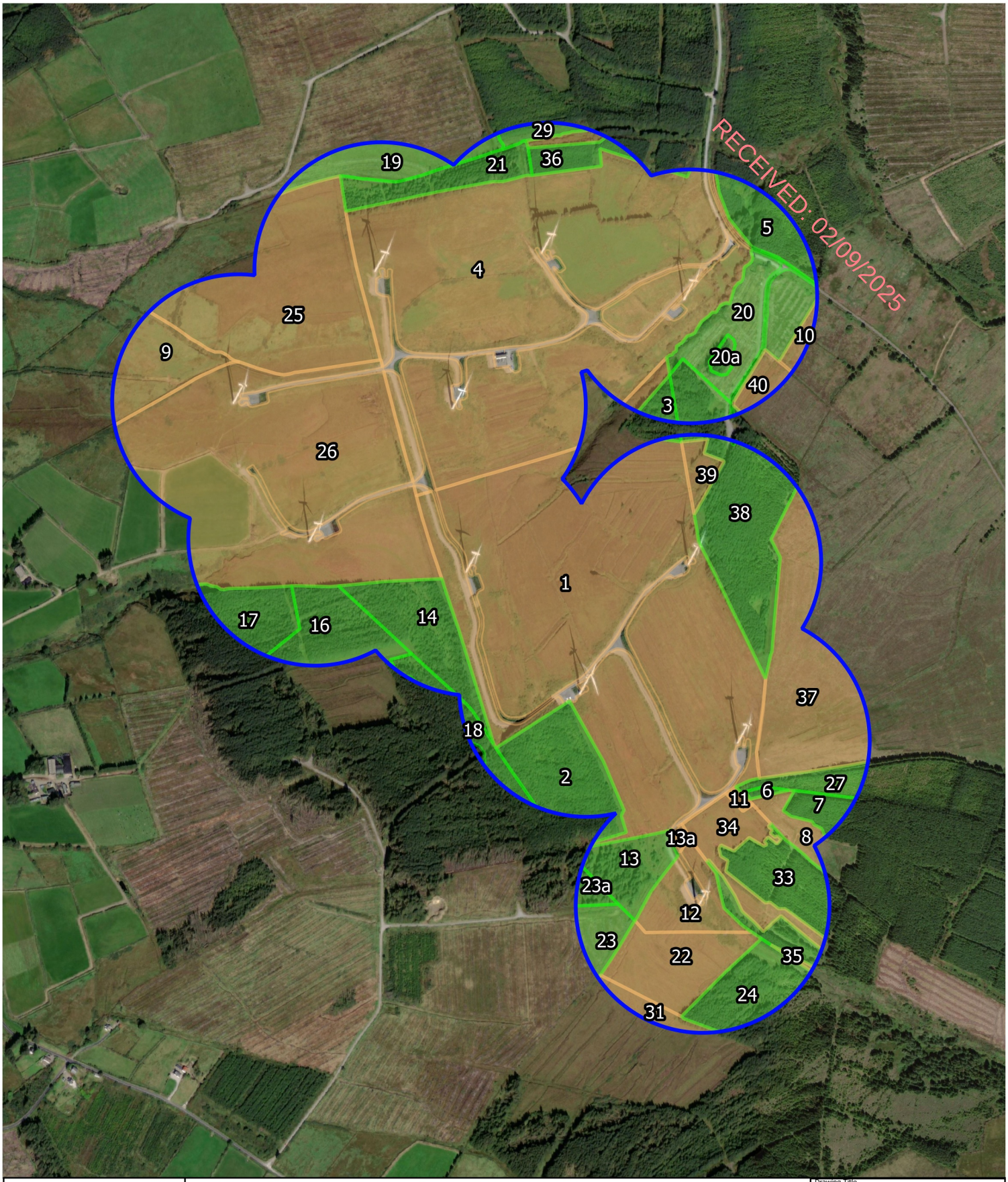
Wilson, M., Irwin, S., O'Donoghue, B., Kelly, T., & O'Halloran, J. (2010). The use of forested landscapes by Hen Harriers in Ireland. *COFORD: Dublin, Ireland.*

Wilson, M., Fernandez-Bellon, D., Irwin, S. and O'Halloran, J. (2015) The Interaction between Hen Harrier and Wind Turbines. School of Biological Earth & environmental Sciences. University College Cork.

