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**Botanical Study -  
Appendix 6-1**

Carrig Renewable  
Windfarm Application

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## DOCUMENT DETAILS

Client: **Carrig Renewable Energy Ltd**

Project Title: **Carrig Renewable Windfarm Application**

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Prepared By: **MKO  
Tuam Road  
Galway  
Ireland  
H91 VW84**



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# 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 Carrig Windfarm, Co. Tipperary. The detailed assessments focused on the habitats occurring immediately adjacent to the Proposed Development footprint. The detailed botanical surveys were undertaken on the 10<sup>th</sup> August 2022, 8<sup>th</sup> September 2022, 13<sup>th</sup> June 2023, 29<sup>th</sup> June 2023, and 11<sup>th</sup> August 2023, with additional information on habitat mapping undertaken on numerous other dates in 2022 and 2023.

## 1.2 Survey Methods

A total of 17 relevés detailed were undertaken within the construction footprint or representative habitats within the study area. The location of each is provided on Figure 1.1.

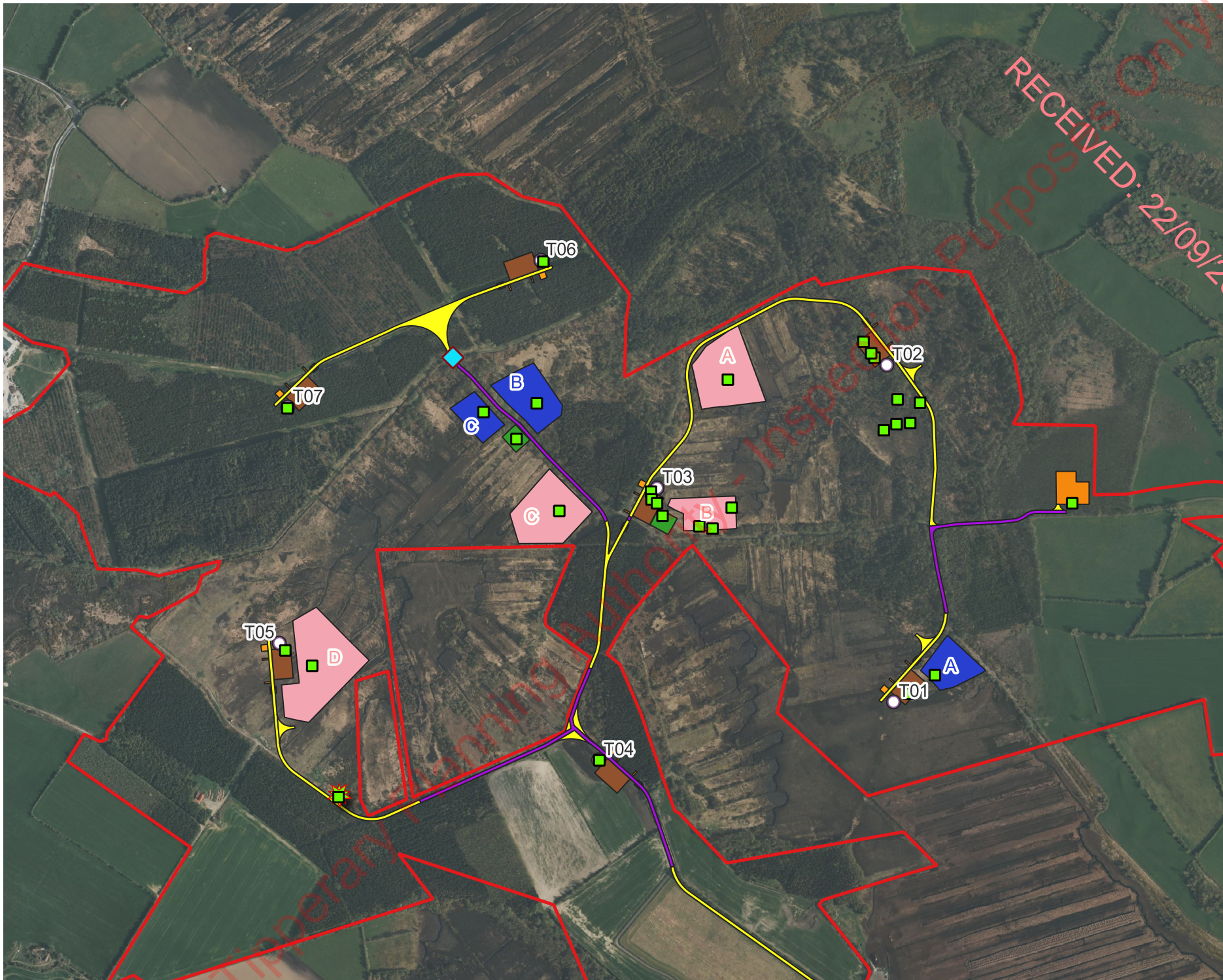
Relevés that were undertaken in peatland habitats followed guidelines set out in the following document:

*Smith, G.F. & Crowley, W. (2020) The habitats of cutover raised bog. Irish Wildlife Manuals, No. 128. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.*

All species were readily identifiable during the survey. Plant nomenclature for vascular plants follows ‘*New Flora of the British Isles*’ (Stace, 2010), while mosses and liverworts nomenclature follows ‘*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), Neansai O Donovan (B.Sc. Wildlife Biology), Cora Twomey (B.Sc. Ecology) and Rachel Walsh (BSc. Env). Rachel, Neansai and Cathal have over 2 years’ professional experience in ecological surveys and assessment. Bronagh and Cora are qualified ecologists with experience and assessment in ecological surveys and monitoring. This report has been reviewed by John Hynes (BSc., MSc., MCIEEM) who has over 10 years’ experience in ecological assessment and ecological management.



