Technical Appendix 5-1
Technical Habitat Report

EIAR – Volume 3

Muingmore Wind Farm

SLR Project No.: 501.065301.00001

April 2026

Habitat Survey of Muingmore Wind Farm Development Site, Co. Mayo

Report for *RWE Renewable Ireland Ltd*.

FitzGerald Ecology

January 2024

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1. Introduction

RWE Renewable Ireland Ltd. commissioned FitzGerald Ecology to carry out a habitat survey of a proposed wind farm development site at Muingmore, west Co. Mayo. The aim of the study was to determine the presence/absence of any rare or threatened habitats that may be impacted by the proposed Muingmore wind farm development.

A full vegetation study of the habitats on site was conducted (including rare/legally protected plant and invasive species surveys), along with a detailed summary report outlining and describing the various habitats and plants present on site, including detailed habitat maps and species lists.

The site does not currently fall within areas designated at a National or European level; however, it is in close proximity to *Tristia Bog NHA*, which is located the north-east of the site. Commercial forestry, sheep/cattle grazing, and turf cutting appear to be the main land uses in the area. The site itself has been influenced by these land uses, with commercial forestry, grazing sheep and cattle present, along with signs of extensive peat harvesting occurring in the past. The study area for this habitat study was all lands within the Muingmore development site (see Figure 1 for extent).

2. Expertise and Qualifications

The habitat fieldwork and reporting for this project was completed by Alexis FitzGerald B.A. M.Sc. ACIEEM. Alexis is the Director of *FitzGerald Ecology*, which was established in 2015 as a botanical and ecological consultancy, based in Dublin, Republic of Ireland. Alexis holds an honours degree in Natural Sciences, with a specialisation in Botany, from Trinity College Dublin and obtained a distinction in his Masters in Biodiversity and Conservation from the same institution. During his career, he has completed multiple Ecological Impact Assessments (including EIAR Biodiversity Chapters), Appropriate Assessments and Preliminary Ecological Appraisal reports for residential and infrastructural projects across the Republic of Ireland. These were completed both in his previous three-year professional role as Consultant Ecologist for Scott Cawley Ltd. ecology consultancy, and for his current *FitzGerald Ecology* consultancy. He is an expert at habitat surveying and vascular plant, charophyte and bryophyte identification, developed over more than ten years of intensive study in university, professional ecological surveying and with natural history groups such as the Botanical Society of Britain and Ireland (BSBI) and the Dublin Naturalists' Field Club (DNFC). He also has extensive professional experience with vegetation and habitat classification, mapping and data analysis (including Fossitt (2000) classification, EU Habitats Directive Annex I habitats and statistical vegetation analysis tools such as Irish Vegetation Classification (IVC)), as well as rare, protected and invasive plant species surveying and monitoring. He also has experience with specialised bat, bird and terrestrial mammal surveys.

3. Methodology

The habitat/plant walkover surveys were carried out by Alexis FitzGerald B.A. M.Sc. in September 2023, with reference to Smith *et al.* (2011). The habitats were classified according to the Irish Heritage Council classification system (Fossitt, 2000). The abundance of each species present in each habitat was recorded using the percentage scale[1]. The locations of rare and non-native species were also

[1] Percentages were recorded as follows: 0.1, 0.3, 0.5, 0.7, 1, 3, 5, 7, 10, 15, 20, 25, 30, etc., continuing in 5% steps to 100%.

recorded. EU Habitats Directive Annex I habitats were classified as per Commission of the European Communities (2013), also with reference to the corresponding national habitat survey reports and descriptions, particularly NPWS (2019). The nomenclature for the Annex I habitats also follows Commission of the European Communities (2013), with any abbreviated names for the habitats following NPWS (2019). Vascular plant taxonomy and nomenclature follows Stace (2019), whilst bryophyte taxonomy and nomenclature follow Atherton *et al.* (2010). Ecological evaluations were made according to the criteria as set out in Appendix II. Habitats were not classified according to the Irish Vegetation Classification (IVC) (using the ERICA[2] tool), as relevés were not completed in all habitats and relevé data are required for this classification. Furthermore, IVC is not necessary for the correct classification of the most sensitive and protected Annex I habitats which occur on site.

Four relevés were recorded, one in each Annex I habitat which was safely accessible for relevé recording during the survey, with the exception of the blanket bog relevés, two of which were recorded in different sectors of the site. The relevés were placed in representative areas of each respective habitat (*i.e.* the most common vegetation community within that habitat), in order to provide concrete data to justify the Annex I habitat classifications, and to provide further information on their condition. They were recorded largely as per Perrin *et al.* (2014). Relevés were recorded digitally on a handheld tablet using the TurboVeg vegetation recording software. The relevé size was $2m^2$ for all habitats. A photographic record of the relevés and the associated context were also taken. The grid reference of each relevé was also recorded in Irish Transverse Mercator projection and these were then used to map the locations of each relevé on QGIS.

The timing for the survey was optimal for carrying out habitat mapping and botanical surveys. No limitations were encountered during the surveys, and all areas of the site were accessible to view from the edge, and most areas were accessible and/or safe for a full walkover.

