

GALETECH
ENERGY SERVICES

Islandmore Wind Farm

Environmental Impact Assessment Report

Annex 5.2: Habitats Baseline

Islandmore Wind Farm Limited

Contents

5.1 Introduction 1
5.2 Methodology 1
5.2.1 Habitat Mapping 1
5.2.2 Fossitt Habitat Classification 1
5.2.3 Quantitative Vegetation Data 2
5.2.4 Active Peat 2
5.2.5 Irish Vegetation Classification 3
5.2.6 Annex I Assessment 3
5.2.7 Invasive Alien Species 4
5.3 Results & Discussion 4
5.3.1 Fossitt Habitat Classification & Descriptions 4
5.3.2 Irish Vegetation Classification 24
5.3.3 Annex I Conservation Assessments 26
5.3.4 Invasive Alien Species 48
5.3.5 Rare and notable species 59
5.4 Conclusion 62

5.1 INTRODUCTION

Islandmore Wind Farm Limited ('the developer') has commissioned Galetech Energy Services (GES) to manage the preparation of an Environmental Impact Assessment Report (EIAR) for the proposed Islandmore Wind Farm ('the project') in County Roscommon. APEM Group Woodrow have been commissioned by GES to prepare a Technical Appendix which presents the baseline data for habitats within the project footprint, to support **Chapter 5** (Biodiversity) of the EIAR.

5.2 METHODOLOGY

5.2.1 HABITAT MAPPING

The developer provided shapefiles illustrating the footprint of the project and the extent of the project site which is delimited by the Red Line Boundary. These shapefiles were imported into the mobile app 'QField' to assist surveyors in orientating themselves while conducting surveys in the field. The habitats present were mapped or target noted as appropriate using QField. The mobile app 'ArcGIS Survey123' was used to georeference notes and photographs taken across the project site, during botanical surveys.

Shapefiles were created using the Geographical Information Systems (GIS) programmes 'ArcGIS Pro' and 'QGIS'. Satellite imagery was consulted, and this provided the primary source of data from which polygons were drawn to delineate habitat boundaries. The base map 'World Imagery' was used and the images for the project site are dated 20 October 2021 (ESRI 2009). Google Earth Pro was consulted in order to access the most up to date images available for the project site, dated 29 April 2026 (note, current turf cutting may not be fully captured, and would be dependent on recent activity). These images provided valuable information on active and historic turf cutting. Best practice guidance for habitat mapping has been followed, including minimum mappable areas for polygons (400m^2) and polylines (20m) (Smith *et al*. 2011). Notes from the field surveys were consulted to enable classification of these polygons according to habitat type.

5.2.2 FOSSITT HABITAT CLASSIFICATION

A botanical survey was carried out between 25-28 September 2023. Each habitat identified was classified according to Fossitt Level 3, allowing for rapid coverage of a large area (Fossitt 2000). Particular attention was paid to the areas of proposed turbine locations. To corroborate this classification, a habitat description and species list were compiled for each habitat present. The DAFOR scale was used to record the relative abundance of each species by assigning it to one of five categories, namely Dominant, Abundant, Frequent, Occasional or Rare (**Table 1**). Vascular plant nomenclature follows Stace's New Flora of the British Isles - 4th edition (Stace 2019). Best practice guidance for field habitat surveys has been followed (Smith *et al.* 2011). This survey effort is equivalent to JNCC Phase 1 habitat surveys (CIEEM 2017, JNCC 2010).

Level	Definition
Dominant	A Dominant species generally covers more than two-thirds of the habitat. Most habitats do not have a dominant species, but exceptions can include dense bracken (HD1) stands.
Abundant	Abundant species typically cover between one-third and two-thirds of the habitat. Usually only a few species in a habitat can be considered Abundant.
Frequent	Commonly encountered species seen when walking through a habitat are Frequent. A rule of thumb for evaluating Frequent species is 'everywhere you look, you see some' whereas Abundant species are those where 'everywhere you look, you see lots.'
Occasional	Occasional species generally have relatively low frequency and low cover. However, they do not have to be searched for to be found.
Rare	Rare species are those that are only found once or a very few times during the survey, depending on the size of the habitat. Species cover is also low where rare species are found.
Locally	The term locally can be used to describe local abundance, such as "locally abundant".