- ### Map Legend
- Relevé locations
  - EIAR Site Boundary
  - Construction Compound
  - Peat Repository Areas
  - Spoil Repository Areas
  - Substation
  - Crane Platform Hardstand
  - Existing Roads to be Upgraded
  - Proposed New Roads

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Drawing Title	
Relevé locations	
Project Title	
Carrig Renewables Wind Farm	
Drawn By	Checked By
RW	JH
Project No.	Drawing No.
211016	Figure 1-1
Scale	Date
1:9,000	20.09.2023

  
**MKO**  
 Planning and  
 Environmental  
 Consultants  
 Tuam Road, Galway  
 Ireland, H91 VW84  
 +353 (0) 91 735611  
 email: info@mkofireland.ie  
 Website: ww.mkofireland.ie

## 2. RESULTS

### 2.1 Turbine 1

Turbine 1 will be located on recolonising cutover bog (PB4) habitat.

Table 2-1 Botanical Survey Results

Relevé 1 (4 x 4)	Grid reference: ITM 599470 701350	Date 13/06/2023
Species	Common Name	% Cover
<b>Vascular Plants</b>		
<i>Calluna vulgaris</i>	Ling heather	90
<i>Erica tetralix</i>	Cross leaved heather	20
<i>Betula pubescens</i>	Downy birch	<0.1
<b>Additional relevé data as per Smith et al. 2020<sup>1</sup></b>		
<i>Sphagnum</i> cover		0
Bare peat cover		20
Average acrotelm depth		No acrotelm
Substrate firmness (firm, soft, very soft, quaking)		firm
Moisture level (wet, intermediate, dry)		dry
Soil type		Bog peat
Fossitt (2000) Habitat Classification		Cutover bog (PB4)
IVC (Irish Vegetation Community classification)		HE2B <i>Calluna vulgaris</i> - <i>Hypnum jutlandicum</i>
IWM 128 sub-community classification		<i>Calluna vulgaris</i> -bare peat cutover bog (BP1)
Affinity to Annex I habitat		No <sup>2</sup>

<sup>1</sup> Smith, G.F. & Crowley, W. (2020) *The habitats of cutover raised bog. Irish Wildlife Manuals, No. 128. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.*

<sup>2</sup> According to Smith et al. (2020), an area of cutover bog must have *Sphagnum* cover of more than 40%, in addition to other criteria, to qualify as Active Raised Bog. As this is the threshold used for the High *Sphagnum* habitat group, it follows that an area of cutover should fall into the HS1, HS2 or HS3 habitat types to qualify as active raised bog.



Plate 2-1 Example of the receiving habitat at T1



Plate 2-2 Habitat in the vicinity of Turbine 1

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## Turbine 2

Turbine 2 is located within bog woodland (WN7) which is comprised primarily of downy birch (*Betula pubescens*), grey willow (*Salix cinerea*), and scot's pine (*Pinus sylvestris*). The woodland is dry and firm underfoot and the understorey is dominated by bramble (*Rubus fruticosus agg.*), bracken (*Pteridium aquilinum*) and broad buckler-fern fern (*Dryopteris dilatata*).

Table 2-2 Botanical Survey Results – Relevé 1, Turbine 2

Relevé 1 (10m x 10m)	Grid reference: ITM 599408 701962	Date 11/08/2023
Species	Common Name	% Cover
<b>Canopy</b>		
<i>Betula pubescens</i>	Downy birch	20
<i>Pinus sylvestris</i>	Scots pine	30
<b>Shrub layer</b>		
<i>Betula pubescens</i>	Downy birch	20
<b>Field layer</b>		
<i>Calluna vulgaris</i>	Ling heather	10
<i>Molinia caerulea</i>	Purple moor grass	20
<i>Rubus fruticosus agg.</i>	Bramble	10
<i>Pteridium aquilinum</i>	Bracken	5
<i>Vaccinium myrtillus</i>	Bog myrtle	5
<b>Ground layer</b>		
<i>Pseudoscleropodium purum</i>		1
<i>Hypnum jutlandicum</i>		5
	Pine needles	95
Fossitt (2000) Habitat Classification		Bog woodland (WN7)
IVC (Irish Vegetation Community classification)		WLAC <i>Betula pubescens</i> - <i>Sphagnum palustre</i>



Woodland classification as per Perrin et al. 2008 <sup>3</sup>	a. <i>Rubus fruticosus</i> - <i>Dryopteris dilatata</i> (4. <i>Betula pubescens</i> - <i>Molinia caerulea</i> group)
Affinity to Annex I habitat	No – No <i>Sphagnum</i> species present. Ground is dry and firm with limited bryophyte cover.