4. Baseline Survey Results

Legally Protected and Rare Flora

No plant species listed on the *Flora (Protection) Order 2022*, were recorded during the field surveys in 2023. One locally rare native species was recorded within the study area, which was *Carex limosa*, found at one location just within the south-eastern site boundary.

Non-native (Invasive) Flora

Two plant species listed on the Third Schedule of the *European Communities (Birds and Natural Habitats) Regulations, 2011 to 2021* were recorded during the field surveys in 2023, namely, *Rhododendron ponticum* and *Gunnera tinctoria. R. ponticum* is found scattered across the central and western sections of the site (see Figure 2). *G. tinctoria* is found at one location at the edge of a conifer plantation block at the western end of the site.

Additionally, three (non-listed) non-native/introduced plant species were recorded across the study area during the field surveys, and although some species can be of benefit to wildlife (e.g. pollinators), some of these are considered to be invasive in some habitats and contexts. These species have arrived by various means, including natural and human routes, such as garden escapes, transportation by birds, small mammals and wind, as well as via intentional dumping of garden waste and accidental

[2] https://biodiversityireland.ie/projects/ivc-classification-explorer/

transport by human visitors. The relevant species are as follows: *Crocosmia* x *crocosmiiflora, Gaultheria mucronata,* and *Alnus cordata*.

All of the mapped non-native species recorded on site are shown in Figure 2.

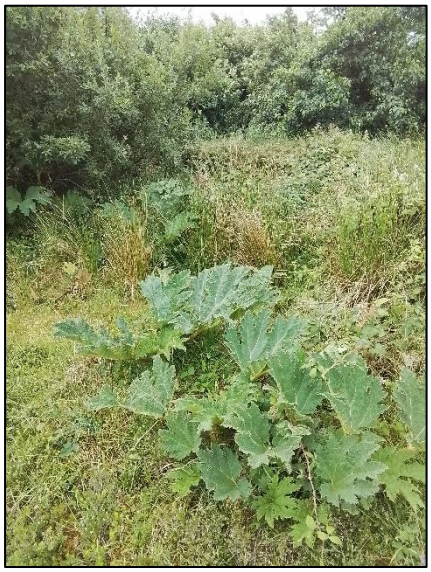

Plate 1: Gunnera tinctoria on site

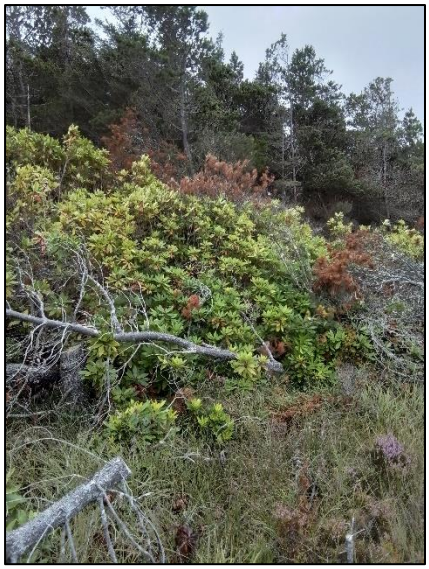

Plate 2: Rhododendron ponticum on site

Habitats

The habitat types (and/or mosaics) recorded within the study area according to the Heritage Council classification system (Fossitt, 2000) are described in detail in section 3.1 (and are also mapped in Figure 3). Full plant species lists (with percentage abundance estimates for each species) for each recorded habitat are also presented in Appendix I of this report. The species found in the habitat mosaics are very similar to those found in their constituent, single habitat types, and hence their species are not listed separately.

The following 15 habitat types (and/or mosaics) were recorded within the study area during the field surveys in 2023:

- Lowland blanket bog (PB3)
- Poor fen and flush (PF2)
- Scrub (WS1)
- Wet Heath (HH3)
- Wet grassland (GS4)
- Eroding/upland river (FW1)
- Dry-humid acid grassland (GS3)
- Cutover bog (PB4)
- Conifer plantation (WD4)
- Other artificial lakes and ponds (FL8)
- Transition mire and quaking bog (PF3)
- Reed and large sedge swamps (FS1)
- Dense bracken (HD1)
- Recolonising bare ground (ED3)
- Buildings and artificial surfaces (BL3)

Figure 1. Muingmore study area (in red), with proposed wind turbine locations in view

Figure 2. Locations of all non-native invasive plant species mapped within the study area during the field surveys in 2023