APPENDIX A

HABITAT LOSS CALCULATION

Contents



Map Legend

Lands within 250m of Existing Turbines

- Forestry
- Open

N

Microsoft product screen shots reprinted with permission from Microsoft Corporation

Drawing Title	Habitat Loss Calculation Lands
Project Title	Taurbeg Wind Farm Extension of Operational Life
Drawn By: D. Woods	Checked By: P. Cregg
Project No.: 231030	Drawing No.: Appx. A - Fig. 1
Scale: 1:10,000	Date: 19.06.2025

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			Forestry Information				10 Year Extension of Operational Life											
Area Reference Number	Habitat	Area (Ha)	Forestry Y/N?	Planting Year (Where Available)	Expected Felling Year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	Totals (Ha)
1	Open	32.03	N			32.03	32.03	32.03	32.03	32.03	32.03	32.03	32.03	32.03	32.03	32.03	32.03	
2	Forestry	3.49	Y	1987	c.2040													
3	Forestry	0.40	Y	-	2032									0.40	0.40	0.40	0.40	
4	Open	32.81	N			32.81	32.81	32.81	32.81	32.81	32.81	32.81	32.81	32.81	32.81	32.81	32.81	
5	Forestry	1.77	Y	1989	2034											1.77	1.77	
6	Forestry	0.10	Y	1991	c.2036													
7	Forestry	0.71	Y	1991	c.2036													
8	Open	0.85	N			0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	
9	Open	2.57	N			2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	
10	Open	0.36	N			0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	
11	Open	0.11	N			0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	
12	Open	2.03	N			2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	
13	Forestry	1.85	Y	1987	c.2040													
13a	Open	0.09	N			0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	
14	Forestry	3.08	Y	1987	c.2040													
16	Forestry	2.58	Y	2020	c.2055	2.58	2.58	2.58	2.58	2.58								
17	Forestry	1.81	Y	1987	c.2035												1.81	
18	Forestry	1.04	Y	1987	c.2035												1.04	
19	Forestry	1.90	Y	-	2062	1.90	1.90											
20	Forestry	3.71	Y	-	2063	3.71	3.71	3.71										
20a	Forestry	0.24	Y	-	2032									0.24	0.24	0.24	0.24	
21	Forestry	1.89	Y	-	2032									1.89	1.89	1.89	1.89	
22	Open	3.17				3.17	3.17	3.17	3.17	3.17	3.17	3.17	3.17	3.17	3.17	3.17	3.17	
23	Forestry	1.03	Y	2017	c.2050	1.03	1.03											
23a	Forestry	0.34	Y	1987	c.2040													
24	Forestry	2.38	Y	-	2032									2.38	2.38	2.38	2.38	
25	Open	9.59	N			9.59	9.59	9.59	9.59	9.59	9.59	9.59	9.59	9.59	9.59	9.59	9.59	
26	Open	20.47	N			20.47	20.47	20.47	20.47	20.47	20.47	20.47	20.47	20.47	20.47	20.47	20.47	
27	Forestry	0.96	Y	1991	2036													
28	n/a																	
29	Forestry	0.44	Y	-	2048													
31	Open	0.67	N			0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	
32	n/a																	
33	Forestry	3.23	Y	1987	c.2030-2035										3.23	3.23	3.23	
34	Open	2.05	N			2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	
35	Open	0.05	N			0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	
36	Forestry	0.88	Y	2003	2036													
37	Open	6.86	N			6.86	6.86	6.86	6.86	6.86	6.86	6.86	6.86	6.86	6.86	6.86	6.86	
38	Forestry	6.18	Y	1987	c.2030							6.18	6.18	6.18	6.18	6.18	6.18	
39	Open	0.62	N			0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	
40	Open	0.65	N			0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	

																Total of 10 years	1224.33
																Average over 10 years Extension of Life	122.43
					Annual Totals		124.20	121.27	117.56	117.56	114.98	121.16	121.16	126.07	129.30	131.07		
					Forestry		9.22	6.29	2.58	2.58	0.00	6.18	6.18	11.09	14.32	16.09		7.45
					Open		114.98	114.98	114.98	114.98	114.98	114.98	114.98	114.98	114.98	114.98		114.98
							124.20	121.27	117.56	117.56	114.98	121.16	121.16	126.07	129.30	131.07		