Derreenacrinnig West Wind Farm

Habitat Management Plan (HMP)

Doherty Environmental Consultants Ltd.

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Derreenacrinnig West Wind Farm

Habitat Management Plan

Document Stage	Document Version	Prepared by
Final	1	Pat Doherty MSc, MCIEEM

CONTENTS

1 Introduction

Doherty Environmental Consultants (DEC) Ltd. have been commissioned by Dreenacrinnig West Wind Farm Ltd. to prepare a Habitat Management Plan (HMP) for the proposed Derreenacrinnig West Wind Farm in Co. Cork.

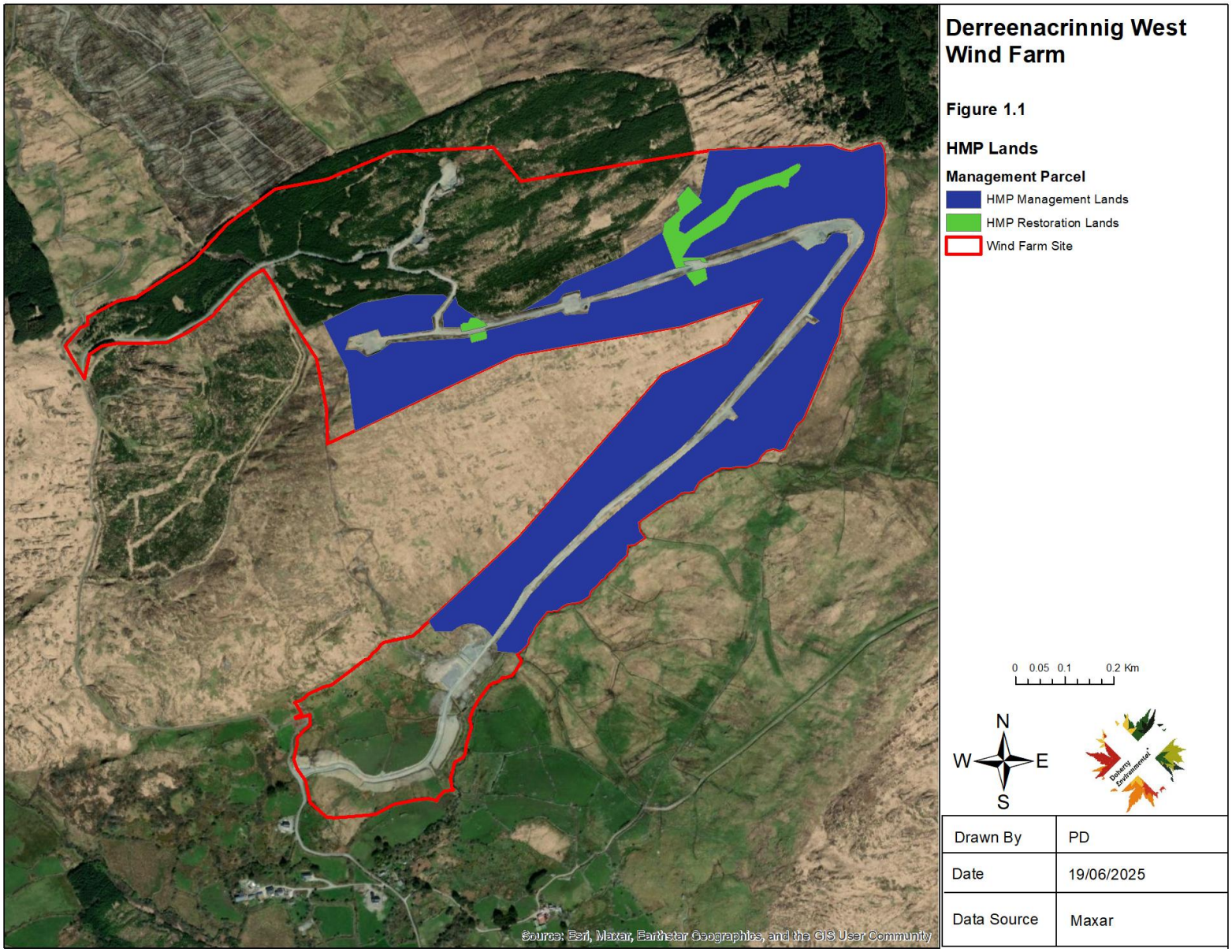
This HMP has been prepared for lands occurring within the Redline Boundary of the Derreenacrinnig West Wind Farm Site that does not fall under the permanent wind farm infrastructure footprint. The location of the HMP Lands is shown on **Figure 1.1**. The HMP Lands that will be subject to habitat management amount to c. 37.5Ha. The target habitat occurring in the HMP Management Lands are semi-natural acid grassland and dry/ montane heath and wet heath habitat.