Table 1: The DAFOR Scale. Source: (Smith *et al.* 2011 pp. 59)

5.2.3 Quantitative Vegetation Data

Quantitative vegetation data was recorded using 2m x 2m quadrats located within the Red Line Boundary of the development. Best practice guidance on the methodology for sampling and describing vegetation types in the field was followed (Rodwell 2006). The relative abundance of species was recorded as a percentage and using the Domin Scale of cover (**Table 2**). Information on other useful environmental variables were also collected, such as elevation, aspect, and peat depth. The data gathered for each quadrat was tabulated (**Appendix I**). Each quadrat was assigned an alpha numeric code, number based on the associated Turbine number followed by sequential roman numerals (*e.g.* T01i, T01ii, T01iii *etc*.)

DOMIN	Cover
10	91–100%
9	76–90%
8	51–75%
7	34–50%
6	26–33%
5	11–25%
4	4–10%
3	<4% (many individuals)
2	<4% (several individuals)
1	<4% (few individuals)

Table 2: The Domin scale. Source: (Rodwell 2006, pp. 38)

5.2.4 Active Peat

Evaluations on active peat were recorded while collecting quadrat data. According to the Interpretation Manual of European Habitats *active peat* is defined as "*a*

significant area of vegetation that is normally peat forming" (European Commission 2013, pp. 82). Best practice guidance on evaluating whether peat is active or not was consulted while evaluating the status of the peat (NIEA 2012).

Peat is more likely to be active if (NIEA 2012):-

- Bog-moss (*Sphagnum* spp.) is present;
- The peat is spongy underfoot;
- Deep peat is present (> 0.5m);
- Intact peat is present, or the hydrology is intact;
- Hare's-tail cottongrass *Eriophorum vaginatum* and common cottongrass *Eriophorum angustifolium* are present;
- Typical peatland species are present; and,
- There is hummock and pool topography.

Peat is more likely to be inactive if (NIEA 2012):-

- There is no or very little bog-moss present;
- There is a significant cover of non-typical peatland species;
- There is a mosaic of acid grassland or dry heath;
- Peat depth is <0.5m;
- The surface is dry and/or the hydrology is severely affected by deep drains; and,
- There are large areas of bare peat and/or algal mats.

5.2.5 IRISH VEGETATION CLASSIFICATION

Quadrat data allows for the identification of vegetation communities according to the Irish Vegetation Classification (IVC). The data on species composition and coverage recorded for each quadrat was input to the Engine for Relevés to Irish Communities Assignment (ERICA) tool, following the procedure published in the User's Manual (Perrin *et al*. 2019). The results produced by the ERICA tool assign a vegetation community defined by the IVC to each quadrat Table 23*: Irish Vegetation* Classification **for all quadrats generated using ERICA tool (Perrin *et al.* 2019). Table 23**The collection of quadrat data and its use in the classification of vegetative communities according to the IVC [or British National Vegetation Classification (NVC)] is equivalent to JNCC Phase 2 habitat surveys (Smith *et al*. 2011, pp 99, JNCC 2010). Extended Phase 1 and Phase 2 habitat surveys are often used as the basis for Ecological Impact Assessments (CIEEM 2017).

5.2.6 ANNEX I ASSESSMENT

Annex I assessments were carried out at each quadrat location following best practice guidance (Perrin *et al*. 2014). The threshold for determining 'pass' or 'fail' of a monitoring stop for each Annex I habitat type was taken from published best practice guidelines (Perrin *et al.* 2010, **Table 3**).

Best practice guidance was followed when determining whether something was within the *local vicinity*, meaning a c. 50-100m radius around the quadrat or what is "meaningfully seen" from the monitoring stop (Perrin *et al*. 2014, pp. 48).

As per best practice guidance, active and inactive peat was assessed using the same criteria when conducting monitoring stops, regardless of whether the habitat was a priority or non-priority Annex I habitat type (i.e. 7130* Blanket bog (active) or 7130 Blanket bog) (Perrin *et al*. 2010).

