APPENDIX 6-1

BOTANICAL STUDY

Contents

1. INTRODUCTION

1.1 Introduction

MKO were commissioned to undertake detailed botanical surveys to provide an evaluation and assessments of the habitats occurring on site at the proposed Seskin Wind Farm, Co. Carlow. The detailed assessments focused on the habitats occurring under or immediately adjacent to the Proposed Project footprint. Botanical surveys were undertaken on the 24th of August 2022, 14th of September 2022, 29th and 30th of November 2022, 15th of February 2023, 19th and 20th of July 2023 with additional information on habitat mapping undertaken on numerous other dates in 2022 and 2023.

1.2 Survey Methods

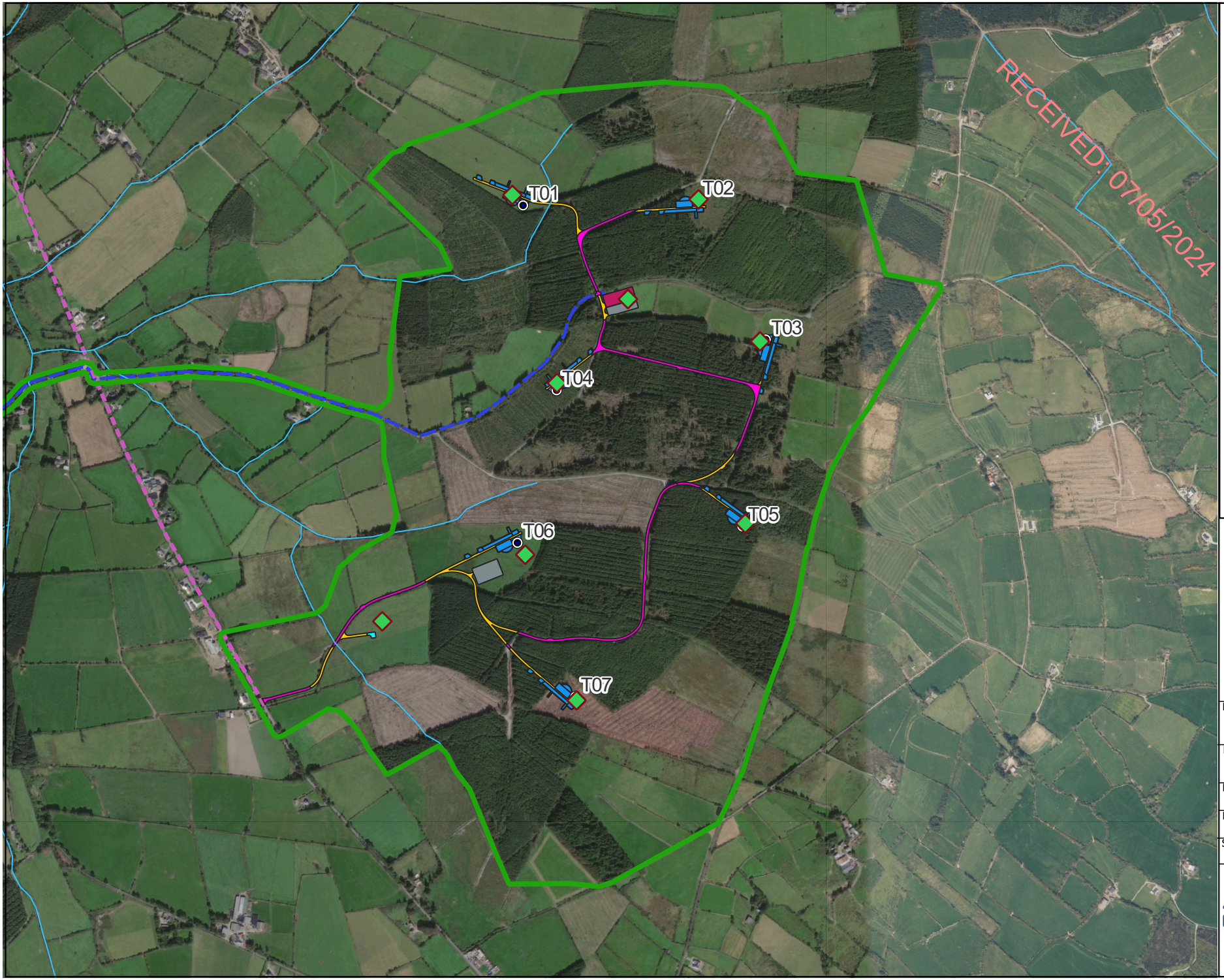
A total of 9 detailed relevés were undertaken within the construction footprint or representative habitats within the EIAR Site Boundary. The location of each is provided on Figure 1.1.

Habitats were assessed and described using both Fossitt (Fossitt, 2000) and the Irish Vegetation Classification (IVC) (Perrin et al., 2018) system. Where habitats had a potential to correspond to Annex 1 habitat type further detailed assessment of Annex I habitats was also undertaken in line with the condition assessment methods outlined in Martin et al. (2018), while reference was also made to the EU interpretation manual (EC, 2013).

Plant nomenclature for vascular plants follows '*New Flora of the British Isles*' (Stace, 2010), while mosses and liverworts nomenclature follow '*Mosses and Liverworts of Britain and Ireland - a field guide'* (British Bryological Society, 2010).