The HMP Lands are made up of two distinct area parcels to be referred to as the HMP Management Lands and HMP Restoration Lands. The HMP Management Lands amount to c. 36 Ha and are all area of heath/bog habitat occurring within the Redline Boundary of the wind farm site. These are shown on **Figure 1.1**. The HMP Restoration Lands amount to c. 1.5 Ha and represent all areas of previously installed hardstanding that are now not required for the proposed wind farm site. These areas are shown on **Figure 1.1**.

The HMP Management Lands and HMP Restoration Lands will be managed throughout the lifetime of the wind farm with a view to restoring and maintaining wet and montane heath habitat that corresponds to structure of Annex 1 quality wet heath.

It is noted that none of the lands currently included in the c. 36 Ha of HMP Management Lands are managed under any nature conservation schemes, and thus there are no restrictions to land management practices, which is evident by virtue of excessive livestock grazing pressure, throughout the Site, in within areas of lower elevation and level ground within the HMP Management Lands. The implementation of this HMP as part of the overall Derreenacrinnig West Wind Farm project provides an opportunity to manage and conserve the area of wet and montane heath habitat occurring within the HMP Management Lands, as well as the HMP Restoration Lands for the lifetime of the Proposed Development.

The wind farm operator will, throughout the lifetime of the wind farm, ensure the implementation of the actions specified within the HMP. Pursuant to the terms and conditions of the lease agreements on site, the landowners must comply with all necessary actions and precautions required by the wind farm operator for the implementation of this HMP.


Derreenacrinnig West Wind Farm
Figure 1.1
HMP Lands
Management Parcel
HMP Management Lands
HMP Restoration Lands
Wind Farm Site
0 0.05 0.1 0.2 Km
N
W
E
S
Drawn By PD
Date 19/06/2025
Data Source Maxar
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

2 Purpose of the HMP

The purpose of this HMP is to provide detailed descriptions of the locations, methods and activities of habitat restoration and maintenance that will:

a) restore acid grassland and, dry and montane heath within the HMP Restoration Lands that consist of lands associated with the previously development area of made ground now not required as part of the proposed wind farm footprint;
b) maintain and/or restore areas of heath/bog vegetation occurring within the HMP Management Lands so as to improve the overall conservation condition of heath/bog habitat within the wind farm site boundary.

In order for this HMP to be meaningful, the aims and objectives of habitat restoration and management for each part of the Site are described. This is necessary to:

a) make sure that expectation levels for the quality of legacy habitat are realistic; and
b) ensure that post habitat restoration monitoring is adequately prescribed.

The implementation of the HMP will mitigate for the loss of habitats to the Proposed Development and will provide for a net increase in the extent of heath habitat at favourable conservation condition.

3 Scope of HMP

The HMP sets out the following:

1. Details of habitat management area;
2. Details of regular monitoring of habitat management measures using fixed quadrat locations;
3. Appropriate maps, clearly identifying habitat management areas;
4. Detailed methodology and prescriptions of habitat management measures, including timescales and with defined criteria for the success of the measures; and
5. Details of the production of regular monitoring reports to be submitted to the Planning Authority at years 1, 2, 3, 5, 7, 10, 15, 20, 25, 30, 35 & 40 which will include details of contingency measures should monitoring reveal unfavourable results.

4 Description of Derreenacrinnig West Wind Farm & HMP Management Lands

4.1 Overview of Location & Existing Land Cover

4.1.1 General Site Description

The Proposed Development is located within an agricultural and forested landscape, between Goulanes, Castledonovan, in Co. Cork. The nearest settlement is the village of Drimoleague which is situated 5.1km to the southeast of the Site. The Site is located 10.5km north-east of Bantry, Co. Cork and 10.9km west of Dunmanway. The Site is 14.2km south-east the county boundary between Cork and Kerry and is 59km west of Cork City.

The Site is located within the townland of Derreenacrinnig West. The Grid Connection development traverses the townlands of Derreenacrinnig West, Barnagowlane West, Glanareagh, Gortnacowly, Ards Beg, Ardrah, Laharanshermeen, Maulraha, Maulikeeve, Derryarkane, Cappanaboul, Skahanagh, Gortroe, Shandrum Beg, Shandrum More, Dromloughlin, Ballylicky, Crossoge, in Co. Cork.

Temporary works will be required to accommodate the delivery of the turbine components. These temporary works are included as part of this application and are located in the townlands of Castledonovan, Derreenacrinnig East, and Derreenacrinnig West. The Site extends to approximately 104 ha.

