



APPENDIX 6-8

BLANKET BOG REHABILITATION PLAN

**BLANKET BOG REHABILITATION AND MANAGEMENT PLAN AT
KILGARVAN WIND FARM, CO. KERRY**

Prepared for



by

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Table of Contents

1. INTRODUCTION	1
1.1. Background.....	1
1.2. Outline Description of Proposed Development site	1
1.3. Objectives of blanket bog restoration plan	2
2. DETAILS	3
2.1. Area location.....	3
2.2. Description of the peatland restoration area	3
Plate 2. Views of old forestry drains within the proposed restoration area.	6
3. MANAGEMENT PRESCRIPTIONS	7
3.1. Tree removal and Blocking of drains	7
3.2. Monitoring.....	7
3.2.1. Monitoring of bog vegetation recovery	7
3.3. Plan Implementation.....	8
3.4. Ongoing Monitoring.....	8
4. OVERVIEW	9
5. REFERENCES	10

1. INTRODUCTION

1.1. Background

This Blanket Bog Rehabilitation and Management Plan has been prepared in support of the Environmental Impact Assessment Report (EIAR) produced for the Proposed Repowering of the Existing Kilgarvan Wind Farm (hereafter termed the Proposed Development). Full details of the Proposed Development are given in Chapter 4 of the EIAR.

As part of the Proposed Development, areas of blanket bog and wet heath, totalling approximately 2.84 hectares in area, will be built upon. As the bog and heath habitats are considered to be of high ecological importance, mitigation is being provided to offset the habitat loss through the restoration of an area blanket bog habitat, as described in this report. This plan is focused on the rehabilitation of an area of blanket bog habitat (c. 5.5ha), which has been drained and planted with conifers in the past. Following the implementation of the measures outlined in this report, there will be a marked improvement in the quality/condition of the peatland habitat on the site.

The bog rehabilitation programme described in this report will be implemented in accordance with published guidance and best practice, as follows:

- Coillte (2008) *Restoring Active Blanket bog in Ireland* (LIFE Project Number LIFE02 NAT/IRL/8490). End of Project Report.
- Mackin *et al.* (2017) *Best practice in raised bog restoration in Ireland*. Irish Wildlife Manuals, No. 99. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.

1.2. Outline Description of Proposed Development site

The Proposed Development occurs in a mountainous area to the east of Kilgarvan village. The 28 no. existing wind turbines currently in operation on the site and associated infrastructure that will be removed as part of the Proposed Development were commissioned between 2007 and 2009.

The Existing Kilgarvan Wind Farm infrastructure was constructed in areas dominated by coniferous plantation and wet heath/blanket bog. Most of the existing wind farm area lies between an altitude of 300 and 450 metres above sea level and the topography is generally sloping. As part of the Proposed Development, it is proposed to erect 11 no. turbines in parallel with the removal of the existing turbines. A full description of the Proposed Development can be found in Chapter 4 of this EIAR.

1.3. Objectives of blanket bog restoration plan

The main objective of this plan is to rehabilitate/restore an area of blanket bog which has been partly drained in and planted with conifers in the past, in order to mitigate for the loss of blanket bog and heath habitats as a result of the Proposed Development.

2. DETAILS

2.1. Area location

The rehabilitation area is located in the western-central part of the EIAR Site Boundary (see Figure A6.8.1). The area is surrounded by a mixture of open blanket bog (to the north) and afforested wet heath/blanket bog. The plot measures approximately 5.5 hectares in area.

2.2. Description of the peatland restoration area

The rehabilitation area comprises a mix of open blanket bog areas with occasional forest drains and small areas dominated by low-yielding/stunted conifers (Figure A6.8.2). In general, the depth of peat throughout the site varies between 1.5 and 2 metres with some areas of shallow peat occurring around rock outcrops. The drained bog areas are generally dominated by *Molinia caerulea* with some scattered *Calluna vulgaris* and *Erica tetralix* (Plates 1 and 2). Most of the forestry drains which occur are relatively shallow, i.e. c. 50cm deep, are c. 4 metres apart and most already contain some cover of *Sphagnum* moss (Plate 1). The drains are generally wet at the bottom with some standing water, however there is little evidence of active flow/drainage within them.

There are small groups of stunted conifers which are generally between 1.5 and 4 metres tall which cover c. 0.7ha of the proposed rehabilitation area. These small areas of conifers have a very shaded ground layer dominated by conifer needles with little or no native bog vegetation occurring underneath.