Plate 23 Relevé 1 in the vicinity of T2

Table 23 Botanical Survey Results - Relevé 2, Turbine 2

Relevé 2 (10m x 10m)	Grid reference: ITM 599402 701970	Date 11/08/2023
Species	Common Name	% Cover
<b>Canopy</b>		
<i>Betula pubescens</i>	Downy birch	30
<i>Pinus sylvestris</i>	Scots pine	5

<sup>3</sup> Perrin, P., Martin, J., Barron, S., O'Neill, F., McNutt, K. & Delaney, A. (2008) National Survey of Native Woodlands 2003-2008. Unpublished report submitted to National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin

<i>Sorbus aucuparia</i>	Rowan	2
<b>Shrub layer</b>		
<i>Betula pubescens</i>	Downy birch	10
<i>Sorbus aucuparia</i>	Rowan	2
<i>Pinus sylvestris</i>	Scots pine	5
<i>Ulex europaeus</i>	Common gorse	3
<i>Ilex aquifolium</i>	Holly	10
<b>Field layer</b>		
<i>Calluna vulgaris</i>	Ling heather	5
<i>Molinia caerulea</i>	Purple moor grass	30
<i>Pteridium aquilinum</i>	Bracken	3
<i>Dryopteris dilatata</i>	Broad buckler-fern	10
<i>Ilex aquifolium</i>	Holly sapling	0.5
<i>Quercus robur</i>	Oak sapling	1
<b>Ground layer</b>		
<i>Pseudoscleropodium purum</i>		25
<i>Hypnum jutlandicum</i>		20
<i>Polytrichum commune</i>		5
	Leaf litter	50
Fossitt (2000) Habitat Classification		Bog woodland (WN7)
IVC (Irish Vegetation Community classification)		WLAC <i>Betula pubescens</i> - <i>Sphagnum palustre</i>
Woodland classification as per Perrin et al. 2008		a. <i>Rubus fruticosus</i> - <i>Dryopteris dilatata</i> (4. <i>Betula pubescens</i> - <i>Molinia caerulea</i> group)
Affinity to Annex I habitat		No – No <i>Sphagnum</i> species present. Ground is dry and firm with limited bryophyte cover.



Plate 2-4 Relevé 2 in the vicinity of T2

Table 2-4 Botanical results, Relevé 3, Turbine 2

Relevé 3 (10m x 10m)	Grid reference: ITM 599388 701991	Date 11/08/2023
Species	Common Name	% Cover
<b>Canopy</b>		
<i>Betula pubescens</i>	Downy birch	60
<i>Sorbus aucuparia</i>	Rowan	10
<b>Shrub layer</b>		
<i>Betula pubescens</i>	Downy birch	30
<i>Ulex europaeus</i>	Common gorse	5
<i>Ilex aquifolium</i>	Holly	20
<b>Field layer</b>		
<i>Rubus fruticosus agg.</i>	Bramble	15
<i>Molinia caerulea</i>	Purple moor grass	10

<i>Pteridium aquilinum</i>	Bracken	20
<i>Dryopteris dilatata</i>	Broad buckler-fern	10
<i>Ilex aquifolium</i>	Holly sapling	3
<b>Ground layer</b>		
<i>Pseudoscleropodium purum</i>		5
<i>Thuidium tamariscinum</i>		10
	Leaf litter	80
Fossitt (2000) Habitat Classification		Bog woodland (WN7)
IVC (Irish Vegetation Community classification)		WLAA <i>Betula pubescens-Vaccinium myrtillus</i>
Woodland classification as per Perrin et al. 2008		a. <i>Rubus fruticosus-Dryopteris dilatata</i> (4. <i>Betula pubescens-Molinia caerulea</i> group)
Affinity to Annex I habitat		No – No <i>Sphagnum</i> species present. Ground is dry and firm with limited bryophyte cover.



Plate 2-5 Relevé 3 in the vicinity of T2

## Turbine 3

Turbine 3 is located within a small margin of Bog woodland/scrub mosaic (WN7/WS1) adjacent to cutover bog (PB4).

Table 2.5 Botanical Survey Results – Relevé 1 in the vicinity of Turbine 3

Relevé 1 (10 x 10)	Grid reference: ITM 599001 701718	Date 11/08/2023
Species	Common Name	% Cover
<b>Canopy</b>		
<i>Betula pubescens</i>	Downy birch	30
<i>Salix cinerea</i>	Grey willow	40
<b>Shrub layer</b>		
<i>Ulex europaeus</i>	Common gorse	10
<i>Sambucus nigra</i>	Elder	3
<b>Field layer</b>		
<i>Pteridium aquilinum</i>	Bracken	30
<i>Osmunda regalis</i>	Royal fern	5
<i>Rubus fruticosus agg.</i>	Bramble	40
<i>Urtica dioica</i>	Nettle	15
<i>Phalaris arundinaceae</i>	Reed canary grass	5
<b>Ground layer</b>		
<i>Kindbergia praelonga</i>	Common Feather-moss	10
	Leaf litter	90
<b>Fossitt (2000) Habitat Classification</b>		
Fossitt (2000) Habitat Classification		Bog woodland/scrub mosaic (WN7/WS1)
<b>IVC (Irish Vegetation Community classification)</b>		
IVC (Irish Vegetation Community classification)		WLAF <i>Betula pubescens</i> - <i>Pteridium aquilinum</i>
<b>Woodland classification as per Perrin et al. 2008</b>		
Woodland classification as per Perrin et al. 2008		a. <i>Rubus fruticosus</i> - <i>Dryopteris dilatata</i> (4. <i>Betula pubescens</i> - <i>Molinia caerulea</i> group)