4.1.2 Habitats within the Wind Farm Site

The Site consists predominantly of exposed or thinly covered bedrock and a mosaic of wet heath/upland blanket bog. Areas of dry heath are found on elevated areas with exposed rock. A large conifer plantation occurs in the northern part of the site. An elevated ridge runs across the centre of the site in a north-east to south-west direction. Below this ridge, the site slopes off steeply to the south with more shallow peat soil. Vegetation along this slope indicates that there is a calcareous influence mostly likely due to the presence of glacial deposits. Peat depth across the majority of the site is >0.5m deep in particular on the southern slope. Blanket bog only occurs where the peat is >0.5m. This is mostly confined to the northern half of the site where deep peat is found in pockets.

Article 17 mapping for the distribution of Annex 1 habitats in Ireland (NPWS, 2019) has mapped to contiguous polygons of Alpine and Sub-Alpine heath occurring within the boundary of the wind farm site.

4.1.2.1 Wet heath HH3

The majority of the Site is characterised by wet heath habitat. Purple moor-grass (*Molinia caerulea*) is the dominant species with abundant Cotton grass (*Eriophorum vaginatum.*) also present. Stands of low-growing Western gorse (*Ulex gallii*), cross-leaved heather (*Erica tetralix*) and Ling (*Calluna vulgaris*) are also abundant in places. Moss cover is high in places and includes *Polytricum commune*, *Aulacomnium palustre* and *Sphagnum* species. Sedges including *Carex nigra* and *C. flacca* are also present. Other species include marsh lousewort (*Pedicularis palustris*), milkwort (*Polygala vulagris*). Stands of rushes (*Juncus effuses*) are also abundant throughout this habitat. On the southern slope black bog rush (*schoenus nigrans)* is abundant in places, indicating a calcareous influence. At the bottom of the slope some localised areas of flush occur in wetter areas.

In parts of the Site where peat depth is greater than 0.5m, wet heath grades into small pockets of habitat more characteristic of upland blanket bog (PB2). Vegetation is dominated by hares tail cotton grass, deergrass (*Scirpus cespitosus*) and ling. Cover of sphagnum mosses including *Sphagnum papillosum* and *S. capillifolium* is high in patches, particularly in a wet area. Such patches occur as discrete units within the overall wet heath habitat that dominates the land cover within the wind farm site not under the footprint of the existing wind farm infrastructure.

4.1.2.2 Dry siliceous heath (HH1)

Wet heath grades to dry siliceous heath habitat on elevated parts of the Site where exposed rock is present and peat soil is more free draining. The vegetation is dominated by ling (*Calluna vulgaris)* and bell heather (*Erica cinerea*) and grasses such as mat grass (*Nardus stricta*), sweet vernal (*Anthoxanthum odoratum*), couch grass (*Elymus sp*.) and meadow foxtail (*Alopecuris pratenis*). Such patches occur as discrete units within the overall wet heath habitat that dominates the land cover within the wind farm site, not under the footprint of the existing wind farm infrastructure.

4.1.2.3 Conifer plantation (WD4)

A large conifer plantation occurs in the northern part of the Site. It is a commercial forest consisting mostly of mature Sitka spruce (*Picea sitchensis*).

4.1.2.4 Upland rivers (FW1)

Two upland streams (FW1) drain the Site to the north and south. Both streams are characteristic of an upland eroding river channel with a substrate of bedrock and very little aquatic vegetation.

The upper sections of the Derreenacrinnig East Stream and the un-named stream draining the proposed wind farm site, are of low fisheries potential owing to their upland 1st-oder character with variable flow rates, subject to both flood and drying out. Downstream of the wind farm site, both streams provide suitable spawning habitat for salmonids and lamprey habitat.

The Ilen, Mealagh and Owvane Rivers downstream of the proposed wind farm site and crossed by the overhead line sections of the proposed Grid Connection route are important salmon rivers providing suitable habitat for all age classes of Atlantic salmon. Suitable lamprey habitat is also available throughout these watercourses.

4.1.2.5 Buildings and artificial surfaces (BL3)

Buildings and artificial surfaces occur within the wind farm site and is comprises of the existing wind farm access track and hardstand areas. The existing wind farm infrastructure on site was constructed during 2020 as part of the consented wind farm development. This habitat is artificial in nature and is generally devoid of vegetation.