1.3 Statement of Authority

Field surveys were undertaken by Cathal Bergin (BSc. Wildlife Biology), Bronagh Boylan (B.Sc Environmental Science), Cora Twomey (B.Sc. Ecology) and Valerie Kendall (B.Sc(H)., M.Env.Sc.). Cathal has over 2 years' professional experience in ecological surveys and assessment. Valerie has over 10 years of relevant experience in environmental consultancy and ecological assessments. Bronagh and Cora are qualified ecologists with experience and assessment in ecological surveys and monitoring. This report has been prepared by Cora Twomey (BSc. Eco) and reviewed by Corey Cannon (BSc., MSc., MCIEEM, CEcol) who has over 10 years' experience working in ecological consultancy.



Map Legend

- EIAR Site Boundary
- Proposed Turbine Layout
- Proposed Turbine Hardstands
- Proposed Turbine Foundation
- Proposed New Roads
- Proposed Temporary Construction Compounds
- Proposed Onsite Substation
- Proposed Met Mast
- Proposed Grid Connection Cable Route
- Releve Locations
- Watercourses

Drawing Title
Releve Locations

Project Title
Seskin, Co. Carlow

Drawn By	Checked By
CH	CC
Project No.	Drawing No.
220246	Figure 1-1
Scale	Date
1:15,000	30/04/2024

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2. RESULTS

2.1 Turbine 1

Turbine 1 will be located on improved agricultural grassland (GA1) habitat which is surrounded by conifer plantation (WD4) to the south and west, more improved agricultural grasslands to the north.

Table 2-1 Botanical Survey Results – Turbine 1

Relevé 1	Grid reference: ITM 663403 669672	Date 29/11/2022
Species	**Common Name**	**% Cover**
Vascular Plants		
Lolium perenne	Perennial ryegrass	80
Trifolium pratense	Red clover	5
Trifolium repens	White clover	5
Ranunculus repens	Creeping buttercup	5
Cirsium vulgare	Spear thistle	5
Juncus effusus	Soft Rush	2
Holcus lanatus	Yorkshire-fog	2
Fossitt (2000) Habitat Classification	Improved agricultural grassland (GA1)	
IVC (Irish Vegetation Community classification)	GL2C- *Holcus lanatus – Lolium perenne* grassland	
Affinity to Annex I habitat	No	

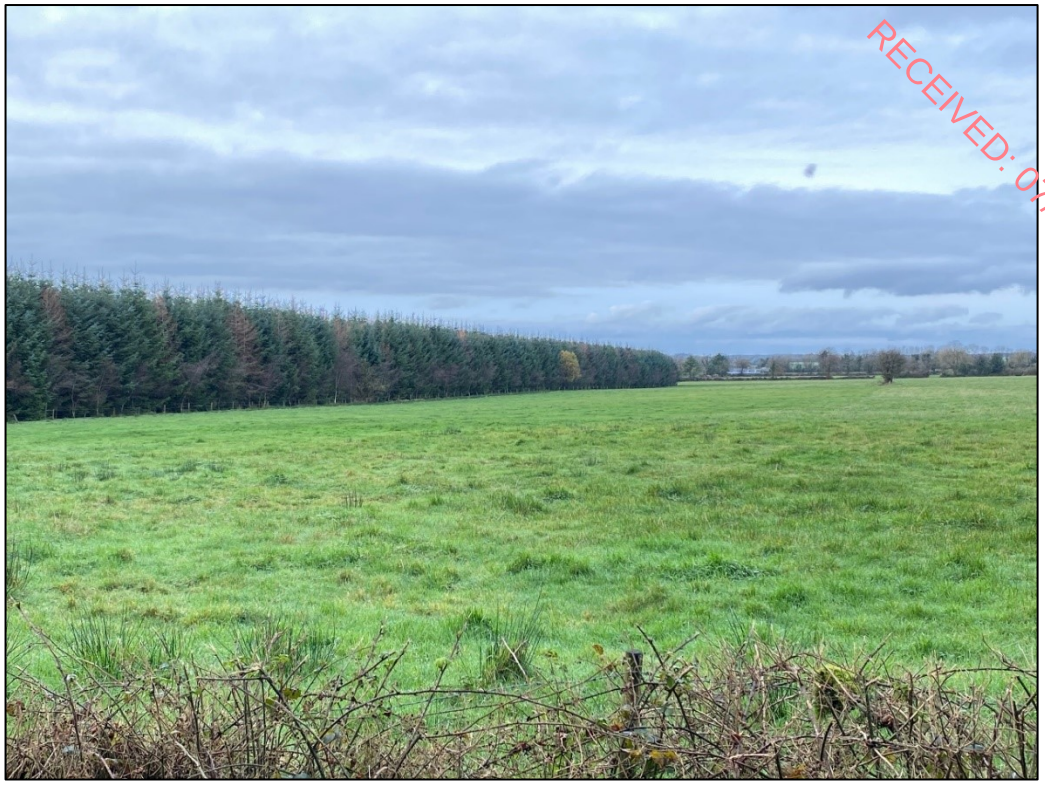

Plate 2-1 Example of the receiving habitat at Turbine 1

2.2 Turbine 2

Turbine 2 will be located within an area of conifer plantation (WD4).