To estimate the changes in area of the Annex I habitat type 7130* Blanket bog (active), the area of recently disturbed bare peat was mapped and measured using GIS software. *Google Earth* was interrogated using the *Historical Imagery* function to estimate the annual cover of other Annex I habitat types.

To estimate 'Future Prospects', the nature and the intensity of negative impacts were assigned scores as well as estimates on the area of habitat impacted, according to best practice guidelines (Perrin *et al*. 2014). The scores were multiplied together, and the totals were combined to produce a final value. This score represents the current actual status of the Annex I habitat type. Scores significantly below zero are categorised as *Unfavourable – Bad,* scores below zero are *Unfavourable – Inadequate,* and scores above zero are *Favourable*.

Annex I Habitat Type	No. of Criteria	Max. no. of Failures
4010 North Atlantic wet heaths with *Erica tetralix*	19	3
7130 Blanket bogs	15	2

Table 3: Number of criteria and maximum number of assessment criteria allowed to fail without resulting in failure of the monitoring stop for each Annex I habitat type. Source: (Perrin *et al.* 2010, pp. 28)

5.2.7 INVASIVE ALIEN SPECIES

The presence of any invasive alien plant species within the project site was recorded during Phase 1 and Phase 2 surveys. The route of the underground electricity line was also surveyed for invasive alien species (IAS). For each occurrence, identification was made to the species level, and the location, abundance and date were recorded (according to best practice guidance) and a photograph was taken (Smith *et al*. 2011).

5.3 RESULTS & DISCUSSION

5.3.1 FOSSITT HABITAT CLASSIFICATION & DESCRIPTIONS

The project site is predominantly composed of upland habitats, with the main habitat types being (PB2) Upland Blanket Bog (74.09ha), (PB4) Cutover Bog (45.53ha), and (WD4) Conifer Plantation (22.26ha) (**Table 4**). Additionally, seven other Fossitt 2000 habitat types were identified throughout the project site, each making up a small area (≤ 5ha) within the overall land coverage (**Figure 1**). Linear habitats were mapped as polylines and the length of these features was calculated (**Table 5**). The elevation of the project site varies from 143m at T10 to 169m at T3.

Fossitt Habitat Code & Classification	Area (ha)
(ED2) Spoil and bare ground	0.1
(GA1) Improved grassland	1.5
(GS3) Dry-humid acid grassland	5
(GS4) Wet grassland	3.5
(PB2) Upland blanket bog	53.5

(PB4) Cutover bog	47
(WD1) (Mixed) broadleaved woodland	0.5
(WD4) Conifer plantation	30
(WN7) Bog woodland	0.2
(WS1) Scrub	5

Table 4: Fossitt 2000 habitats identified within the project site and associated hectarage

Fossitt Habitat Code & Classification	Area (km)
(BL3) Buildings and artificial surfaces	7.5
(FW4) Drainage ditches	17.0
(WL1) Hedgerows	2.0
(WL2) Treelines	0.05

Table 5: Fossitt 2000 linear habitats identified within the project site and associated length