Affinity to Annex I habitat	No – No <i>Sphagnum</i> species present. Ground is dry and firm with limited bryophyte cover.
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Plate 2-6 Relevé 1 in the vicinity of Turbine 3

Table 2-6 Botanical survey results - Relevé 2 in the vicinity of Turbine 3

Relevé 2 (4 x 4)	Grid reference: ITM 599002 701704	Date 11/08/2023
Species	Common Name	% Cover
<b>Vascular plants</b>		
<i>Calluna vulgaris</i>	Ling heather	40
<i>Phalaris arundinaceae</i>	Reed canary grass	20
<i>Erica tetralix</i>	Cross-leaved heath	5
<i>Potentilla erecta</i>	Tormentil	5
<i>Molinia caerulea</i>	Purple moor-grass	30
<i>Pteridium aquilinum</i>	Bracken	15

<i>Rubus fruticosus</i> agg.	Bramble	No <sup>2</sup>
<b>Non-vascular plants</b>		
<i>Hypnum jutlandicum</i>		40
<i>Campylopus introflexus</i>		10
<b>Additional relevé data as per Smith at al. 2020</b>		
<i>Sphagnum</i> cover		0
Bare peat cover		10
Average acrotelm depth		No acrotelm
Substrate firmness (firm, soft, very soft, quaking)		firm
Moisture level (wet, intermediate, dry)		dry
Soil type		Bog peat
Fossitt (2000) Habitat Classification		Cutover bog (PB4)
IVC (Irish Vegetation Community classification)		HE2D - <i>Calluna vulgaris</i> - <i>Molinia caerulea</i> - <i>Erica cinerea</i>
IWM 128 sub-community classification		<i>Calluna vulgaris</i> bare peat cutover bog (BP1) transitional to <i>Calluna vulgaris</i> cutover bog (LS1)
Affinity to Annex I habitat		No <sup>2</sup>

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Plate 2-7 Relevé 2 in the vicinity of Turbine 3

Table 2-7 Botanical survey results - Relevé 3 in the vicinity of Turbine 3

Relevé 3 (4 x 4)	Grid reference: ITM 599012 701697	Date 11/08/2023
Species	Common Name	% Cover
<b>Vascular plants</b>		
<i>Calluna vulgaris</i>	Ling heather	25
<i>Phalaris arundinaceae</i>	Reed canary grass	15
<i>Potentilla erecta</i>	Tormentil	0.5
<i>Molinia caerulea</i>	Purple moor-grass	25
<i>Rubus fruticosus agg.</i>	Bramble	0.5
<i>Betula pubescens</i>	Birch sapling	0.5
<i>Quercus robur</i>	Oak sapling	0.5
<b>Non-vascular plants</b>		
None		



Additional relevé data as per Smith at al. 2020	
<i>Sphagnum</i> cover	0
Bare peat cover	40
Average acrotelm depth	No acrotelm
Substrate firmness (firm, soft, very soft, quaking)	firm
Moisture level (wet, intermediate, dry)	dry
Soil type	Bog peat
Fossitt (2000) Habitat Classification	Cutover bog (PB4)
IVC (Irish Vegetation Community classification)	HE4E - <i>Molinia caerulea</i> - <i>Calluna vulgaris</i> - <i>Erica tetralix</i> (Transitional)
IWM 128 sub-community classification	<i>Calluna vulgaris</i> bare peat cutover bog (BP1)
Affinity to Annex I habitat	No <sup>2</sup>



Plate 2-8 Relevé 3 in the vicinity of Turbine 3

## 2.4 Turbine 4

Turbine 4 is located within Improved Agricultural Grassland (GA1) surrounded to the northeast by Conifer plantation (WD4).

Table 2-8 Botanical Survey Results

Relevé 1 (2 x 2)	Grid reference: ITM 598907 701229	Date 13/06/2023
Species	Common Name	% Cover
<b>Vascular Plants</b>		
<i>Lolium perenne</i>	Perennial Rye Grass	70
<i>Jacobaea vulgaris</i>	Ragwort	5
<i>Chenopodium album</i>	Fat hen	1
Fossitt (2000) Habitat Classification		Improved Agricultural Grassland (GA1)
IVC classification		WE1D <i>Lolium perenne</i> - <i>Anagallis arvensis</i> (transitional)

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Plate 2-9 Receiving habitat at Turbine 4

2.5

## Turbine 5

Turbine 5 is located on cutover bog (PB4) surrounded by turbary drains. The peat within this area consists of areas of bare peat with other areas colonised by soft rush (*Juncus effusus*), sweet vernal grass (*Anthoxanthum odoratum*), cats ear (*Hypochaeris radicata*), willow saplings (*Salix sp*), sedges (*Carex panicea*, *Carex flacca*, *Carex demissa*), and ling (*Calluna vulgaris*). Drains consist of willows, ling, soft rush, bulrush (*Typha latifolia*) and birch saplings (*Betula pubescens*). The relevé and surrounding area did not consist of any bryophytes. The ground underfoot was very dry and firm.