4.2 Existing & Past Site Management

The dominant land use at the Site is for livestock grazing with both cattle and sheep. Sheep are the dominant livestock on heath/bog habitats dominating the land cover within the Site. Historic burning of heath/bog habitat was also practiced within the Site. This is indicated by the over-dominance of *Molinia caerulea* within much of the Site. The *Molinia* swards dominating the cover in much of the Site and particularly the south facing slopes of Derreenacrinnig West hill are characterised by dense and tussocky Molinia with a thick litter layer. This sward is considered to be representative of the Irish Vegetation Classification HE4D community Molinia caerulea – Potentilla erecta – Erica tetralix. This community is species-poor with expansive examples of this community on drier ground developing as a result of negative land use activities such as overgrazing by sheep or burning.

Both burning and excessive grazing are known to result in a decrease in ericoid cover and an increase in gramminoid cover and especially *Molinia caerulea*. Grazing pressure is currently considered to still exert a pressure on the favourable conservation status of heath/bog habitat within the Site.

5 Habitat Management, Restoration & Maintenance

Habitat restoration and maintenance will be achieved within the HMP Management Lands by securing landowner agreements on stock removal/management and avoidance damaging land management practices such as burning.

Dreenacrrrnig West Wind Farm Ltd. will work with the current landowners to manage areas of heath/bog with the HMP Management Lands and areas to be restored to acid grassland,heath within the HMP Restoration Lands so as to restore and/or maintain these lands at good conservation status for at least the lifetime of the Derreenacrinnig West Wind Farm development, which is predicted to be at least 40 years.

The techniques for habitat restoration/maintenance that will be implemented will comprise:

- **Restoration of heath vegetation around the development footprint after construction.** Habitat restoration will be targeted at areas of the temporary construction phase footprint in order to reinstate heath habitat. Techniques for restoration of heath will be implemented for the HMP Restoration Lands
- **Stock Management.** Dreenacrinnig West Wind Farm Ltd. will work with landowners to improve general land management and grazing regimes.
- **Fencing.** Fencing will be provided both during the construction and decommissioning phase and the operation phase of the wind farm site to promote heathland restoration and ongoing management.
- **Management Agreements with landowners** to prevent any ongoing damaging land management practices.

5.1.1 Restoration of Vegetation in HMP Restoration Lands

Habitat restoration will be targeted along the sections of previously installed hardstand not forming part of the proposed wind farm footprint.

In these areas, as shown on **Figure 1.1** the existing areas of permeable hardcore hardstand will be topped with a native substrate previously stripped from the existing hardstand footprint at Derreenacrinnig West and stored within the proposed wind farm site. Sufficient native overburden material is held within the wind farm site to provide an overburden substrate with a minimum depth of 200mm. This will provide suitable peat dominated substrate that will support the target sward of acid grassland/ dry/montane heath habitat.

A boundary berm enclosing the area of the HMP Restoration Lands will be provided so that all overburden material used to resurface the hardcore hardstanding is kept in place and eliminates the potential for material loss as a result of runoff etc.