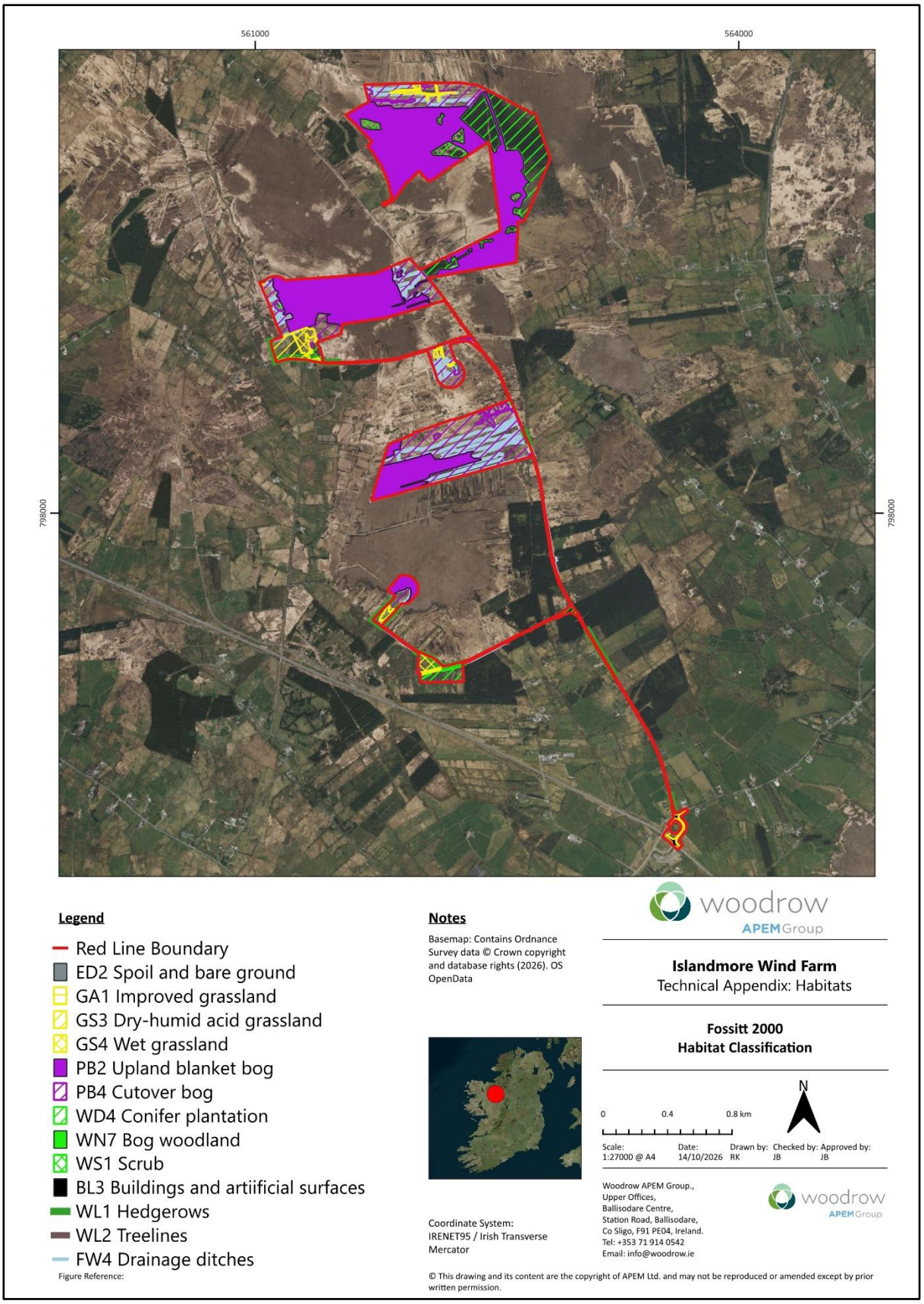


Figure 1: Fossitt 2000 habitat classification & codes

(BL3) Buildings and artificial surfaces

Four locally classed roads (L5501, L55018, L5506 and an unnamed road) traverse the project site. The linear habitats were generally species poor. A species list was not taken for the habitat (BL3) Buildings and artificial surfaces.

(ED2) Spoil and bare ground

An access track connects the L5501 to an area of (PB4) Cutover bog and is likely used for turf extraction. Vegetation cover on the unpaved surface was minimal, and the habitat was dominated by bare ground (**Plate 1**). The species which colonised the unpaved surface are typical of the surrounding peatland habitats with some common ruderal species also present (**Table 6**).



Plate 1: (ED2) Spoil and bare ground located near T05

Scientific Name	Common Name	DAFOR
Calluna vulgaris	Heather	O*
Carex panicea	Carnation sedge	O
Juncus effusus	Soft-rush	O
Molinia caerulea	Purple moor-grass	O

**See Table 1 for description.*

Table 6: Species list for (ED2) Spoil and bare ground

(FW4) Drainage ditches

(FW4) Drainage ditches were widespread across the project site, ranging in size and scale. The (FW4) Drainage ditches within the (PB4) Cutover bog where active peat extraction was on-going are frequently very large, often measuring c. 2m wide and 3m deep. Elsewhere within the project site where the (FW4) Drainage ditches are

located within historic (PB4) Cutover bog, they were more modest in size (c. 1m width and c. 1m depth) (**Plate 2**). These (FW4) Drainage ditches often form the boundaries of land parcels. These boundaries are largely infrequently managed and as such are frequently associated with low invading (WS1) Scrub and derelict (WL1) Hedgerows. (FW4) Drainage ditches were also recorded within the (PB2) Upland blanket bog habitat where a drying effect was often evident. These wet ditches are largely unvegetated by aquatic species, although one record of the uncommon Lesser bladderwort *Utricularia minor* was recorded within a large artificial drain (c. 10m wide and 2m deep) near T09 (**Table 7**).