Relevé 1 (4 x 4)	Grid reference: ITM 598335 701429	Date 29/06/2023
Species	Common Name	% Cover
<b>Vascular Plants</b>		
<i>Molinia caerulea</i>	Purple moor grass	70
<i>Hypochaeris radicata</i>	Cats ear	5
<i>Potentilla erecta</i>	Tormentil	15
<i>Taraxacum officinale agg.</i>	Dandelion	5
<i>Cirsium palustre</i>	Marsh thistle	3

<i>Salix spp.</i>	Willow saplings	1
<i>Potentilla anserina</i>	Silverweed	1
<i>Hydrocotyle vulgaris</i>	Marsh pennywort	2
<i>Hypericum pulchrum</i>	Slender St. Johns wort	1
<i>Carex demissa</i>	Common yellow sedge	3
<i>Anthoxanthum odoratum</i>	Sweet vernal grass	15
<i>Calluna vulgaris</i>	Ling heather	8
<i>Juncus effusus</i>	Soft rush	5
<i>Erica tetralix</i>	Cross leaved heath	3
<i>Glaucous sedge</i>	Carex flacca	2
<b>Additional relevé data as per Smith at al. 2020</b>		
<i>Sphagnum cover</i>		0
Bare peat cover		10
Average acrotelm depth		No acrotelm
Substrate firmness (firm, soft, very soft, quaking)		firm
Moisture level (wet, intermediate, dry)		dry
Soil type		Bog peat
Fossitt (2000) Habitat Classification		Cutover bog (PB4)
IWM 128 sub-community classification		<i>Molinia caerulea</i> cutover bog (LS3)
IVC classification		HEAD <i>Molinia caerulea</i> - <i>Potentilla erecta</i> - <i>Erica tetralix</i>
Affinity to Annex I habitat		No <sup>2</sup>

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Plate 2-10 Receiving habitat at T5

2.6

## Turbine 6

Turbine 6 is located within Conifer Plantation (WD4), close to a grassy Coillte access track and drainage ditch.

Table 2.9 Botanical Survey Results

Relevé 1 (10 x 10)	Grid reference: ITM 598805 702137	Date 13/06/2023
Species	Common Name	% Cover
<b>Canopy</b>		
<i>Picea sitchensis</i>	Sitka spruce	100
<b>Ground layer</b>		
<i>Kindbergia praelonga</i>	Common Feather-moss	15
Needles		85
Fossitt (2000) Habitat Classification		
		Conifer Plantation (WD4)



Plate 2-11 Example of receiving habitat at Turbine 6

2.7

## Turbine 7

Turbine 7 is located within a conifer forestry (WD4) close to a grassy Coillte access track and drainage ditch.

Table 2-10 Botanical Survey Results

Relevé 1 (10 x 10)	Grid reference: ITM 598339 701870	Date 13/06/2023
Species	Common Name	% Cover
<b>Canopy</b>		
<i>Picea sitchensis</i>	Sitka spruce	100
<b>Ground layer</b>		
Needles		100
Fossitt (2000) Habitat Classification		
		Conifer Plantation (WD4)



Plate 2-12 Example of receiving habitat at Turbine 7

2.8

## Proposed substation and Battery Storage Compound

The proposed substation is located within an Ash plantation categorised as broadleaved woodland (WD1).

Table 2-11 Botanical Survey Results

Relevé 1 (10 x 10)	Grid reference: ITM 599768 701697	Date 13/06/2023
Species	Common Name	% Cover
<b>Canopy</b>		
<i>Fraxinus excelsior</i>	Ash	80
<b>Shrub layer</b>		
<i>Crataegus monogyna</i>	Hawthorn	5
<i>Euonymus europaeus</i>	Spindle	5
<i>Corylus avellana</i>	Hazel	10

<i>Prunus spinosa</i>	Blackthorn	30
<b>Ground layer</b>		
Bryophytes		<0.5
<i>Hedera hibernica</i>	Ivy	90
<i>Arum maculatum</i>	Lords and ladies	1
<i>Polystichum setiferum</i>	Soft shield fern	<0.5
<i>Ranunculus repens</i>	Creeping buttercup	1
<i>Galium aparine</i>	Cleavers	0.5
<i>Heracleum sphondylium</i>	Common hogweed	0.5
Fossitt (2000) Habitat Classification		Broadleaved woodland (WD1)
IVC classification		WL2C <i>Fraxinus excelsior</i> - <i>Acer pseudoplatanus</i>



Plate 2-13 Receiving habitat in the footprint of the proposed substation.



## Proposed Construction Compounds

The easternmost construction compound is located on an area of degraded Cutover bog (PB4) adjacent to scrub (WS1) and dense bracken (HD1) mosaic. The area is adjacent to the proposed Turbine T3 area.