Table 2-2 Botanical Survey Results – Turbine 2

Relevé 1	Grid reference: ITM 664002 669678	Date 29/11/2022
Species	**Common Name**	**% Cover**
Vascular Plants		
Rubus fruticosus agg.	Bramble	20
Cirsium palustre	Marsh thistle	10
Picea sitchensis	Sitka spruce	10
Salix caprea	Goat willow	10
Digitalis purpurea	Foxglove	5
Vicia sativa	Common vetch	10
Verbascum blattaria	Moths mullein	2
Potentilla erecta	Cinquefoil	2

Galium palustre	Marsh bedstraw	5
Agrostis capillaris	Common bent grass	5
Deschampsia cespitosa	Tufted hairgrass	2
Juncus effusus	Soft Rush	5
Fossitt (2000) Habitat Classification	Conifer Plantation (WD4) with encroachment of Scrub (WS1)	
IVC (Irish Vegetation Community classification)	SC1E – *Rubus fruticosus agg. – Holcus lanatus*	
Affinity to Annex I habitat	No	

Plate 2-2 Example of the receiving habitat at Turbine 2

2.3 Turbine 3

Turbine 3 is within an area of wet grassland (GS4), that is bordered to the east and south by recently felled woodland (WS5) and wet grasslands (GS4) to the west .

Table 2-3 Botanical Survey Results – Turbine 3

Relevé 1	Grid reference: ITM 664181 669229	Date 14/09/2022
Species	**Common Name**	**% Cover**
Vascular Plants		
Juncus effusus	Soft Rush	40
Holcus lanatus	Yorkshire-fog	40
Molinia caerulea	Purple Moor Grass	10
Cirsium palustre	Marsh Thistle	3
Agrostis capillaris	Common Bent Grass	2
Galium palustre	Marsh Bedstraw	2
Rumex obtusifolius	Bitter Dock	1
Fossitt (2000) Habitat Classification	Wet Grassland (GS4)	
IVC community classification	GL2D – *Juncus effusus – Rumex acetosa*	
Affinity to Annex I habitat	No	