Plate 2: (FW4) Drainage ditch near T09

Scientific Name	Common Name	DAFOR
Angelica sylvestris	Wild angelica	O
Arrhenatherum elatius	False oat-grass	O
Calluna vulgaris	Heather	F
Dryopteris dilatata	Broad buckler-fern	O
Eriophorum vaginatum	Hare's-tail cottongrass	O
Eriophorum angustifolium	Common cotton-grass	F
Glyceria fluitans	Floating sweet-grass	R
Holcus lanatus	Yorkshire-fog	F
Juncus bulbosus	Bulbous rush	O
Juncus effusus	Soft-rush	F
Molinia caerulea	Purple moor-grass	F
Polytrichum commune	Common haircap	O
Rubus fruticosus agg.	Bramble	F
Salix cinerea	Grey willow	O

Utricularia minor	Lesser bladderwort	R

Table 7: Species list for (FW4) Drainage ditches

(GA1) Improved grassland

Parcels of (GA1) Improved grassland bordered the L5501 (**Plate 3**). This habitat was species-poor as a result of intensive management including grazing and/or re-seeding and/or the use of fertilizers. The sward was dominated by the agricultural species perennial rye-grass (*Lolium perenne*) although common native grasses (such as cock's-foot (*Dactylis glomerata*) and Yorkshire-fog (*Holcus lanatus*) were also frequent throughout (**Table 8**). Soft-rush (*Juncus effusus*) was a prominent component of this habitat across the project site, albeit its coverage was not sufficient to warrant classification as (GS4) Wet grassland. The average sward height was generally low (c. 10cm, but sometimes as low as c. 2cm).



Plate 3: (GA1) improved grassland along the Turbine Component Haul Route

Scientific Name	Common Name	DAFOR
Cirsium arvense	Creeping thistle	O
Dactylis glomerata	Cock's-foot	F
Holcus lanatus	Yorkshire-fog	F
Juncus effusus	Soft-rush	O
Lolium perenne	Perennial rye-grass	A
Luzula multiflora	Heath wood-rush	O
Plantago lanceolata	Ribwort plantain	O
Pseudoscleropodium purum	Neat feather-moss	O
Ranunculus repens	Creeping buttercup	F
Rhytidiadelphus squarrosus	Springy turf-moss	O
Rumex acetosella	Sheep's sorrel	O
Taraxacum officinale agg.	Dandelion	O

Thuidium tamariscinum	Common tamarisk-moss	O

Table 8: Species list for (GA1) Improved grassland

(GS4) Wet grassland

Parcels of (GS4) Wet grassland were located along the local roads where land has been managed for agriculture in the form of extensive grazing (**Plate 4**). Due to the high organic content in the peaty soils these habitats often have abundant coverage of soft-rush with several common native grass species also contributing significantly to the sward (**Table 9**). The vegetation can be rank with an average height of c. 1m depending on the grazing regime. Encroachment from (WS1) Scrub is often associated with this habitat.



Plate 4: (GS4) Wet grassland along the Turbine Component Haul Route

Scientific Name	Common Name	DAFOR
Agrostis stolonifera	Creeping bent	O
Alopecurus pratensis	Meadow foxtail	O
Anthoxanthum odoratum	Sweet vernal-grass	O
Calliergonella cuspidata	Pointed spear-moss	O
Carex echinata	Star sedge	O
Carex leporina	Oval sedge	O
Cerastium fontanum	Common mouse-ear	O
Chamaenerion angustifolium	Rosebay willowherb	L A
Cirsium dissectum	Meadow thistle	O