Table 2-12 Botanical Survey Results – Relevé 1 in the vicinity of construction compound

Relevé 1 (4 x 4)	Grid reference: ITM 599026 701662	Date 13/06/2023
Species	Common Name	% Cover
<b>Vascular Plants</b>		
<i>Molinia caerulea</i>	Purple moor-grass	50
<i>Calluna vulgaris</i>	Ling Heather	10
<i>Potentilla erecta</i>	Tormentil	10
<i>Pteridium aquilinum</i>	Bracken	8
<i>Ulex gallii</i>	Dwarf furze	5
	Bare peat	60
Fossitt (2000) Habitat Classification		
		Cutover bog (PB4)
IWM 128 sub-community classification		
		<i>Calluna vulgaris</i> -bare peat cutover bog (BP1)
IVC classification		
		HE4D <i>Molinia caerulea</i> - <i>Potentilla erecta</i> - <i>Erica tetralix</i>
Affinity to Annex I habitat		
		No <sup>2</sup>

Table 2-13 Relevé 2 in the vicinity of construction compound

Relevé 2 (10 x 10)	Grid reference: ITM 599022 701674	Date 11/08/2023
Species	Common Name	% Cover
<b>Vascular Plants</b>		
<i>Betula pubescens</i>	Downy birch	50
<i>Salix cinerea</i>	Willow	30
<i>Pteridium aquilinum</i>	Bracken	20

<i>Rubus fruticosus agg.</i>	Bramble	10
<i>Osmunda regalis</i>	Royal fern	5
Fossitt (2000) Habitat Classification	Bog woodland (WN7)/ Dense bracken (HD1) mosaic	
IVC classification	WL4F <i>Betula pubescens</i> - <i>Pteridium aquilinum</i>	



Plate 2-14 Example of habitat in the eastern-most construction compound



Plate 2-15 Relevé 2 in the vicinity of a construction compound

The westernmost proposed construction compound is located within Scrub (WS1) adjacent to a drainage ditch.

Table 2-14 Botanical survey results - western construction compound

Relevé 1	Grid reference: ITM 598756 701814	Date 13/06/2023
Species	Common Name	% Cover
<b>Vascular Plants</b>		
<i>Pteridium aquilinum</i>	Northern bracken fern	100
<i>Betula pubescens</i>	Downy birch	60
<i>Molinia caerulea</i>	Purple moor-grass	30
<i>Salix cinerea</i>	Willow	5
<b>Non Vascular Plants</b>		
<i>Kindbergia praelonga</i>	Common Feather-moss	5
Fossitt (2000) Habitat Classification		Scrub (WS1)

IVC classification	HEAD <i>Molinia caerulea</i> - <i>Potentilla erecta</i> - <i>Erica tetralix</i> (transitional)
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Plate 2-16 Example of habitat present at the western-most construction compound

2.10

## Proposed Peat Repository Areas

The Peat Repository Areas are described below in an easternly to westerly direction (labelled A to D on Figure 1-1) and are found in the following habitats; Cutover bog (PB4), Dense bracken (HD1), Dry meadows and grassy verges (GS2).

Table 2-15 Proposed peat repository area A relevé

Relevé 1	Grid reference: ITM 599141 701922	13/06/2023
Species	Common Name	% Cover
<b>Vascular Plants</b>		
<i>Ranunculus repens</i>	Creeping buttercup	80
<i>Juncus effusus</i>	Soft rush	45
<i>Holcus lanatus</i>	Yorkshire fog	50

<i>Molinia caerulea</i>	Purple moor-grass	20
<i>Taraxacum officinale agg.</i>	Dandelion	5
<i>Salix cinerea</i>	Willow	5
<i>Rumex obtusifolius</i>	Broad-leaved dock	1
Fossitt (2000) Habitat Classification		Cutover bog (PB4)
IVC classification		GL2D <i>Juncus effusus</i> - <i>Rumex acetosa</i>
Affinity to Annex I habitat		No <sup>2</sup>

The proposed peat repository area B is located adjacent to Turbine 3 and associated construction compound on cutover bog (PB4).

Table 2-16 Relevé 1 in the vicinity of proposed peat repository area B

Relevé 1 (4x4)	Grid reference: ITM 599089 701655	Date 11/08/2023
Species	Common Name	% Cover
<b>Vascular Plants</b>		
<i>Molinia caerulea</i>	Purple moor-grass	30
<i>Eriophorum angustifolium</i>	Common Cottongrass	15
<i>Carex panicea</i>	Carnation sedge	20
<i>Calluna vulgaris</i>	Ling Heather	2
<i>Potentilla erecta</i>	Tormentil	10
<i>Plantago lanceolata</i>	Ribwort plantain	3
<i>Taraxacum officinale agg.</i>	Dandelion	5
<i>Succisa pratensis</i>	Devils bit scabious	5
<i>Angelica sylvestris</i>	Angelica	2
<b>Non-vascular plants</b>		
<i>Rhytidiadelphus squarrosus</i>		2
<i>Hypnum jutlandicum</i>		3

<i>Calliergonella cuspidata</i>		3
<b>Additional relevé data as per Smith at al. 2020</b>		
<i>Sphagnum</i> cover		0
Bare peat cover		10
Average acrotelm depth		No acrotelm
Substrate firmness (firm, soft, very soft, quaking)		firm
Moisture level (wet, intermediate, dry)		dry
Soil type		Bog peat
Fossitt (2000) Habitat Classification		Cutover bog (PB4)
IVC (Irish Vegetation Community classification)		GL1D - <i>Molinia caerulea</i> - <i>Potentilla erecta</i> - <i>Agrostis stolonifera</i> (Transitional)
IWM 128 sub-community classification		<i>Eriophorum angustifolium</i> -bare peat cutover bog (BP2)
Affinity to Annex I habitat		No <sup>2</sup>