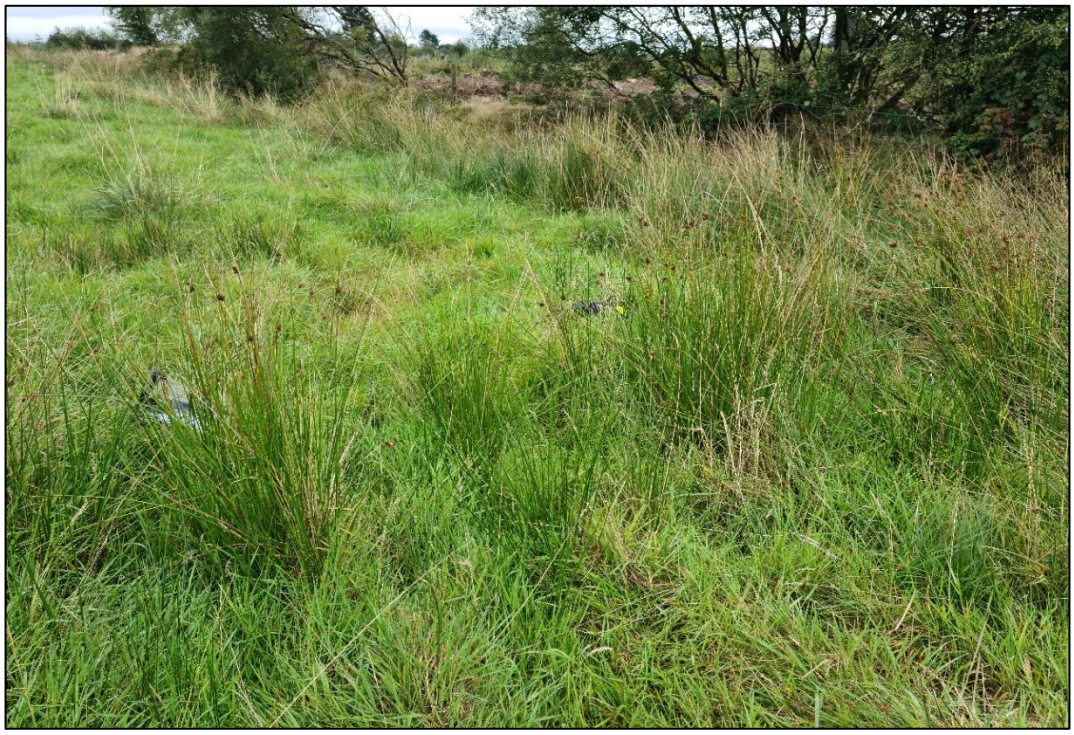

Plate 2-3 Example of the receiving habitat at Turbine 3

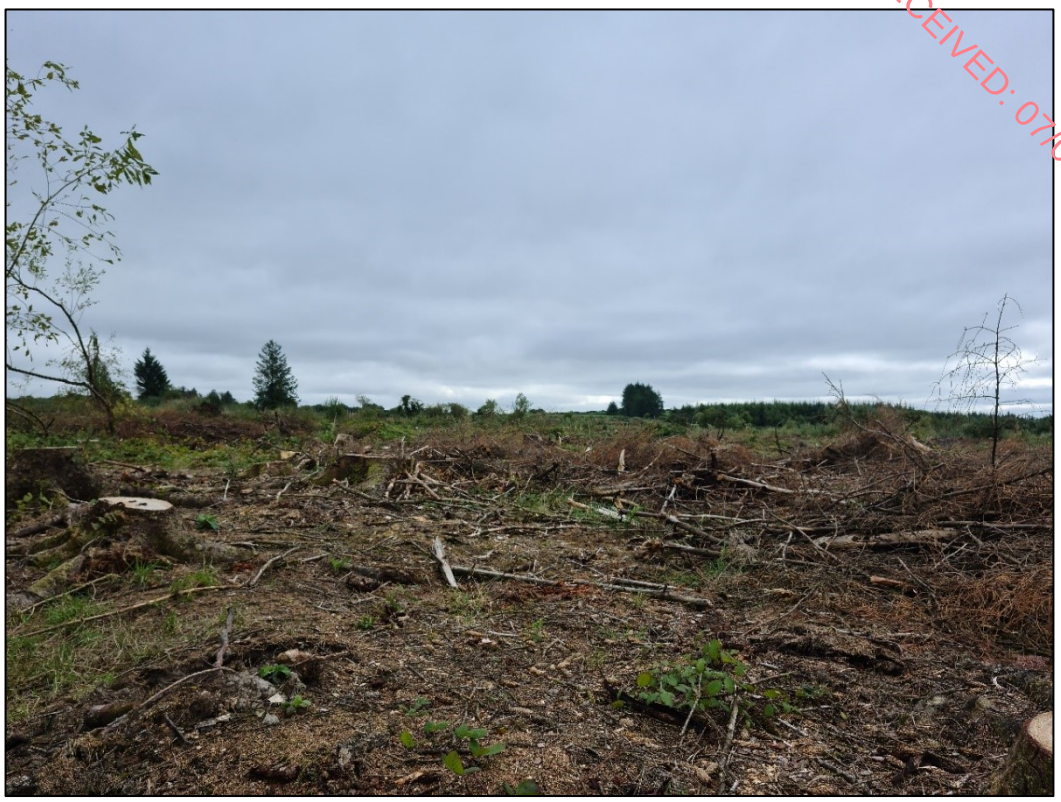

Plate 2-4 Example of recently felled conifer woodland habitat in the vicinity of Turbine 3

2.4 Turbine 4

Turbine 4 is located within an area of conifer woodland (WD4).

Table 2-4 Botanical Survey Results – Turbine 4

Relevé 1	Grid reference: ITM 663571 669074	Date 30/11/2022
Species	Common Name	% Cover
Vascular Plants		
Rubus fruticosus agg.	Bramble	60
Picea sitchensis	Sitka spruce	65
Pteridium aquilinum	Bracken	10
Ulex europaeus	Gorse	5
Non Vascular Plants		
Hylocomium splendens	Glittering Wood-moss	90
Pleurozium schreberi	Red-stemmed Feather-moss	15

Fossitt (2000) Habitat Classification	Conifer plantation (WD4)
IVC classification	SC1C – *Pteridium aquilinum* – *Rubus fruticosus agg.*
Affinity to Annex I habitat	No

Plate 2-5 Example of receiving habitat at Turbine 4

2.5 Turbine 5

Turbine 5 is located within an area of recently felled conifer plantation woodland (WS5) and drainage ditches (FW4). It is surrounded by conifer plantation (WD4) and wet grasslands (GS4).

Table 2-5 Botanical Survey Results – Turbine 5

Relevé 1	**Grid reference: ITM 664149 668659**	**Date 19/07/2023**
Species	**Common Name**	**% Cover**
Vascular Plants		
Ranunculus flammula	Lesser spearwort	0.5

Hedera helix	Ivy	3
Picea sitchensis	Sitka spruce	40
Salix caprea	Goat willow	10
Cerastium fontanum	Mouse-ear chickweed	1
Ilex aquifolium	Holly	1
Glyceria fluitans	Floating grass	2
Galium rotundifolium	Round-leaved bedstraw	2
Dryopteris dilatata	Broad buckler-fern	25
Rubus fruticosus agg.	Bramble	5
Bare peat	60	
Fossitt (2000) Habitat Classification	Recently Felled Woodland (WS5)	
IVC classification	None – did not correspond to any community type	
Affinity to Annex I habitat	No	