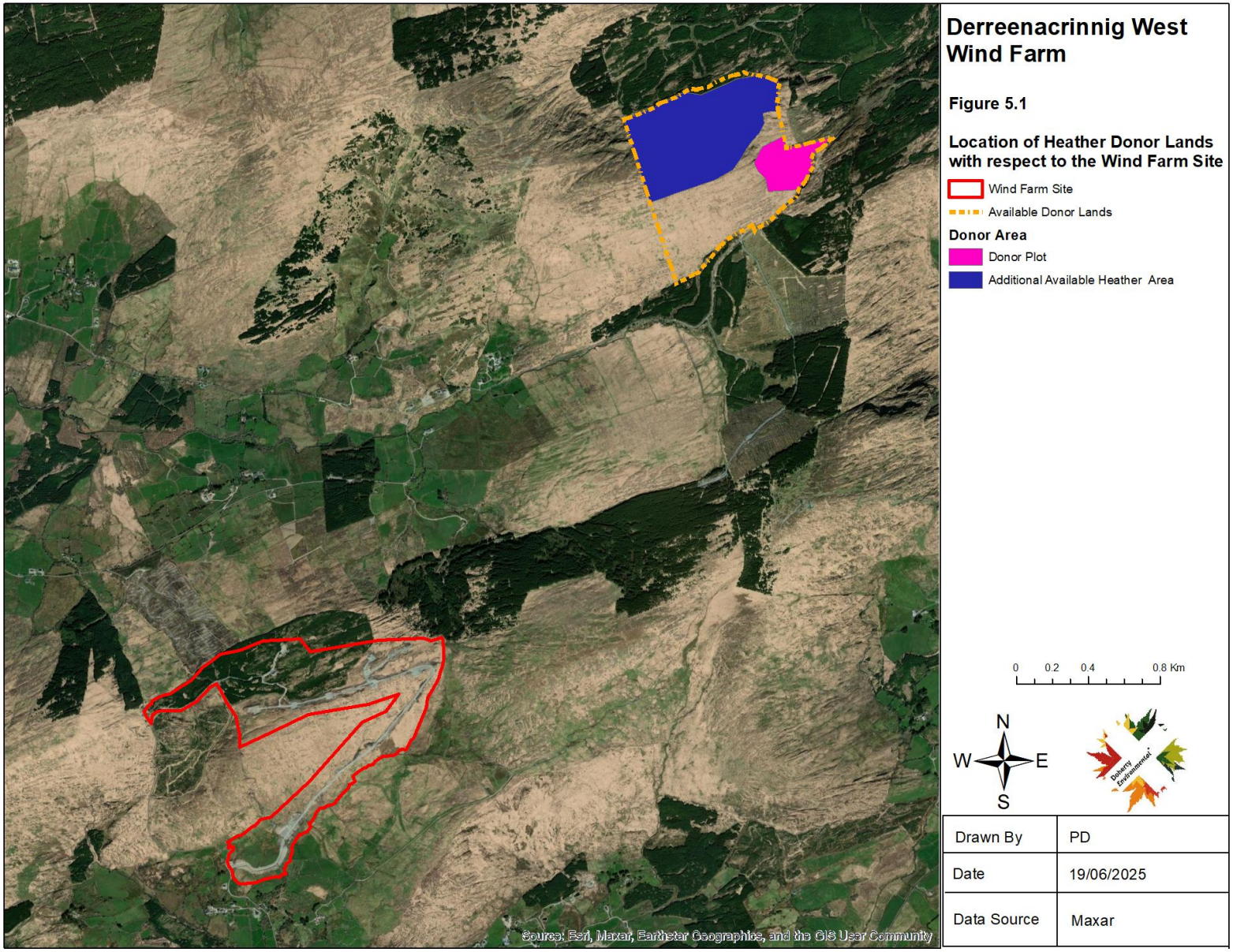
5.1.2 Methods of Vegetation restoration in HMP Restoration Lands

Vegetation cover within the HMP Restoration Lands will be restored by using heather brashing.

The techniques that can be implemented to achieve the colonisation of the HMP Restoration Lands with *Calluna vulgaris* include the application of heather brash/chopper material using a scatter roller; hydroseeding; and or the application of seed and geojute/netting[1] to stabilise and protect the surface during vegetation establishment. Brash/chopper material and seed material to be used for seeding will be harvested from local stands of heather collected from the surrounding area.

Under the guidance of the ECoW, areas for the harvest of heather seed within a donor area in the townland of Goulacullin will be selected for mowing. The heather donor area in the townland of Goulacullin is shown on **Figure 5.1**. The land enclosed in the area Available Donor Lands as shown on **Figure 5.1** are in the ownership of Derreenacrinnig West Wind Farm Ltd. The area identified as the donor location for heather is labelled as "Donor Plot" on **Figure 5.1.** This area amounts to c. 7.5 Ha in size and supports a sward with abundant to dominant cover of leggy Calluna vulgaris. The Donor Plot area at c. 7.5 Ha is well in excess of the 1.5 Ha area requiring brashing at the Derreenacrinnig West Wind Farm site and as such will provide a sufficient resource of brash for the purposes of vegetation restoration at the wind farm site. It is further noted that and additional c. 36 Ha of land supporting a sward where Calluna vulgaris is abundant to dominated also occur within the Available Donor Lands (see area labelled "Additional Available Heather Area" on **Figure 5.1**.

[1] Salmon smolt netting has been successfully used for stablisation of seed during blanket bog restoration in Scotland: see https://www.iucn-uk-heathlandprogramme.org/sites/www.iucn-uk-heathlandprogramme.org/files/file_attach/Session%208%20Combined%20Workshop%20Presentation.pdf



Derreenacrinnig West Wind Farm

Figure 5.1

Location of Heather Donor Lands with respect to the Wind Farm Site

Wind Farm Site
Available Donor Lands

Donor Area

Donor Plot
Additional Available Heather Area

0 0.2 0.4 0.8 Km

N
W E
S

Drawn By	PD
Date	19/06/2025
Data Source	Maxar

The ECoW will inspect the Donor Plot to select the best and most easily accessible areas as donor locations for collection of heather brash and seed. These areas will display signs of mature and 'leggy' heather stands in need of regenerating and display good seed production. It is noted that the collection of seed from such stands of heather will not result in any adverse impacts to the existing heather stands and will facilitate rejuvenation of the existing stands of donor heather.