Cirsium palustre	Marsh thistle	O
Cynosurus cristatus	Crested dog's-tail	O
Epilobium palustre	Marsh willowherb	O
Equisetum palustre	Marsh horsetail	F
Eriophorum angustifolium	Common cotton-grass	O
Filipendula ulmaria	Meadowsweet	L A
Galium saxatile	Heath bedstraw	O
Holcus lanatus	Yorkshire-fog	A
Hypochaeris radicata	Cat's-ear	O
Juncus effusus	Soft-rush	A
Juncus acutiflorus	Sharp-flowered rush	O
Luzula multiflora	Heath wood-rush	O
Plantago lanceolata	Ribwort plantain	O
Ranunculus repens	Creeping buttercup	F
Rumex acetosella	Sheep's sorrel	F
Rhytidiadelphus squarrosus	Springy turf-moss	F
Senecio aquatica	Water ragwort	O
Silene flos-cuculi	Ragged robin	O

Table 9: Species list for (GS4) Wet grassland

(GS3) Dry-humid acid grassland

(GS3) Dry-humid acid grassland was present along the unsurfaced access tracks and areas used for drying turf near T06, T09 and T10 (**Plate 5**). The grass has been somewhat impacted through vehicular access but at levels that allows herbaceous species to persist (**Table 10**). (GS3) Dry-humid acid grassland was also the dominant habitat surrounding the junction of the N5 and R293, albeit, at this location the species diversity is lower with many common and widespread species present.



Plate 5: (GS3) Dry-humid acid grassland near T10

Scientific Name	Common Name	DAFOR
Agrostis spp.	Bent grass	A
Calliergonella cuspidata	Pointed spear-moss	F
Calluna vulgaris	Heather	O
Carex panicea	Carnation sedge	F
Centaurea nigra	Common knapweed	F
Cirsium palustre	Marsh thistle	O
Dactylis glomerata	Cock's-foot	F
Euphrasia sp.	Eyebright	O
Festuca spp.	Fescue	O
Holcus lanatus	Yorkshire-fog	F
Hypochaeris radicata	Cat's-ear	O
Juncus bulbosus	Bulbous rush	F
Juncus conglomeratus	Compact rush	O
Juncus effusus	Soft-rush	O
Molinia caerulea	Purple moor-grass	A
Pedicularis palustris	Marsh lousewort	O
Plantago lanceolata	Ribwort plantain	O
Polygala serpyllifolia	Heath milkwort	R
Pontentilla erecta	Tormentil	O
Potentilla reptans	Creeping cinquefoil	O

Prunella vulgaris	Self-heal	O
Ranunculus acris	Meadow buttercup	O
Rumex acetosella	Sheep's sorrel	O
Rumex obtusifolius	Broad-leaved dock	O
Scorzoneroides autumnalis	Autumn hawksbit	O
Succisa pratensis	Devil's-bit scabious	F
Taraxacum officinale agg.	Dandelion	O
Trifolium pratense	Red clover	O

Table 10: Species list for (GS3) Dry-humid acid grassland

(PB2) Upland blanket bog

The classification of this habitat as (PB2) Upland Blanket Bog was the most appropriate for this habitat for several reasons. First, the elevation of the project site ranges from approximately 143m at T10 to 169m at T3. This places the majority of the project site above the 150m threshold, below which is the typical range for (PB3) Lowland Blanket Bog (Fossitt 2000). Deep peat was found across the project site, with depths ranging from 0.3 to 5.5 metres. However, for (PB2) Upland Blanket Bogs "*peat depths vary and normally fall within the range of 1-2m but can be much deeper in pockets*", as was the case at the project site (Fossitt 2000, p. 46). Moreover, peatland systems which may have originally begun as raised bogs can merge into "*a general expanse of blanket bog, losing their distinctive marginal features*" (European Commission 2013, p. 84). This was likely the case here, with the flatter expanses of bog having accumulated deeper peat and formed an intermediate type between a blanket bog and a raised bog with characteristics of both presenting themselves (Lindsay 1995, pp. 53). Despite these intermediate features, the hydrology of the peatlands was most consistent with that of a blanket bog, further reinforcing the (PB2) Upland blanket bog classification.