There is no evidence of recent peat cutting in this area and very little evidence of grazing by sheep or deer. The present ecological value of the plot is variable with some areas of more intact blanket bog and other areas that are of relatively low ecological value at present due to drainage. However, there is potential to increase the cover of bog vegetation (especially *Sphagnum* mosses) through management intervention such as blocking existing drains and felling conifers.

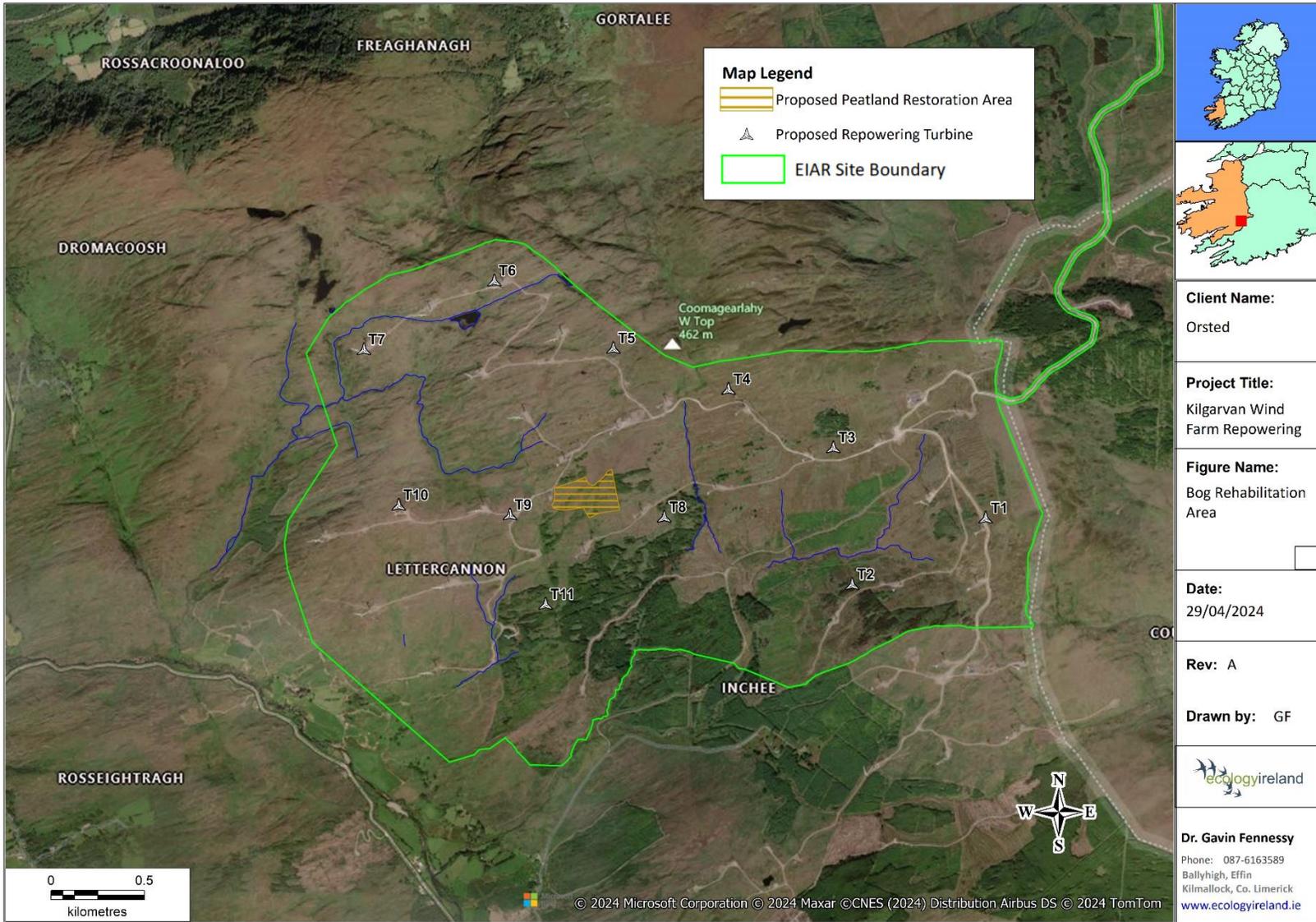


Figure A6.8.1. Location of peatland restoration area at the Proposed Development site.