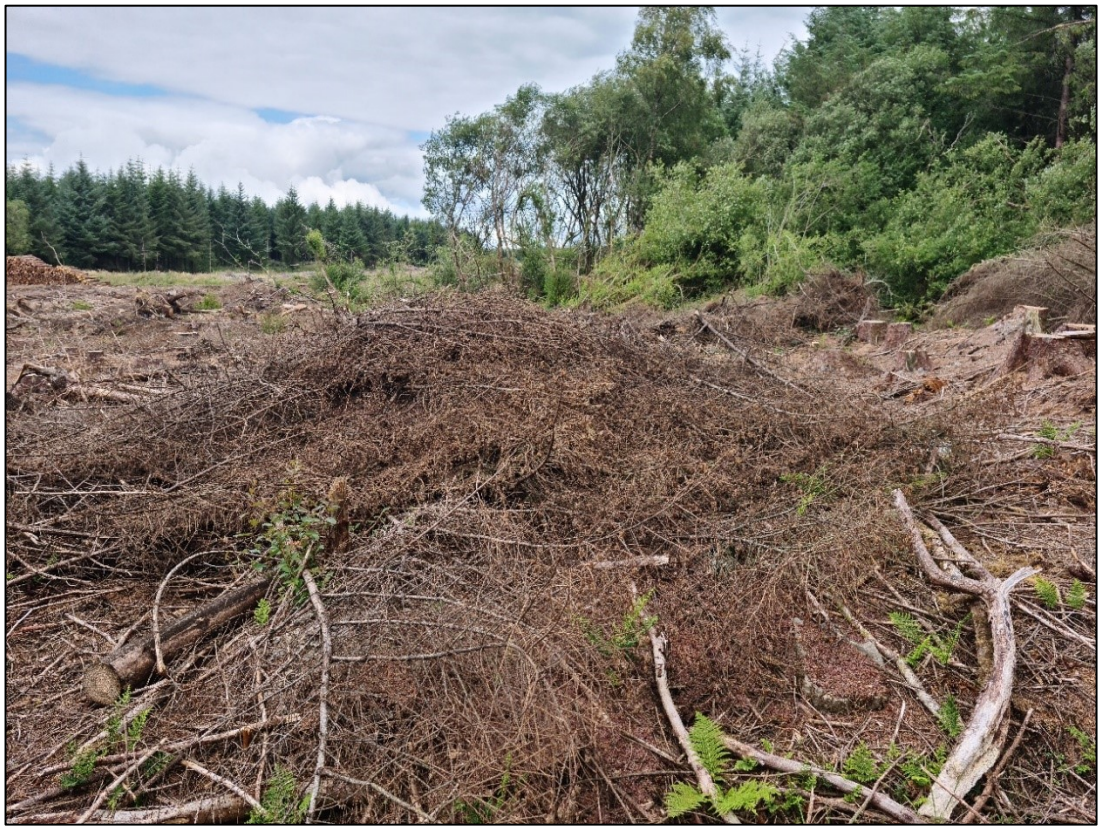

Plate 2-6 Example of receiving habitat at Turbine 5

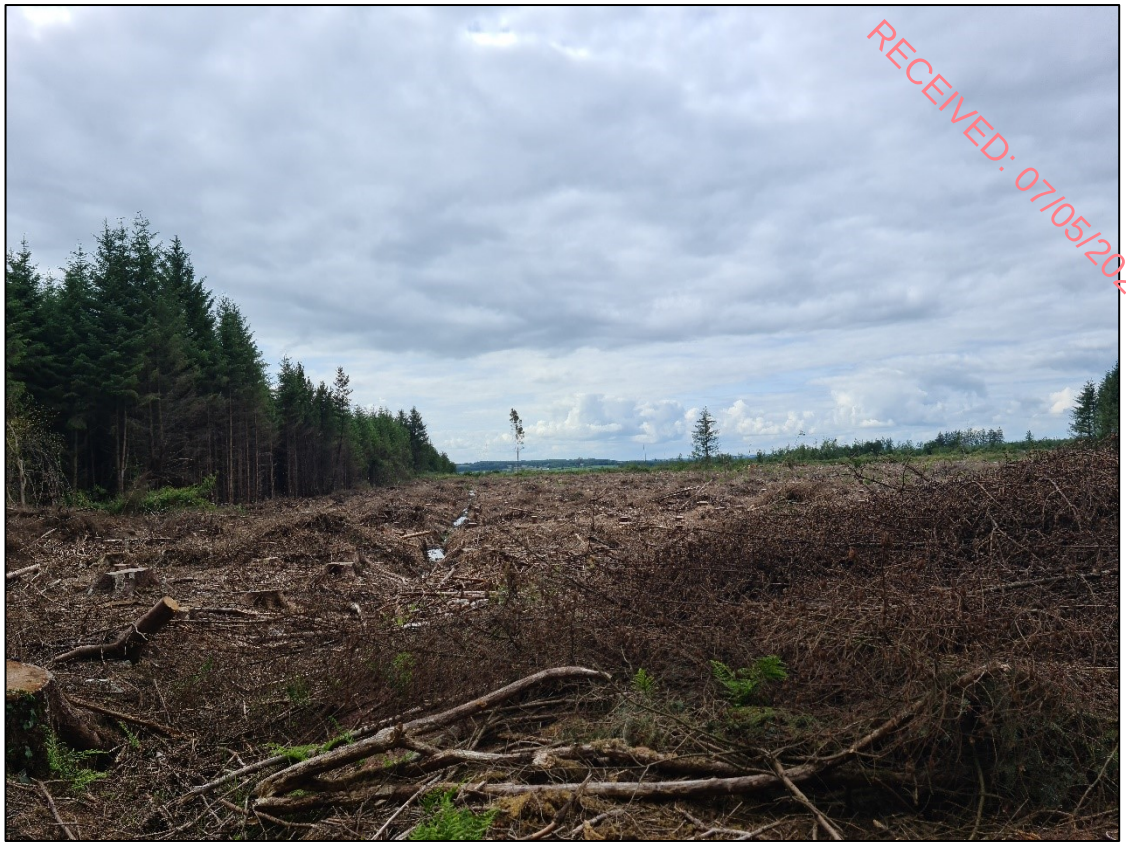

Plate 2-7 Example of receiving habitat in the vicinity of Turbine 5

Plate 2-8 Example of receiving habitat in the vicinity of Turbine 5

2.6 Turbine 6/Temporary Construction Compound

Turbine 6 is located within an area of wet grasslands (GS4) and is bordered by lowland depositing river (FW2) to the north, conifer plantation (WD4) to the west and south, with more wet grasslands to the west of the turbine location. The temporary construction compound is located adjacent to Turbine 6. One relevé was completed for both the temporary construction compound and Turbine 6 as both site infrastructure are located within the same field/habitat.