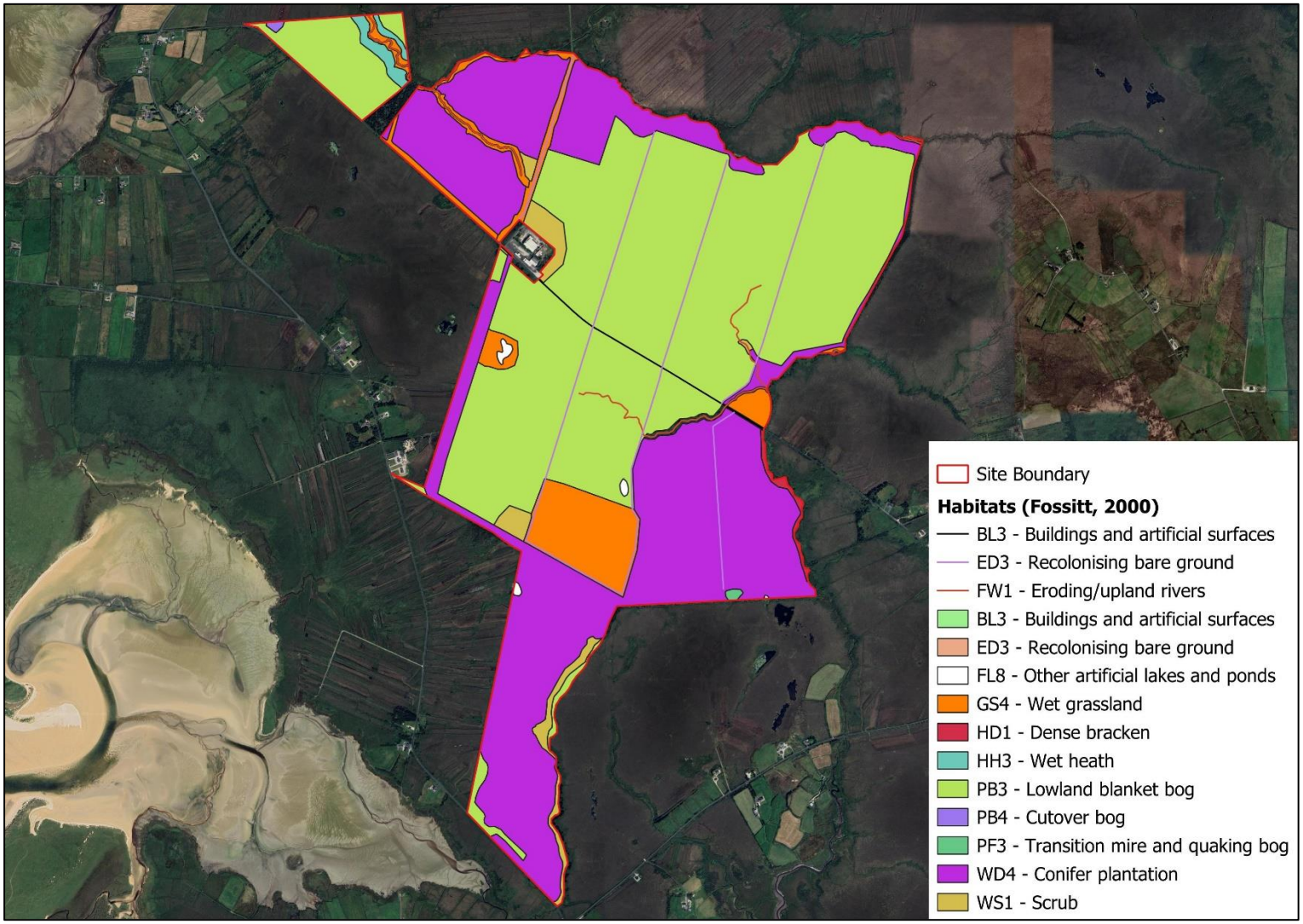

Figure 3. All habitats recorded within the study area during the field surveys in 2023 – the dominant habitat in each polygon is displayed here (habitat mosaics do occur but are not displayed for ease of viewing)

4.1. Habitats Descriptions

Lowland blanket bog (PB3)

Lowland blanket bog (PB3) is mostly found in small patches around the site's boundary, where evidence of drainage is less substantial as compared to the rest of the forestry site. There is a larger more continuous area of this habitat at the north-western tip of the site, where forestry and drainage has not impacted the hydrology to the same extent as elsewhere throughout the site. The dominant species present is *Schoenus nigricans*, an indicator species for this habitat. Also present but less abundant is *Molinia caerulea*, *Calluna vulgaris*, *Erica tetralix*, *Rhynchospora alba*, *Trichophorum germanicum*, *Eriophorum angustifolium*, *Eriophorum vaginatum*, and *Myrica gale*. There is also high *Sphagnum* diversity present: *Sphagnum tenellum*, *Sphagnum cuspidatum*, *Sphagnum capillifolium*, *Sphagnum palustre*, *Sphagnum papillosum*, and *Sphagnum magellanicum* were all recorded within this habitat. A large patch of the invasive *Rhododendron ponticum* is present within this habitat in the north-western section along the road.