Heather seed is very small and can be produced in great abundance. Heather seed does not ripen until about October, depending on weather conditions. Germination requires light, warmth and moisture, so seed collected in the autumn is best sown in the spring. Most germination usually occurs in mid to late summer. If conditions are unsuitable, seed will remain dormant and can persist in the seedbank for decades although viability varies greatly according to site conditions.

In order to use locally-sourced heather brash and seed for both revegetating areas of bare substrate within the HMP Restoration Lands a programme of heather brash and seed collection, using brush harvesters, will be conducted on suitable areas of heather moorland in the surrounding area. Brush harvesters can be deployed as rear and side-mounted brush harvesters, tractor-trailed, ATV-trailed and pedestrian brush harvesters. For the purposed of heather seed collection, the equipment to be deployed will be a combination of either quad-bike ATV-trailed harvesters and pedestrian harvesters. This will avoid the use of heavy machinery on site and the compaction of underlying peat en route to donor locations.

A number of component tasks will be carried out and managed by the ECoW. These tasks will include as a minimum:

- Inspection of all areas of broad donor areas of heather moorland to identify and select suitable locations within these areas for the collection of heather brash and seed. Likely areas suitable for seed collection will be accessible and will display signs of mature and 'leggy' swards showing good flowering characteristics. This inspection and selection will be carried out by the ECoW;
- Plan suitable storage facilities for both heather brash and heather seed (if required) so that harvested materials can be suitably conserved until it is deployed in habitat restoration and enhancement works; and

- If there are any bare patches in restored areas within the Derreenacrinnig West Wind Farm site boundary, implement heather seed spreading on a location-by-location basis, as indicated below and as directed by the ECoW.

Ahead of heathland habitat restoration/enhancement works elsewhere on site, the ECoW will plan and supervise a targeted heather seed collection programme from the donor locations in the surrounding area. In line with the requirements of the Wildlife Act and the breeding bird season, heather flailing must not be carried out during the period 1st March to 31st August to protect ground-nesting birds.

Donor seed will be harvested at the optimum time of year, from October through to December. This timing is outside the nest bird period as well as being outside the time of year when male red grouse begin to establish breeding territories (i.e. late February and March).

Suitable dry storage facilities for both heather brash and heather seed will also be planned so that harvested materials can be suitably conserved and protected from wet conditions until they are deployed in habitat restoration works.

5.1.2.1.1 Seed Application & Management

Heather brash and seed application shall take place in late spring (late April to May) to allow warmth and moisture conditions of early summer to optimise germination. A sowing rate of 15 – 17kg per hectare, with repeated applications over several years, will be required as part of the habitat restoration.

Regrowth of competitor vegetation must be reduced during the establishment phase by one or a combination of the following management actions:

- Topping
- Controlled grazing; and/or
- Weed wiping

The inclusion of seeding of areas with heather seed, as a remedial measure in the unlikely event of a short-fall in turve cover and or bare patches occurring within the temporary construction footprint to be reinstated, will contribute towards the re-establishment of heath vegetation in these reinstatement areas of the Derreenacrinnig West Wind Farm site.

5.1.3 Stock Management of HMP Management Lands

Stock management of both sheep and cattle will be agreed between Derreenacrinnig West Wind Farm Ltd and landowners. The HMP targets habitats of wet heath/blanket bog mosaic habitat that will benefit from stock management.

Within the HMP Lands there will be complete removal of sheep from the HMP Lands during the construction phase and for the following three years. Thereafter, the rate of sheep stocking within the HMP Management Lands will be restricted to a sheep-only stocking rate of 0.3 livestock units per hectare between 1 March to 31 October. No grazing will be permitted outside of this period.

Livestock will continue to be restricted from the HMP Restoration Lands during the operation phase until the establishment of heather dominated swards are confirmed during ongoing operation phase monitoring. Once the desired vegetation within the HMP Restoration Lands is achieved, the project ecologist will provide advice regarding whether grazing can be implemented within the HMP Restoration Lands and the associated stocking density.

Records will be kept of initial habitat condition, current and historical stocking densities will be compiled and maintained for the duration of stock management and grazing restrictions.

5.1.4 Fencing

Stock proof fencing will be installed around the boundary of the HMP Lands. In addition, stock proof fencing will be installed around the boundary of the HMP Restoration Lands. The integrity of the stock proof fencing will be monitored and maintained throughout the lifetime of the HMP. The stock proof fencing around the HMP Restoration Lands will only be removed following recommendation from the project ecologist. Such a recommendation will only be made where the desire heather dominated sward has taken hold within the HMP Restoration Lands.