Table 2-6 Botanical Survey Results – Turbine 6

Relevé 1	Grid reference: ITM 663473 668546	Date 15/02/2023
Species	**Common Name**	**% Cover**
Vascular Plants		
Lolium perenne	Perennial ryegrass	90
Holcus lanatus	Yorkshire-fog	80
Juncus effusus	Soft rush	40
Taraxacum officinale agg	Dandelion	5
Ranunculus repens	Creeping buttercup	40
Fossitt (2000) Habitat Classification	Wet grassland (GS4)	
IVC classification	GL2C – *Holcus lanatus – Lolium perenne*	
Affinity to Annex I habitat	No	

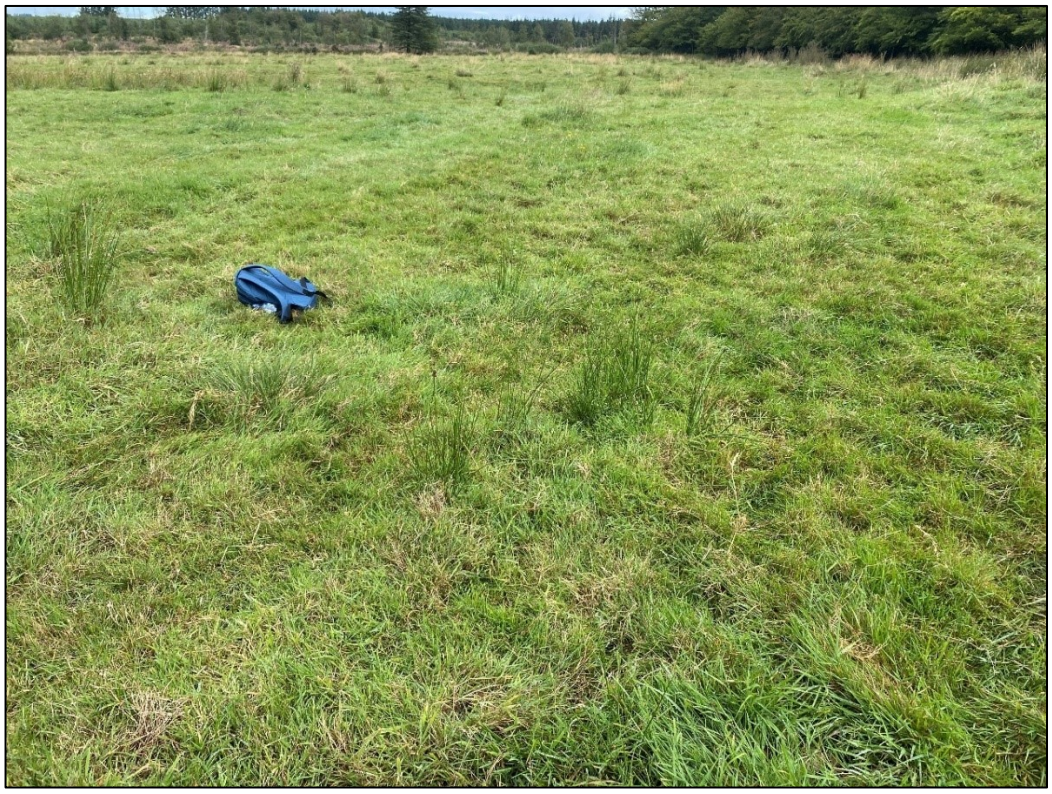

Plate 2-9 Example of receiving habitat at Turbine 6

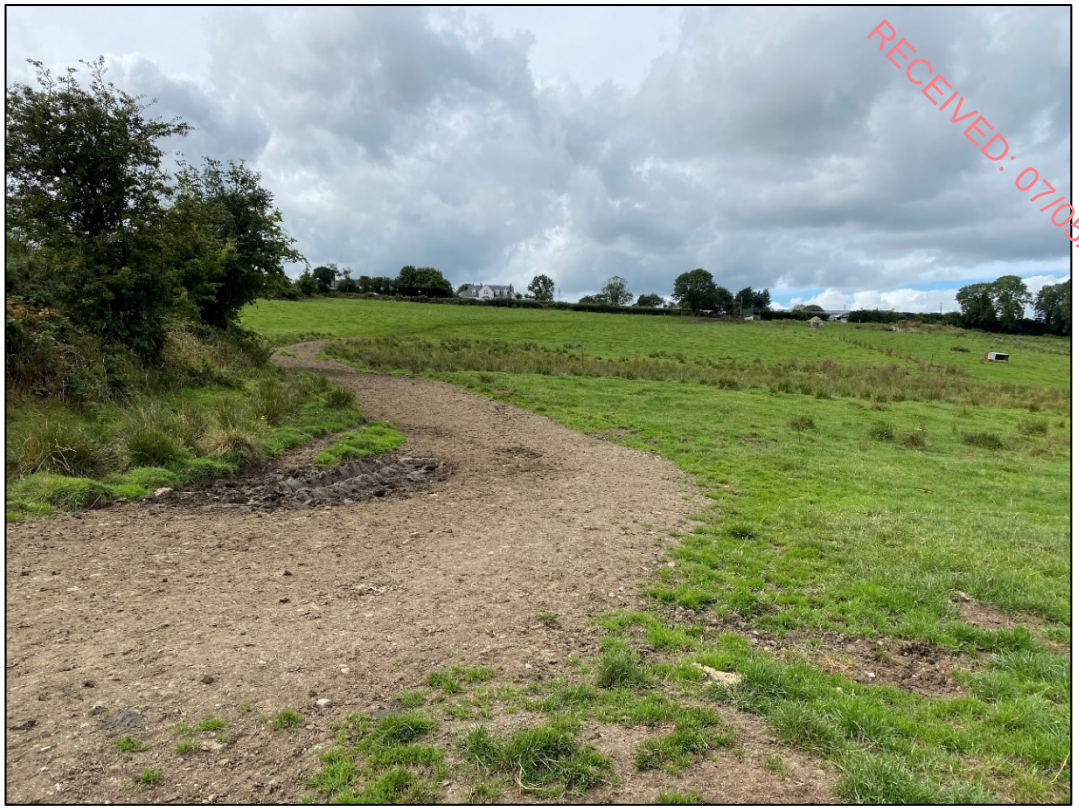

Plate 2-10 habitat in the vicinity of Turbine 6

2.7 Turbine 7

Turbine 7 is located within an area of recently felled conifer plantation (WS5). This location is surrounded by conifer plantation (WD4) to the north, south and west.

Table 2-7 Botanical Survey Results – Turbine 7

Relevé T7	Grid reference: ITM 663630 668116	Date 20/07/2023
Species	**Common Name**	**% Cover**
Vascular Plants		
Juncus effusus	Soft Rush	40