Additionally, the nearest mapped peatland, located 1.5km east of T3 at an elevation between 140-150m, is classified as Annex I 7130 Blanket Bog by the National Parks and Wildlife Service (NPWS), aligning closely with the project site's elevation range. While there are raised bogs in the surrounding landscape, these are generally found at much lower elevations (below 100m), which corresponds to the typical range for (PB1) Raised Bogs. Thus, the combination of elevation, peat depth, hydrology, and surrounding landscape context all point to (PB2) Upland Blanket Bog as the most accurate habitat classification for this Site.

Bogs which have an "*uninterrupted history of natural growth*" are termed primary bogs (SNH 1995, pp. 69). The (PB2) Upland blanket bog identified within the project site includes examples of primary bog. Secondary bog is an alternative a term used to describe cutover bog (SNH 1995, pp. 69). This distinction can be useful when assessing the ecological value of these habitats.

The (PB2) upland blanket bog identified across the project site was in generally good condition, supporting high species diversity and an active bryophyte layer. However, no hummock-hollow microtopography was identified (**Plate 6**), likely reflecting long-term modification of the hydrology, as a result of historic turf extraction.

The (PB2) Upland blanket bog located between T01-T04 has been negatively impacted by forestry practices, including afforestation and the excavation of drainage channels. This area has also been negatively impacted by wildfire, with damage to the bryophyte layer noted (**Appendix I, T01i**).

The (PB2) Upland blanket bog between T05 and T06 was intact primary bog with heather *Calluna vulgaris* dominating the dwarf shrub layer, cottongrasses *Eriophorum* spp. contributing to the graminoid layer, and a bryophyte layer dominated by red bog-moss *Sphagnum rubellum* (**Appendix I, T06i**). The (PB2) Upland blanket bog to the south of T08 is threatened by active turf cutting and associated drainage activities. The remaining (PB2) Upland peatland in the local vicinity of T08 retains an active bryophyte layer and good species diversity. However, a drying effect associated with the drainage channels and turf extraction was noted with a reduction in the cover of bog-mosses (**Appendix I, T08ii**). The (PB2) Upland blanket bog to the north of T10 has been impacted by turf cutting activities and the drying effect is having a notable influence on the bryophyte layer, with bog-mosses becoming less abundant and the lichen *Cladonia portentosa* becoming more prominent (**Appendix I, T10i**). A species list for this habitat is provided (**Table 11**).



Plate 6: (PB2) Upland blanket bog between T05 and T06

Scientific Name	Common Name	DAFOR
Aulacomnium palustre	Bog Bead-moss	O
Calluna vulgaris	Heather	A
Campylopus introflexus	Heath star-moss	O
Carex panicea	Carnation sedge	F
Cladonia portentosa	Reindeer lichen	F
Cladonia uncialis	Thorn-cup lichen	R

Dicranum scoparium	Broom fork-moss	O
Diplophyllum albicans	White earwort	O
Drosera intermedia	Oblong-leaved sundew	O
Drosera rotundifolia	Round-leaved sundew	O
Erica tetralix	Cross-leaved heath	F
Eriophorum angustifolium	Common cotton-grass	F
Eriophorum vaginatum	Hare's-tail cottongrass	F
Galium saxatile	Heath bedstraw	R
Hypnum jutlandicum	Heath plait-moss	O
Leucobryum glaucum	Pincushion moss	R
Melampyrum pratense	Common cow-wheat	R
Menyanthes trifoliata	Bogbean	R
Molinia caerulea	Purple moor-grass	F
Myrica gale	Bog myrtle	O
Narthecium ossifragum	Bog asphodel	F
Odontoschisma sphagni	Bog-moss flapwort	O
Pedicularis sylvatica	Common lousewort	O
Pleurozium schreberi	Red-stemmed feather-moss	O
Polygala serpyllifolia	Heath milkwort	R
Pontentilla erecta	Tormentil	F
Pseudoscleropodium purum	Neat feather-moss	R
Racomitrium lanuginosum	Woolly Fringe-moss	R
Rhynchospora alba	White beak-sedge	O
Rhynchospora fusca	Brown beak-sedge	R
Sphagnum cuspidatum	Feathery bog-moss	O
Sphagnum denticulatum	Cow-horn bog-moss	O
Sphagnum palustre	Blunt-leaved bog-moss	R
Sphagnum papillosum	Papillose bog-moss	O
Sphagnum rubellum	Red bog-moss	A
Sphagnum subnitens	Lustrous Bog-moss	R
Sphagnum subnitens	Lustrous Bog-moss	R
Sphagnum tenellum	Soft bog-moss	O
Succisa pratensis	Devil's-bit scabious	L A
Trichophorum germanicum	Deergrass	F