Across the centre of the site, there is an extensive area of degraded PB3 habitat present. It appears that this area was cutover and/or partially drained for forestry purposes. Peat remains deep in this area, at over 3 metres in most places. The flora of this area indicates a degraded state, as *Schoenus nigricans* is almost absent and *Sphagnum* cover is lower. The vegetation is now presenting as a wet heath (HH3)/dry heath (HH1)-type habitat mosaic. However, the significant depth of the remaining peat indicates that this area should be classified as degraded lowland blanket bog (PB3). This area is being kept open in part by the grazing of roaming cattle and sheep, but scrub (WS1) encroachment is nonetheless occurring in places. Wet grassland (GS4), Recolonising bare ground (ED3) and Poor fen and flush (PF2) also occur scattered in this area in mosaic. There are extensive drainage ditches criss-crossing much of this area. One representative relevé was recorded in this area, M3. This data also indicates that the bog habitat is in poor condition, with heathland-type vegetation being present.

All areas of lowland blanket bog habitat on site (including degraded areas) have been classified as the EU Habitats Directive Annex I habitat [*7130] Blanket bogs (and specifically the Priority 'active' bog type), due to the appropriate indicator species being present. The active form is confirmed by the presence here of significant areas of vegetation that are normally peat-forming e.g. *Schoenus nigricans, Molinia caerulea, Eriophorum* species and *Sphagnum* species. This classification was confirmed by the recording of two relevés within this habitat (see Appendix II). The condition of the habitat on site is considered to be poor, given the signs of past and present peat cutting and drainage of the lowland blanket bog on site. Indeed, directly adjacent to relevé M1, a large bog drain occurs and the peat within this relevé was dry and firm.

Restoring the central degraded lowland blanket bog area of the site via drain blockage, invasive species/scrub removal and other best practice bog restoration methodologies will be an important avenue for proposed future enhancement measures on site.

Plate 3: Lowland blanket bog (PB3) in the north-west of the site

Poor fen and flush (PF2)

Poor fen and flush (PF2) is found at the north-western end of the site in a mosaic with wet grassland (GS4) and wet heath (HH3). The PF2 within these mosaics is dominated by *Sphagnum palustre*, *Juncus effusus*, and *Molinia caerulea*, with lesser amounts of *Myrica gale*, *Agrostis canina*, *Nardus stricta*, *Sphagnum subnitens*, *Sphagnum capillifolium*, and *Carex echinata*.

Scrub (WS1)

Scrub (WS1) is found in isolated patches widely across the site and is often in a mosaic with other habitats such as wet grassland (GS4) and wet heath (HH3). This habitat is characterised by the dominance of such shrub species as *Ulex europaeus* and *Salix cinerea* subsp*. oleifolia*, with lesser quantities of *Rubus fruticosus* agg. In the ground layer of these shrubs, some tall and/or shade-tolerant grass species occur, including *Arrhenatherum elatius*, and creeping species like *Galium aparine*. Other species present include *Dryopteris dilatata*, *Urtica dioica*, *Osmunda regalis*, *Carex paniculata* and the non-native invasive species *Gaultheria mucronata*.

Wet heath (HH3)

Wet heath (HH3) occurs near a stream in the north-western corner of the site, where the peat becomes shallower. It is adjacent to Lowland blanket bog (PB3) habitat. *Molinia caerulea* and *Calluna vulgaris* are the dominant species in the wet heath component. Other species recorded include *Myrica gale*, *Erica tetralix*, *Eriophorum angustifolium*, *Anthoxanthum odoratum*, *Osmunda regalis*, *Jasione*

montana, *Succisa pratensis*, and the bryophytes *Pseudoscleropodium purum*, *Hylocomium splendens*, *Sphagnum capillifolium*, *Aulacomnium palustre*, *Calliergonella cuspidata*, and *Hypnum jutlandicum*.

The areas of wet heath within the site have been classified as the EU Habitats Directive Annex I habitat, [4010] Northern Atlantic wet heaths with *Erica tetralix*, due to the presence of the appropriate indicator species and coverage of dwarf shrubs. These include, in particular, *Erica tetralix, Calluna vulgaris* and *Molinia caerulea.* The classification was confirmed by the recording of a relevé within this habitat (see Appendix II). The condition of the habitat on site is considered to be good.

Plate 4: Wet heath (HH3) in the west of the site

Wet grassland (GS4)

Wet grassland (GS4) is a common habitat at the site, both on its own and in a mosaic with other habitats. There is a large more continuous area of this habitat at the southern end of the site, where it borders conifer plantation (WD4) and a mosaic habitat dominated by wet heath (HH3). This habitat is characterised by having an increased influx of freshwater near the soil surface relative to dry meadows and grassy verges (GS2) or dry calcareous and neutral grassland (GS1), which allows this grassland type to support some wetland plant species. As a result, the habitat within the site is dominated by such grass species as *Agrostis stolonifera* and *Holcus lanatus*, alongside such rush species as *Juncus effusus*. Occasional species in this habitat include *Iris pseudacorus*, *Ranunculus repens*, *Comarum palustre* and *Potentilla anserina*.

Some areas of wet grassland in Ireland are classified as the EU Habitats Directive Annex I habitat, [6410] *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae).

However, the GS4 areas on site are not classified as such, due to an insufficient number of positive indicator species for the habitat type being present.