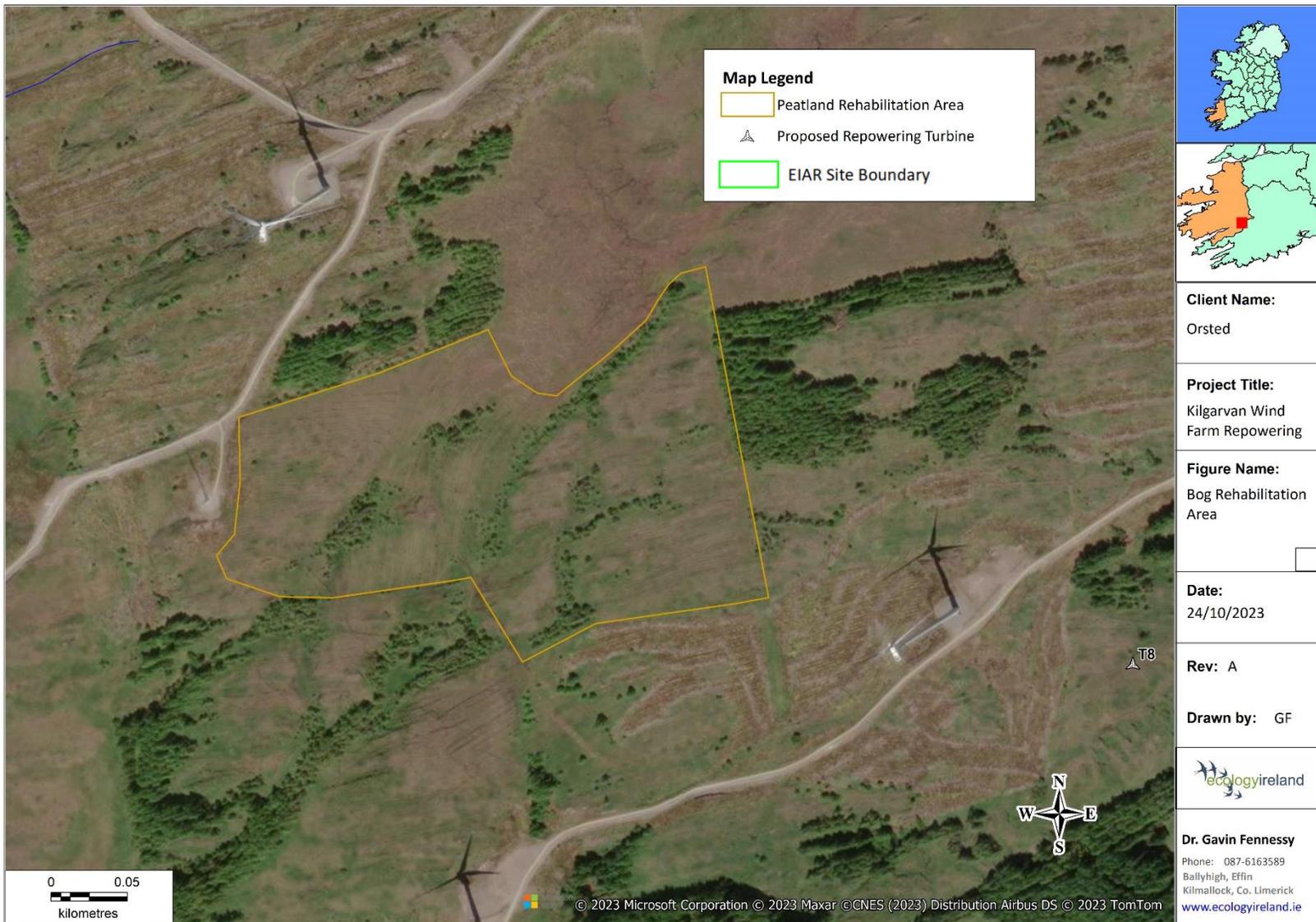


Figure A6.8.2. Proposed peatland rehabilitation area at the Proposed Development site.



Plate 1. Old forestry drain in the peatland rehabilitation area.



Plate 2. Views of old forestry drains within the proposed restoration area.

3. MANAGEMENT PRESCRIPTIONS

3.1. Tree removal and Blocking of Drains

Existing areas of low-yielding conifer plantation will be felled, either manually by chainsaw or by a low-ground pressure tree harvester. As these trees are quite small in size they could be left where they fall to decompose over time however if ground conditions allow, they shall be collected and removed from the area.