Table 2-17 Botanical survey results - Peat repository area B Relevé 2

Relevé 2 (4x4)	Grid reference: ITM 599113 701651	Date 11/08/2023
Species	Common Name	% Cover
<b>Vascular Plants</b>		
<i>Molinia caerulea</i>	Purple moor-grass	50
<i>Eriophorum angustifolium</i>	Common Cottongrass	2
<i>Carex panicea</i>	Carnation sedge	20
<i>Betula pubescens</i>	Birch sapling	5
<i>Calluna vulgaris</i>	Ling Heather	3
<i>Erica tetralix</i>	Cross-leaved heath	1
<b>Non-vascular plants</b>		
<i>Rhytidiadelphus squarrosus</i>		0.5

<i>Campylopus introflexus</i>		3
<i>Sphagnum palustre</i>		2
<i>Sphagnum fallax</i>		1
<i>Sphagnum fimbriatum</i>		1
<b>Additional relevé data as per Smith at al. 2020</b>		
<i>Sphagnum cover</i>		5
Bare peat cover		15
Average acrotelm depth		0 to 5cm
Substrate firmness (firm, soft, very soft, quaking)		firm
Moisture level (wet, intermediate, dry)		dry
Soil type		Bog peat
Fossitt (2000) Habitat Classification		Cutover bog (PB4)
IVC (Irish Vegetation Community classification)		HE4D - <i>Molinia caerulea</i> - <i>Potentilla erecta</i> - <i>Erica tetralix</i> (Transitional)
IWM 128 sub-community classification		<i>Eriophorum angustifolium</i> -bare peat cutover bog (BP2)
Affinity to Annex I habitat		No <sup>2</sup>

Table 2-18 Botanical survey results - Peat repository area B - Relevé 3

Relevé 3 (4x4)	Grid reference: ITM 599148 701689	Date 11/08/2023
Species	Common Name	% Cover
<b>Vascular Plants</b>		
<i>Molinia caerulea</i>	Purple moor-grass	40
<i>Eriophorum angustifolium</i>	Common Cottongrass	15
<i>Drosera rotundifolia</i>	Round-leaved sundew	3
<i>Potentilla erecta</i>	Tormentil	5
<i>Betula pubescens</i>	Birch sapling	2

<i>Calluna vulgaris</i>	Ling Heather	10
<i>Erica tetralix</i>	Cross-leaved heath	10
<b>Non-vascular plants</b>		
<i>Campylopus introflexus</i>		3
<i>Hypnum jutlandicum</i>		5
<i>Sphagnum palustre</i>		0.5
<i>Sphagnum capillifolium</i>		2
<i>Aulacomnium palustre</i>		0.5
<b>Additional relevé data as per Smith at al. 2020</b>		
<i>Sphagnum cover</i>		3
Bare peat cover		20
Average acrotelm depth		0 to 5cm
Substrate firmness (firm, soft, very soft, quaking)		firm
Moisture level (wet, intermediate, dry)		dry
Soil type		Bog peat
<b>Fossitt (2000) Habitat Classification</b>		
Fossitt (2000) Habitat Classification		Cutover bog (PB4)
<b>IVC (Irish Vegetation Community classification)</b>		
IVC (Irish Vegetation Community classification)		HE4E - <i>Molinia caerulea</i> - <i>Calluna vulgaris</i> - <i>Erica tetralix</i>
<b>IWM 128 sub-community classification</b>		
IWM 128 sub-community classification		<i>Eriophorum angustifolium</i> -bare peat cutover bog (BP2)
<b>Affinity to Annex I habitat</b>		
Affinity to Annex I habitat		No <sup>2</sup>

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Plate 2-17 Peat repository area B - Relevé 1



Plate 2-18 Peat repository area B - Relevé 2



Plate 2-19 Relevée 3 in the vicinity of peat repository area B

The proposed peat repository area C is located on cutover bog (PB4) near to the centre of the site, dominated by Purple moor grass.

Table 2-19 Proposed peat repository area C relevé

Relevé 1	Grid reference: ITM 598834 701683	Date 13/06/2023
Species	Common Name	% Cover
<b>Vascular Plants</b>		
<i>Molinia caerulea</i>	Purple moor-grass	100
<i>Potentilla erecta</i>	Tormentil	20
<i>Calluna vulgaris</i>	Ling heather	25
<i>Betula pubescens</i>	Downy birch	15
Fossitt (2000) Habitat Classification		Cutover bog (PB4)
IWM 128 sub-community classification		<i>Molinia caerulea</i> cutover bog (LS3)

IVC classification	HE4D <i>Molinia caerulea</i> - <i>Potentilla erecta</i> - <i>Erica tetralix</i>
Affinity to Annex I habitat	No <sup>2</sup>



Plate 2-20 Example of cutover bog (PB4) where proposed Peat Repository Area C is located

The proposed peat repository D area is located on cutover bog (PB4) adjacent to the proposed Turbine 5.