Plate 5: Wet grassland (GS4) on site

Eroding/upland river (FW1)

Eroding/upland river (FW1) habitat is represented by a number of small streams that criss-cross and drain the site. A few aquatic species were seen occurring in the streams, including *Fontinalis antipyretica*, *Nasturtium officinale* agg., and *Potamogeton polygonifolius*. The bryophytes *Marchantia*

polymorpha and *Brachythecium rivulare* were also recorded on wet rocks and soil in and by the streams.

Some upland streams in Ireland are classified as the EU Habitats Directive Annex I habitat, [3260] Watercourses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation. However, the streams on site are not classified as such, due to an insufficient number of positive indicator species for the habitat type being present. Only *Fontinalis antipyretica* was recorded as a positive indicator, and typically, three positive indicator species should be recorded for the habitat to be classified as the Annex I type. This is a scarce habitat locally and it directly connects the site to the wider area.

Plate 6: Eroding/upland river (FW1) in the north-west of the site

Dry-humid acid grassland (GS3)

Dry-humid acid grassland (GS3) occurs in a mosaic with wet grassland (GS4) along the river at the north-western end of the site. Grass species recorded here include *Agrostis capillaris*, *Agrostis stolonifera*, and *Anthoxanthum odoratum* were recorded here while herbaceous species like *Rumex acetosella*, *Trifolium repens* and *Galium saxatile* were also recorded widely. Abundant bryophyte species in the vegetation include *Rhytidiadelphus squarrosus*, *Hylocomium splendens*, *Dicranum scoparium*, *Thuidium tamariscinum* and *Campylopus introflexus*.

Some GS3 grasslands in Ireland are classified as the EU Habitats Directive Annex I habitat, [6230] Species-rich *Nardus* grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe), or, [6130] Calaminarian grasslands of the Violetalia calaminariae. However, the GS3 areas on site are not classified as either Annex I type, due to an insufficient number of positive

indicator species for either of these habitat types being present, as well as an inappropriate physiography for either of these habitats.

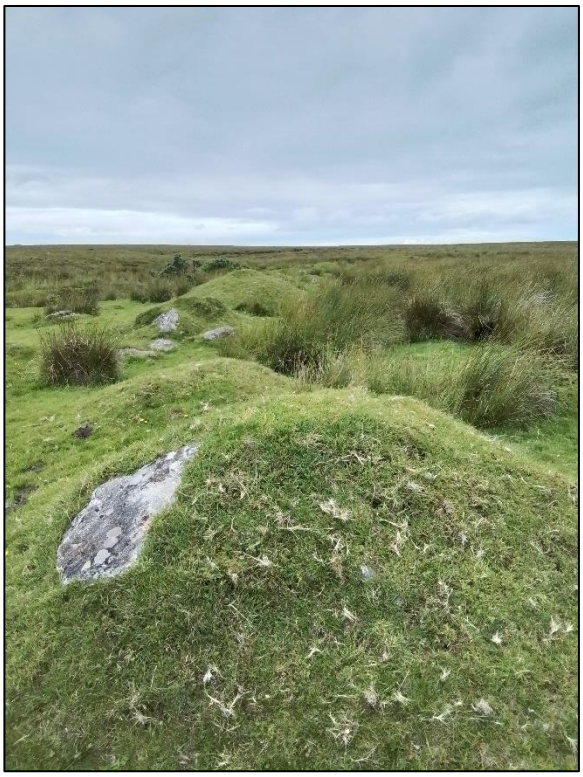

Plate 7: Dry-humid acid grassland (GS3) in the north-west of the site

Cutover bog (PB4)

Cutover bog (PB4) occurs at one location at the north-western tip of the site, where active peat cutting was in operation very recently. This habitat generally occurs on deep peat substrate. *Eriophorum angustifolium* was the most abundant species, followed by *Molinia caerulea* and *Calluna vulgaris*. Also recorded in lesser abundance were *Schoenus nigricans*, *Carex panicea*, and *Juncus effusus*.

Some areas of PB4 habitat correspond with the EU Habitats Directive Annex I habitat [7150] Depressions on peat substrates of the Rhynchosporion. However, the areas of PB4 habitat within the study area are not classified as such due to the lack of sufficient key indicator species for this habitat

type, including *Rhynchospora alba*. Despite its cutover state, this is a valuable wetland habitat, still capable of restoration.

Plate 8: The small area of cutover bog (PB4) beside the north-western site boundary

Conifer plantation (WD4)

Conifer plantation (WD4) dominates the southern and western ends of the site and is found also along most of the site's boundary; it is only really absent from the sites interior and the north-western section. Most of this habitat on site has typical conifer plantation characteristics, however, the western plantation shows more species diversity as it has not been planted as densely and the trees have not yet matured. For this reason, more open glades are present giving the flora a heathy appearance. These areas were probably represented by bog or heath until quite recently. Indeed, the soil on which these conifers have been planted is definitively peaty and acidic in nature. The dominant species is the planted *Picea sitchensis*, followed by *Pinus contorta*. Other tree species present in lesser quantities were *Alnus glutinosa*, *Betula pubescens*, *Larix* species, *Alnus cordata* and *Salix cinerea* subsp. *oleifolia*. Species present among the conifers (including in the heathy glades) include *Dryopteris dilatata*, *Rubus fruticosus* agg., *Hedera helix*, *Calluna vulgaris*, *Succisa pratensis*, *Juncus effusus*,

Molinia caerulea, *Blechnum spicant*, *Potentilla erecta*, and the bryophytes *Hypnum jutlandicum* and *Rhytidiadelphus loreus*.