Galium saxatile	Heath Bedstraw	30
Calluna vulgaris	Common Heather	25
Rubus fruticosus	Bramble	10
Picea sitchensis	Sitka spruce	5
Agrostis capillaris	Common Bent	5
Chamaenerion angustifolium	Rosebay Willowherb	3
Juncus bulbosus	Bulbous Rush	2

Ranunculus acris	Meadow Buttercup	2
Potentilla erecta	Tormentil	2
Vaccinium myrtillus	Bilberry	5
Bare soil		5
Fossitt (2000) Habitat Classification	Recently Felled Woodland (WS5)	
IVC classification	None – did not correspond to any community type	
Affinity to Annex I habitat	No	

Plate 2-11 Example of receiving habitat at Turbine 7

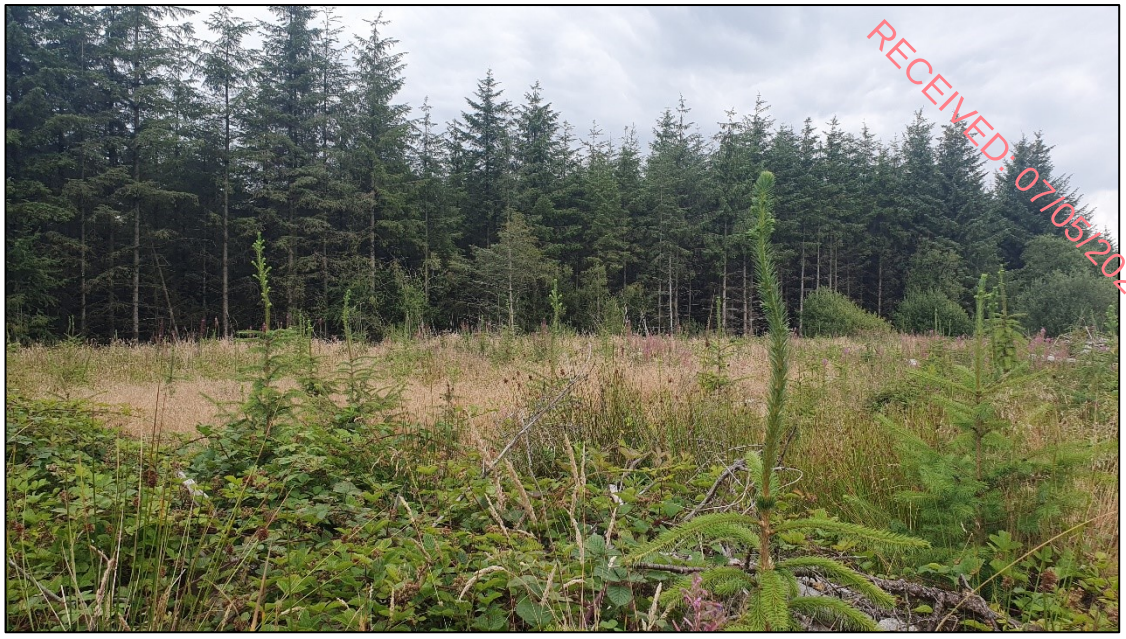

Plate 2-12 Habitat in the vicinity of Turbine 7

2.8 Proposed Onsite Substation and Battery Energy Storage System/Temporary Construction Compound

The proposed onsite substation and battery energy storage system (BESS) compound, and temporary construction compound are within an area of wet grassland (GS4). The field is delineated by treelines (WL1) to the west and earth banks (BL2) overgrown scrub to the north, east and south.