5.1.5 Management agreements with landowners

Under the terms of their lease with the respective landowners, Derreenacrinnig West Wind Farm Ltd. will prevent ongoing damaging land management practices within the HMP Management Lands during the lifetime of the Proposed Development. In this respect, there will be:

- no overgrazing (grazing on site will be in line with the stocking rates specified in Section 5.1.3 above);
- no new drainage and no maintenance of existing drains, with the exclusion of drains designed to protect the development's infrastructure;
- no flailing or mowing (with the exception of any flailing or mowing designed specifically for habitat enhancement as part of the wind farm development).

6 Habitat Management Action Plan

Table 6.1 outlines an Action Plan for the promotion and implementation of management actions to manage and enhance heathland habitats within the HMP Restoration Lands and the HMP Management Lands.

The responsibility for the completion of actions are outlined in **Table 6.1**. The implementation of actions during the construction phase will be completed by the main civil contractor.

6.1 Monitoring

To ensure that management actions outlined in **Table 6.2** are achieving the required objectives for each target, regular monitoring is required. **Table 6.2** below lists the monitoring required for each target, the measurement to be recorded, timing and frequency of monitoring and the personnel who shall carry out each task.

This monitoring programme covers the construction period in addition to (as a minimum) years 1, 2, 3, 5, 7, 10, 15, 20, 25, 30, 35 & 40 following the completion of the construction period. Baseline surveys exist for the entire Site, and these will be complemented by confirmatory surveys completed through the construction phase.

Habitat monitoring will be undertaken using quadrats and fixed-point photography.

Monitoring during the early years of the operational phase will be particularly important for evaluating the success or otherwise of management actions to achieve favourable conservation status for heathland habitats.

The Favourable Conservation Status of Heathland Habitats will be based upon the attributes and targets outlined in **Table 6.1**.

Table 6.1: Attributes, Measurements and Targets for Achieving Favourable Conservation Status

Attribute	Measurement	Target
Vegetation Composition	Relevé	Number of bryophyte or non-crustose lichen species present, excluding Campylopus spp. and Polytrichum spp. ≥ 3.
	Relevé	Number of positive indicator species present ≥ 2
	Relevé	Cover of positive indicator species ≥ 50%
	Relevé	Proportion of dwarf shrub cover composed of *Myrica gale, Salix repens, Ulex galli*i collectively < 50%
	Relevé	Cover of the following weedy negative indicator species: *Cirsium arvense, C. vulgare, Ranunculus repens,* large Rumex species (except *R. acetosa*), *Senecio jacobea, Urtica dioica* collectively < 1%
	Relevé	Cover of non-native species < 1%
	Local vicinity	Cover of non-native species < 1%
	Local vicinity	Cover of scattered native trees and scrub < 20%
	Local vicinity	Cover of *Pteridium aquilinum* < 10%
	Local vicinity	Cover of *Juncus effusus* < 10%
Vegetation Structure	Relevé	Senescent proportion of *Calluna vulgaris* cover < 50%
	Relevé	Last complete growing season's shoots of ericoids and *Empetrum nigrum* showing signs of browsing collectively < 33% (Assess a minimum of 10 shoots distributed across the plot)
	Local vicinity	No signs of burning inside boundaries of sensitive areas
	Local vicinity	Outside boundaries of sensitive areas, all growth phases of *Calluna vulgaris* should occur throughout, with ≥ 10% of cover in mature phase
Physical Structure	Relevé	Cover of disturbed bare ground < 10%
	Local vicinity	Cover of disturbed bare ground < 10%

Management Actions and techniques outlined in Sections 5 above aim to achieve favourable conservation status of heathland within the HMP Restoration Lands and HMP Management Lands.

Where management actions are not deemed to be successful in achieving the targets for favourable conservation status of heathland and heathland habitat, as outlined in **Table 6.1** above, then the implementation of remedial measures will be required. Examples of these remedial measures are provided in Section 5 above. It is noted that the nature of the remedial action to be applied will be dependent upon which attributes are not meeting the targets of favourable conservation status.

6.1.2 Ongoing Monitoring – Meeting Targets

If a habitat fails to meet one of the targets, then management action as listed in **Table 6.2** will be undertaken.

6.2 Reporting of Monitoring

Table 6.2 specifies the timing of monitoring for each HMP Action.

A report detailing the results of all actions requiring implementation during the construction phase will be furnished to the Planning Authority within 12 months of the completion of construction activity, and subsequently in years 1, 2, 3, 5, 7, 10, 15, 20, 25, 30, 35 & 40.

6.2.1 Quadrats & Fixed-Point Photography

Habitat surveys during the monitoring programme will be based on fixed quadrat surveys. Each quadrat will be surveyed using the DOMIN Scale so that individual vegetation communities are identified. Fixed quadrat monitoring locations will be identified by the ECoW during the construction phase.