Plate 9: Conifer plantation at the western end of the site with Succisa pratensis in an open glade

Other artificial lakes and ponds (FL8)

Other artificial lakes and ponds (FL8) habitat is present at a few locations in the southern half of the site. It mainly forms mosaics with other habitats on the pond margins, including transition mire and quaking bog (PF3) and reed and large sedge swamps (FS1). The ponds appear to have been created in order to facilitate drainage of the surrounding bog areas. These ponds have been colonised by vegetation over time. The most abundant species recorded within this habitat was the aquatic species *Nymphaea alba*, with lesser amounts of *Typha latifolia*, *Potamogeton natans* and *Epilobium hirsutum*.

Plate 10: Other artificial lakes and ponds (FL8) habitat on site

Transition mire and quaking bog (PF3)

Transition mire and quaking bog (PF3) is mostly confined to three ponding areas in the southern half of the site, where it covers only a small area. It is often in a mosaic with other artificial lakes and ponds (FL8) habitat, occurring at the edge of the ponds. This habitat is dominated by species such as *Menyanthes trifoliata, Sphagnum cuspidatum* and the sedges *Carex rostrata*, *Carex limosa*, and *Carex echinata*. Also present in lesser quantities are *Molinia caerulea*, *Juncus effusus*, *Osmunda regalis*, *Eleocharis* species, *Eriophorum angustifolium*, *Myrica gale*, and *Aulacomnium palustre*.

Some of the areas of transition mire within the site were classified as the EU Habitats Directive Annex I habitat [7140] Transition mire and quaking bogs due to the presence of the appropriate indicator species and the dominance of sedge species. These indicator species include *Carex rostrata, Menyanthes trifoliata, Carex echinata* and *Carex limosa*. One area containing this habitat was considered as non-Annex due to the dominance of *Agrostis stolonifera* rather than sedges. All of the areas of this habitat on site are considered to be in good conservation condition, based on the abundance of positive indicator species present and the high degree of inundation of the mires during this late summer survey.

Plate 11: Transition mire and quaking bog (PF3) on site

Reed and large sedge swamps (FS1)

Reed and large sedge swamps (FS1) is represented at one location at the southern end of the site where it occurs in a mosaic with artificial lakes and ponds (FL8) and transition mire and quaking bog (PF3) habitats. This habitat is dominated by *Typha latifolia*. Also recorded in smaller quantities were *Molinia caerulea* and *Angelica sylvestris*.

Plate 12: Reed and large sedge swamp dominated by Typha latifolia on site, in mosaic with FL8 and PF3

Dense bracken (HD1)

Dense bracken (HD1) is found along the eastern site boundary in a mosaic with scrub (WS1) and wet grassland (GS4). This habitat is characterised by the monotypic dominance of *Pteridium aquilinum*.

Recolonising bare ground (ED3)

Recolonising bare ground (ED3) is represented by the numerous trackways that traverse the site. Species recorded include *Agrostis capillaris*, *Plantago lanceolata*, *Lolium perenne*, *Jacobaea vulgaris*, *Bellis perennis*, and *Plantago major*.

Buildings and artificial surfaces (BL3)

Buildings and artificial surfaces (BL3) are represented a public access road which traverses through the centre of the site.

5. Summary

This report presents a summary of findings from a habitat survey in September 2023 at the proposed Muingmore wind farm site, west Co. Mayo. It discusses the main habitat features and the species composition of the listed habitats found during the field survey, as well as any rare, invasive or noteworthy species on the site. The mapping of habitats including those of Annex I quality will be used

to best inform the proposed Muingmore wind farm development project. A total of 15 separate habitats types (and/or mosaics) were recorded across the study area.

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Appendix I: Species Lists

Plant Species Lists per Habitat:

Lowland blanket bog (PB3)		Poor fen and flush (PF2)		Wet Heath (HH3)	
Scientific Name	**%**	**Scientific Name**	**%**	**Scientific Name**	**%**
Schoenus nigricans	60	*Sphagnum palustre*	40	*Molinia caerulea*	50
Trichophorum germanicum	5	*Juncus effusus*	30	*Calluna vulgaris*	35
Eriophorum angustifolium	3	*Myrica gale*	1	*Carex binervis*	0.1
Molinia caerulea	10	*Molinia caerulea*	15	*Myrica gale*	5
Erica tetralix	5	*Anthoxanthum odoratum*	0.1	*Anthoxanthum odoratum*	1
Rhynchospora alba	5	*Carex echinata*	0.5	*Erica tetralix*	5
Calluna vulgaris	10	*Sphagnum capillifolium*	3	*Eriophorum angustifolium*	3
Potentilla erecta	0.1	*Agrostis canina*	1	*Pseudoscleropodium purum*	1
Sphagnum tenellum	1	*Hydrocotyle vulgaris*	0.5	*Hylocomium splendens*	0.1
Sphagnum cuspidatum	5	*Sphagnum subnitens*	10	*Sphagnum capillifolium*	3
Sphagnum capillifolium	5	*Nardus stricta*	3	*Hypnum jutlandicum*	0.5
Myrica gale	1	*Polytrichum commune*	1	*Aulacomnium palustre*	0.5
Carex panicea	1			*Scapania species*	0.1
Sphagnum palustre	1			*Polygala serpyllifolia*	0.1
Cladonia portentosa	1			*Succisa pratensis*	0.1
Melampyrum pratense	0.1			*Calliergonella cuspidata*	0.1
Succisa pratensis	0.5			*Osmunda regalis*	3
Sphagnum papillosum	5			*Jasione montana*	1
Sphagnum magellanicum	3				
Eriophorum vaginatum	1				
Drosera rotundifolia	0.3				
Dactylorhiza fuchsii	0.1				
Luzula multiflora	0.1				
Picea sitchensis	0.5				
Rhododendron ponticum	3				

Wet grassland (GS4)		Eroding/upland river (FW1)		Dry-humid acid grassland (GS3)	
Scientific Name	**%**	**Scientific Name**	**%**	**Scientific Name**	**%**
Juncus effusus	70	*Fontinalis antipyretica*	5	*Agrostis capillaris*	55
Agrostis stolonifera	20	*Nasturtium officinale* agg.	5	*Agrostis stolonifera*	5
Rumex acetosa	1	*Potamogeton polygonifolius*	15	*Juncus effusus*	10
Potentilla erecta	1	*Marchantia polymorpha*	3	*Galium saxatile*	15
Holcus lanatus	5	*Brachythecium rivulare*	1	*Rumex acetosella*	1
Comarum palustre	3			*Anthoxanthum odoratum*	15
Ranunculus repens	3			*Trifolium repens*	7
Anthoxanthum odoratum	1			*Prunella vulgaris*	0.1
Stachys palustris	0.3			*Rhytidiadelphus squarrosus*	3
Ulex europaeus	1			*Hylocomium splendens*	1
Iris pseudacorus	1			*Dicranum scoparium*	0.1
Agrostis canina	0.5			*Thuidium tamariscinum*	0.3
Viola palustris	0.1			*Campylopus introflexus*	0.3
Potentilla anserina	3			*Aira praecox*	0.1
Angelica sylvestris	1			*Polytrichum* species	0.3
Dactylorhiza fuchsii	0.1			*Hypnum* species	1
Rhytidiadelphus squarrosus	5				

Wet grassland (GS4)		Eroding/upland river (FW1)		Dry-humid acid grassland (GS3)	
Hylocomium splendens	1				

Cutover bog (PB4)		Conifer plantation (WD4)		Scrub (WS1)	
Scientific Name	**%**	**Scientific Name**	**%**	**Scientific Name**	**%**
Eriophorum angustifolium	15	*Picea sitchensis*	80	*Ulex europaeus*	50
Carex panicea	5	*Dryopteris dilatata*	3	*Salix cinerea subsp. oleifolia*	40
Calluna vulgaris	7	*Rubus fruticosus* agg.	5	*Rubus fruticosus agg.*	10
Juncus effusus	1	*Hedera helix*	1	*Dryopteris dilatata*	3
Schoenus nigricans	5	*Salix cinerea* subsp. *oleifolia*	1	*Arrhenatherum elatius*	3
Molinia caerulea	10	*Alnus glutinosa*	1	*Galium aparine*	3
		Betula pubescens	1	*Urtica dioica*	1
		Pinus contorta	10	*Osmunda regalis*	1
		Larix species	1	*Carex paniculata*	5
		Alnus cordata	1	*Gaultheria mucronata*	1
		Calluna vulgaris	5		
		Succisa pratensis	1		
		Juncus effusus	1		
		Hypnum jutlandicum	5		
		Rhytidiadelphus loreus	1		
		Molinia caerulea	3		
		Blechnum spicant	0.5		
		Potentilla erecta	0.1		

Recolonising bare ground (ED3)		Other artificial lakes and ponds (FL8)	
Scientific Name	**%**	**Scientific Name**	**%**
Agrostis capillaris	5	*Nymphaea alba*	40
Cynosurus cristatus	0.1	*Typha latifolia*	3
Plantago lanceolata	1	*Potamogeton natans*	10
Lolium perenne	5	*Epilobium hirsutum*	1
Leontodon autumnalis	1		
Jacobaea vulgaris	0.3		
Bellis perennis	1		
Plantago major	0.1		