Table 2-8 Botanical Survey Results – Proposed Onsite Substation, BESS and temporary construction compound

Relevé 1	Grid reference: ITM 663764 669340	Date 24/08/2022
Species	Common Name	% Cover
Lolium perenne	Perennial Rye Grass	80
Holcus lanatus	Yorkshire-fog	80
Juncus effusus	Soft Rush	25
Ranunculus repens	Creeping buttercup	80
Ranunculus acris	Meadow buttercup	20
*Rumex acetosella*Sheep's sorrel10*Agrostis stolonifera* Creeping bent grass10		
Fossitt (2000) Habitat Classification	Wet grassland (GS4)	
IVC classification	GL2C - *Holcus lanatus – Lolium perenne*	

Affinity to Annex I habitat	No

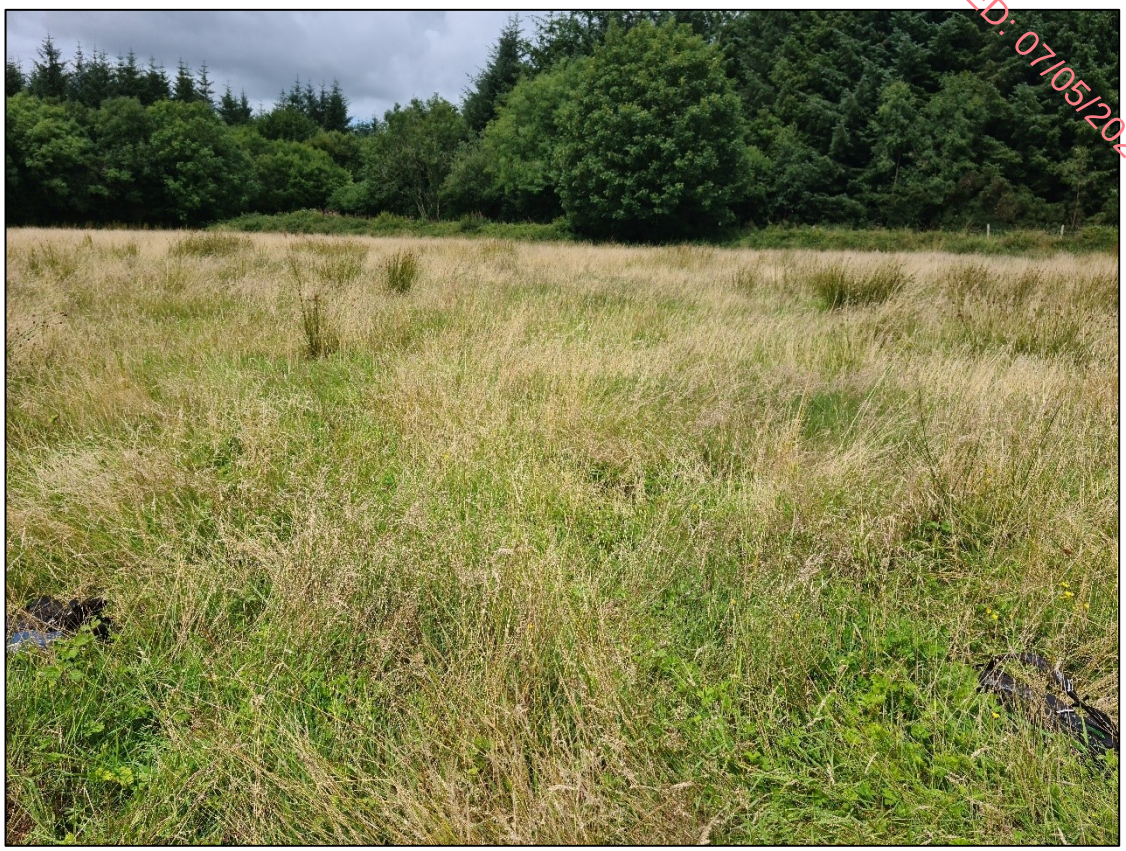

Plate 2-13 Example of receiving habitat in the footprint of the proposed onsite substation, BESS and temporary construction compound

2.9 Met Mast

The proposed met mast will be located within a field comprising of wet grassland (GS4). Conifer plantation (WD4) borders the field to the east, with drainage ditches (FW4) to the east and south, and lowland depositing rivers (FW2) to the west, with spoil and bare ground (ED2) farm tracks that are heavily poached to the north.

Table 2-9 Botanical Survey Results – Met Mast

Relevé 1	Grid reference: ITM 663054 668385	Date 19/07/2023
Species	**Common Name**	**% Cover**
Juncus effusus	Soft Rush	80
Jacobaea aquatica	Water ragwort	20
Holcus lanatus	Yorkshire-fog	15
Ranunculus repens	Creeping buttercup	60
Deschampsia cespitosa	Tufted hairgrass	60
Jacobaea vulgaris	Ragwort	10
Ranunculus acris	Meadow buttercup	25
Agrostis capillaris	Common bent grass	2
Molinia caerulea	Purple Moor Grass	15
Fossitt (2000) Habitat Classification	Wet grassland (GS4)	
IVC classification	GL2D – *Juncus effusus – Rumex acetosa*	
Affinity to Annex I habitat	No	

3. BIBLIOGRAPHY

European Commission (2013). Interpretation manual of European Union Habitats. EUR 28.

Fossitt, J. A. (2000). A Guide to Habitats in Ireland. Dublin: The Heritage Council.

Perrin et al., (2018). Irish Vegetation Classification (IVC) – An Overview of Concepts, Structure and Tools. In Practice, CIEEM. December 2018, pp 15-19.

Perrin (2019). Irish Vegetation Classification ERICA – Engine for Relevés to Irish Communities Assignment V5.0 User's Manua