Table 2-20 Relevé of peat repository area adjacent to T5

Relevé 1	Grid reference: ITM 598384 701401	Date 29/06/2023
Species	Common Name	% Cover
<b>Vascular Plants</b>		
<i>Molinia caerulea</i>	Purple moor grass	15
<i>Calluna vulgaris</i>	Ling heather	30
<i>Eriophorum angustifolium</i>	Common cottongrass	15
<b>Non-vascular plants</b>		

<i>Campylopus introflexus</i>		5
Bare peat		65
Fossitt (2000) Habitat Classification		Cutover bog (PB4)
IWM 128 sub-community classification		<i>Calluna vulgaris</i> -bare peat cutover bog (BP1)
IVC classification		BG1D <i>Eriophorum angustifolium</i> - <i>Campylopus introflexus</i>
Affinity to Annex I habitat		No <sup>2</sup>



Plate 2-21 Proposed peat repository area D

2.11

## Proposed Spoil Repository Areas

Proposed spoil repository areas are labelled A to C as shown on Figure 1-1. Spoil Repository Area A consists of grassland habitat colonising cutover peat adjacent to the proposed Turbine 1. Purple Moor Grass is present in the area.

Table 2-21 Proposed spoil repository area A relevé

Relevé 1 (4 x 4)	Grid reference: ITM 599518 701384	Date 13/06/2023
Species	Common Name	% Cover
<b>Vascular Plants</b>		
<i>Bromus hordeaceus</i>	Soft brome grass	30
<i>Luzula multiflora</i> agg.	Heath woodrush	25
<i>Carex panicea</i>	Carnation sedge	25
<i>Potentilla erecta</i>	Tormentil	20
<i>Erica tetralix</i>	Cross leaved heather	20
<i>Eriophorum angustifolium</i>	Common bog cotton	1
Fossitt (2000) Habitat Classification	Cutover bog (PB4)	
IWM 128 sub-community classification	<i>Molinia caerulea</i> cutover bog (LS3)	
IVC classification	HE4B <i>Molinia caerulea</i> - <i>Nardus stricta</i> (transitional)	
Affinity to Annex I habitat	No <sup>2</sup>	

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Plate 2-22 Proposed spoil repository area A

The proposed spoil repository B area is located near to the centre of the site, adjacent to the proposed access road to Turbines 6 and 7 to the east, on an area described as a mosaic of grassland (GS2), cutover bog (PB4) and bog woodland (WN6).

Table 2-22 Proposed spoil repository area B relevé

Relevé 1	Grid reference: ITM 598793 701879	Date 13/06/2023
Species	Common Name	% Cover
<b>Vascular Plants</b>		
<i>Convolvulus arvensis</i>	Bindweed	60
<i>Arrhenatherum elatius</i>	False oat grass	25
<i>Angelica sylvestris</i>	Wild angelica	15
<i>Galium aparine</i>	Cleavers	10
<i>Holcus lanatus</i>	Yorkshire Fog	5
<i>Polygala serpyllifolia</i>	Milkwort vetch	5

Fossitt (2000) Habitat Classification	Dry meadows and grassy verges (GS2)
IVC classification	SC1F <i>Galium aparine</i> - <i>Urtica dioica</i> (transitional)



Plate 2-23 Example of Dry meadows and grassy verges (GS2) habitat where a proposed Peat Repository Area is located

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The proposed spoil repository C area is located adjacent to the access road to turbines 6 and 7, to the west in a broadleaved woodland (WD1) and dense bracken (HD1) mosaic.

Table 2-23 Proposed spoil repository area C relevé

Relevé 1	Grid reference: ITM 598696 701863	Date 13/06/2023
Species	Common Name	% Cover
<b>Vascular Plants</b>		
<i>Pteridium aquilinum</i>	Bracken	100
<i>Rubus fruticosus agg.</i>	Bramble	20
Fossitt (2000) Habitat Classification		Broadleaved woodland WD1/Dense bracken HD1



Plate 2-24 Example of Dense bracken (HD1) habitat where a proposed Peat Repository Area is located



2.12

## Met Mast

The proposed met mast is to be located adjacent to an existing track on a small area of bare peat and spoil/rubble (ED2) adjacent to scrub (WS1) dominated by common gorse, willow, nettle, rosebay willowherb (*Chamaenerion angustifolium*) and bramble.

Table 2-24 Relevé within footprint of proposed met mast

Relevé 1	Grid reference: ITM 598432 701162	Date 29/06/2023
Species	Common Name	% Cover
<b>Vascular Plants</b>		
<i>Ulex europaeus</i>	Common gorse	60
<i>Rubus fruticosus agg.</i>	Bramble	20
<i>Chamaenerion angustifolium</i>	Rosebay willowherb	10
<i>Urtica dioica</i>	Nettle	15
<i>Cirsium arvense</i>	Creeping thistle	2
<i>Stachys palustris</i>	Marsh woundwort	1
<i>Potentilla erecta</i>	Tormentil	5
Bare peat and spoil/rubble		80
Fossitt (2000) Habitat Classification		
		Scrub (WS1)



*Plate 2-25 Habitat within the footprint of the proposed met mast*

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