Transition mire and quaking bog (PF3)		Reed and large sedge swamps (FS1)	
Scientific Name	**%**	**Scientific Name**	**%**
Carex rostrata	20	*Typha latifolia*	80
Menyanthes trifoliata	30	*Molinia caerulea*	0.5
Sphagnum cuspidatum	20	*Angelica sylvestris*	0.1
Molinia caerulea	5		
Juncus effusus	1		
Osmunda regalis	1		
Carex limosa	10		
Eleocharis species	3		
Eriophorum angustifolium	3		
Myrica gale	1		
Carex echinata	20		
Aulacomnium palustre	1		

Appendix II: Relevé Data

Feature	Value
Date	01/08/2023
Recorder	Alexis FitzGerald
Grid Reference (ITM Easting, ITM Northing)	475444.000, 823977.000
Relevé Reference	M1
Altitude (m)	76.4
Aspect	NW
Slope	3°
Habitat - Fossitt	PB3
Habitat – Annex I	7130*
Species Recording Scale	Percentage
Relevé Area (m^2)	4
Number of species	13
Species	Percentage
Schoenus nigricans	65
Molinia caerulea	20
Calluna vulgaris	5
Erica tetralix	5
Potentilla erecta	0.1
Eriophorum angustifolium	3
Rhynchospora alba	1
Trichophorum germanicum	0.1
Campylopus introflexus	0.3
Odontoschisma sphagni	0.1
Racomitrium lanuginosum	3
Sphagnum tenellum	0.3
Campylopus atrovirens	0.1
Physical Criteria	Percentage
Bare Soil	5
Rocks	0
Surface Water	0
Litter cover	0.5
Peat depth (cm)	>100
Median vascular plant height (cm)	33
Grazing regime	Possibly grazed by roaming cattle
Remarks	Signs of old cutover bank near the plot; peat here is dry and firm

Feature	Value
Date	01/08/2023
Recorder	Alexis FitzGerald
Grid Reference (ITM Easting, ITM Northing)	475542.000, 824221.000
Relevé Reference	M2
Altitude (m)	76.6
Aspect	SE
Slope	3°
Habitat – Fossitt	HH3
Habitat – Annex I	4010
Species Recording Scale	Percentage
Relevé Area (m^2)	4
Number of species	14
Species	Percentage
Molinia caerulea	50
Calluna vulgaris	35
Erica tetralix	5
Calliergonella cuspidata	1
Polygala serpyllifolia	0.1
Potentilla erecta	0.1
Succisa pratensis	0.1
Carex binervis	0.1
Eriophorum angustifolium	1
Hylocomium splendens	5
Hypnum jutlandicum	0.5
Cladonia portentosa	5
Scapania species	0.1
Sphagnum subnitens	3
Physical Criteria	Percentage
Bare Soil	1
Rocks	0
Surface Water	0
Litter cover	0.5
Peat depth (cm)	>100
Median vascular plant height (cm)	27
Grazing regime	Possibly grazed by roaming cattle
Remarks	Signs of old cutover bank near the plot; peat here is dry and firm

Feature	Value
Date	02/08/2023
Recorder	Alexis FitzGerald
Grid Reference (ITM Easting, ITM Northing)	476397.000, 823511.000
Relevé Reference	M3
Altitude (m)	84.7
Aspect	n/a
Slope	0°
Habitat - Fossitt	PB3
Habitat – Annex I	7130*
Species Recording Scale	Percentage
Relevé Area (m^2)	4
Number of species	7
Species	Percentage
Calluna vulgaris	90
Erica tetralix	1
Molinia caerulea	1
Eriophorum angustifolium	0.1
Campylopus introflexus	1
Cladonia portentosa	0.1
Berberis species	0.1
Physical Criteria	Percentage
Bare Soil	7
Rocks	0
Surface Water	0
Litter cover	0.5
Peat depth (cm)	>100
Median vascular plant height (cm)	16
Grazing regime	Grazed by roaming sheep
Remarks	Large bog drain directly adjacent to the plot; peat here is dry and firm, Annex I habitat is in a degraded state

Feature	Value
Date	01/03/2023
Recorder	Alexis FitzGerald
Grid Reference (ITM Easting, ITM Northing)	476485.000, 821472.000
Relevé Reference	M4
Altitude (m)	63.1
Aspect	n/a
Slope	0°
Habitat - Fossitt	PB3
Habitat – Annex I	7130*
Species Recording Scale	Percentage
Relevé Area (m^2)	4
Number of species	15
Species	Percentage
Schoenus nigricans	60
Molinia caerulea	15
Calluna vulgaris	15
Potentilla erecta	0.1
Succisa pratensis	0.5
Eriophorum angustifolium	3
Rhynchospora alba	0.7
Trichophorum germanicum	3
Odontoschisma sphagni	0.1
Racomitrium lanuginosum	0.1
Cladonia portentosa	7
Drosera rotundifolia	0.1
Sphagnum papillosum	1
Sphagnum capillifolium	10
Physical Criteria	Percentage
Bare Soil	0.5
Rocks	0
Surface Water	0
Litter cover	0.5
Peat depth (cm)	>100
Median vascular plant height (cm)	48
Grazing regime	Red deer stag seen in vicinity
Remarks	Signs of old cutover banks near the plot; peat here is dry and firm