The shallow forestry drains which occur will be blocked by a low ground pressure excavator using fresh peat from adjacent areas between the drains. Construction will ensure that the dams are 20cm to 30cm above the general ground level and are capped with a layer of vegetated scraw to ensure erosion of the top of the dam does not occur. The distance between peat dams will be determined by a survey of surface levels prior to drain blocking, however in sloping areas the installed peat dams will be 5 metres apart.

The ultimate purpose of blocking drains is to raise water levels in the peat to encourage the growth of peat-forming vegetation and especially the growth of Sphagnum mosses. Procedures for drain blocking in bogs is described in detail in Mackin *et al.* (2017).

3.2. Monitoring

In order to confirm that the objectives of this Plan are being achieved, the area will be monitored during the lifetime of the Proposed Development. The mitigation and monitoring measures associated with this are described in detail in Chapter 6 of the EIAR. This includes monitoring of habitat restoration and revegetation of decommissioned areas of the Existing Kilgarvan Wind Farm, including the borrow pit.

3.2.1. Monitoring of bog vegetation recovery

Immediately in advance of drain-blocking a series of permanent quadrats will be established for the purpose of monitoring of vegetation change over time. The location of these quadrats will be marked using wooden pegs and the grid reference will be recorded using GPS. It is expected that up to ten quadrats will be required and these will be large (at least 4m x 4m) to take into account the scale of the plan area. The occurrence and cover of vascular plant and moss species will be recorded in these quadrats along with a number of other important parameters such as the height of vegetation, cover of bare peat, peat depth, flowering of plant species etc. This survey will take place in early July of each monitoring year. Photographs of the quadrats will also be taken on deployment and subsequently during the following years of monitoring.

During the site visits for vegetation monitoring, a walk-over survey will take place in order to check for the presence of occasional self-seeded conifers which may become established. Seedlings up to approximately 20cm in height can be easily removed by hand, while larger saplings may need to be removed by loppers or hand-saw at some stage later in the year.

The walk-over survey will also observe if any further drains require blocking or if any of the newly installed dams require maintenance.

The bog rehabilitation and management plan will be instigated during the construction phase and the progress of the rehabilitation monitored annually in the operational Years 1, 2 and 3 and at five-year intervals thereafter for the lifetime of the Proposed Development. Status reports will be prepared and any recommendations for additional management presented in these reports will be implemented according to the advice of the habitat specialist. The reports will be provided for the information of the Planning Authority, Kerry County Council and the National Parks and Wildlife Service (NPWS).

3.3. Plan Implementation

In parallel with the construction phase of the Proposed Development, this rehabilitation and management plan, including all physical measures required, namely the felling of conifers and the blocking of drains, will be implemented under the supervision of a suitably qualified habitat specialist.

3.4. Ongoing Monitoring

The rehabilitation area will continue to be monitored over the lifetime of the Proposed Development as described above. Tasks to be completed during the ongoing monitoring include checking the functionality of the dams, and to survey the area for any conifer seedlings which may have established over the time period since the previous round of monitoring. Conifer seedlings which do establish will be removed as described in Section 3.2.1 above.

4. OVERVIEW

The blanket bog rehabilitation and management plan for the Proposed Repowering of the Existing Kilgarvan Wind Farm will restore an area of former lowland blanket bog that has been damaged by drainage and afforestation. This enhancement will help offset the localised loss of blanket bog and heath habitat as a result of construction of the Proposed Development

The objectives of this plan are achievable, as similar bog projects have been carried out successfully at various Coillte owned properties in Ireland (Coillte 2008, Mackin *et al.* 2017).

This plan will be underwritten by a detailed monitoring programme, which will allow for modifications to ensure that the objectives are being achieved throughout the lifetime of the Proposed Development. In parallel with the rehabilitation monitoring the habitat specialist will monitor and report on the other restored areas (e.g. the borrow pit) within the Proposed Development site.

5. REFERENCES

Coillte (2008) *Restoring Blanket bog in Ireland* (LIFE Project Number LIFE02 NAT/IRL/8490). End of Project Report.

Fossitt, J. (2000) *A Guide to Habitats in Ireland*. Heritage Council, Kilkenny.

Mackin, F., Barr, A., Rath, P., Eakin, M., Ryan, J., Jeffrey, R. & Fernandez Valverde, F. (2017) *Best practice in raised bog restoration in Ireland*. Irish Wildlife Manuals, No. 99. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.