Quadrats will be located within all areas of the Site that are subject to the habitat management measures outlined in Section 5 above.

Fixed point photographs will be taken of the vegetation at all quadrats and of the surrounding area during each round of monitoring. The grid reference of the initial fixed point photograph location will be recorded during the initial round of monitoring and the direction of view of photographs recording the surrounding area will also be recorded.

Table 6.2: Habitat Management & Monitoring Action

HMP Action Ref. No.	Management Measure	Target	Method	Measurement	Timing	Entity Responsible
1.	**Grazing Control**	Promote grazing regimes as outlined in Section 5	Implementation of livestock numbers specified in Section 5	Monitor grazing and liaise with landowner to check that livestock numbers and grazing regime are adhered to. The success of the grazing regime in terms of contributing to heathland and heathland restoration will be monitored using permanent fixed quadrats. A photographic log of all quadrats and areas subject to grazing control will be maintained.	Throughout lifetime of the HMP. Monitor during Years 1, 2, 3, 5, 7, 10, 15, 20, 25, 30, 35 & 40 of the operation phase	Operator
2.	**Install stock proof fencing**	Install stock proof fencing around the boundary of the HMP Management Lands. Fencing to be installed by Contractor during the construction phase.	Post and rail fencing	Monitoring fencing during annual monitoring.	Monitor during Years 1, 2, 3, 5, 7, 10, 15, 20, 25, 30, 35 & 40 of the operation phase.	The Construction Contractor /Operator
4.	**Control competitive non-indicator heathland species**	Non-indicator heath species should be kept to a minimum of <10% of the vegetation in the HMP area priority habitats.	Removal of Competitive Species. Remove spreading conifer trees.	Quadrat monitoring and photographic log will be undertaken to measure the extent of non-indicator species.	Control on an annual basis. Monitor during Years 1, 2, 3, 5, 7, 10, 15, 20, 25, 30, 35 & 40 of the operation phase.	The Construction Contractor /Operator
5.	**Sensitive removal of heathland**	Sensitively remove heathland vegetation as turves under the	Remove heath vegetation as turves excavated to a depth	Construction Contractor's ECoW monitoring of heathland turving and	Construction phase – vegetation clearance.	Construction Contractor

HMP Action Ref. No.	Management Measure	Target	Method	Measurement	Timing	Entity Responsible
	vegetation from areas of the construction footprint as turves	footprint construction site, maintain turves in good condition so that they can be reinstated in temporary construction areas.	of at least 30 cm, where soil depths are to this level or below. Where shallower remove to base of soil. This layer will be stored as turves and kept viable by irrigation if necessary because soil and especially and peat component is prone to shrinkage and drying.	condition during the construction phase.		
6.	**Re-instate turves in Re-instatement Areas**	Re-instate turves and restore heathland vegetation in the reinstatement areas.	Re-instate turves following the management techniques outlined in Section 5.1.5	The success of turve re-instatement and heathland restoration will be monitored using permanent fixed quadrats. A photographic log of all quadrats and areas subject to turve reinstatement will be maintained.	Re-instate turves during the Construction stage. Monitor during Years 1, 2, 3, 5, 7, 10, 15, 20, 25, 30, 35 & 40 of the operation phase.	Construction Contractor
7.	**Restrict drainage**	No drainage of lands within the HMP Management Lands throughout the lifetime of the HMP.	Restrict drainage activity	Monitoring of site for any signs of turbary activity. Liaise with landowner to ensure no drainage is undertaken throughout the lifetime of the plan.	Throughout the lifetime of the HMP.	Operator
8.	**Prevent certain land use practices**	Prevent certain land use practices to ensure favourable conservation status of heathland habitats.	Prevent the following activities throughout the lifetime of the HMP: • The reclamation, fertilisation or drainage of the	Quadrat monitoring Photographic log	Implement throughout lifetime, and monitor/report during Years 1, 2, 3, 5, 7, 10, 15, 20, 25, 30, 35 & 40.	Operator

HMP Action Ref. No.	Management Measure	Target	Method	Measurement	Timing	Entity Responsible
			HMP area will be restricted. • The application of slurry, lime, herbicides, pesticides, insecticides, fungicides will be restricted. • Scrub will be prevented from establishing on heathland and heathland habitats through ongoing removal.			

6.3 References

NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill.

Perrin, P.M., Barron, S.J., Roche, J.R. & O'Hanrahan, B. (2014). Guidelines for a national survey and conservation assessment of upland vegetation and habitats in Ireland. Version 2.0. Irish Wildlife Manuals, No. 79. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.