Vaccinium oxycoccos	Cranberry	O

Table 11: Species list for (PB2) Upland blanket bog

(PB4) Cutover bog

(PB4) Cutover bog is a highly variable habitat which can range from predominantly bare peat to re-vegetated active peatland (**Plate 7**). Indeed, examples of both were found within the project site. (PB4) Cutover bog which had recently been excavated and disturbed featured a significant coverage of bare peat accompanied by pioneer species such as common cotton-grass, heath star-moss (*Campylopus introflexus*), and bulbous rush (*Juncus bulbosus*) (**Appendix I, T09ii**). However, even on disturbed bare peat, remnant species indicative of high-quality conditions can persist such as round-leaved sundew (*Drosera rotundifolia*) and papillose bog-moss (*Sphagnum papillosum*) (**Appendix I, T09ii**). Indeed, this describes the habitat in the local vicinity of T09, where large-scale mechanical excavation of peat is on-going.

In contrast then, historic cutover can be fully re-vegetated with a high diversity of peatland species and a rich bryophyte layer including high *Sphagnum* coverage. This is the case at T01v where the bryophyte layer is locally dominated by papillose bog-moss , with red bog-moss , and Cow-horn bog-moss (*Sphagnum denticulatum*) also present (**Appendix I, T01v**). At times the peat can still feel firm underfoot alluding to past removal of the acrotelm. Peat haggs and drainage ditches are often reliable markers for delineating (PB4) Cutover bog from primary bog.

Due to the variability in vegetative composition within the (PB4) Cutover bog category the ecological value assigned to this habitat must reflect this. While collecting quadrat data, notes were taken on the substrate so that a distinction could be made between (PB4) Cutover bog which is composed of active deep peat and (PB4) Cutover bog which is inactive. A species list for this habitat is provided (**Table 12**).



Plate 7: (PB4) Cutover blanket bog between proposed T09 location and the L5501/local road

Scientific Name	Common Name	DAFOR
Agrostis canina	Velvet bent	O
Anthoxanthum odoratum	Sweet vernal-grass	O
Aulacomnium palustre	Bog Bead-moss	R
Betula pubescens	Downy birch	F
Blechnum spicant	Hard fern	R
Calluna vulgaris	Heather	A
Campylopus introflexus	Heath star-moss	O
Carex flacca	Glaucous sedge	O
Carex leporina	Oval sedge	R
Carex nigra	Common sedge	O
Carex panicea	Carnation sedge	F
Carex rostrata	Bottle sedge	R
Cladonia portentosa	Reindeer lichen	O
Cynosurus cristatus	Crested dog's-tail	R
Dactylis glomerata	Cock's-foot	O
Drosera rotundifolia	Round-leaved sundew	O
Dryopteris dilatata	Broad buckler-fern	R
Erica tetralix	Cross-leaved heath	O
Eriophorum angustifolium	Common cotton-grass	L D
Eriophorum vaginatum	Hare's-tail cottongrass	O
Hylocomium splendens	Glittering wood-moss	O
Hypnum jutlandicum	Heath plait-moss	F
Hypocharis radicata	Cat's-ear	O
Juncus bulbosus	Bulbous rush	O
Juncus effusus	Soft-rush	O
Melampyrum pratense	Common cow-wheat	R
Molinia caerulea	Purple moor-grass	L D
Myrica gale	Bog myrtle	F
Narthecium ossifragum	Bog asphodel	O
Odontoschisma sphagni	Bog-moss flapwort	O
Pleurozium schreberi	Red-stemmed feather-moss	O

Polygala serpyllifolia	Heath milkwort	R
Polytrichum commune	Common haircap	F
Pontentilla erecta	Tormentil	F
Potentilla anserina	Silverweed	R
Rhytidiadelphus squarrosus	Springy turf-moss	O
Rubus fruticosus agg.	Bramble	F
Salix cinerea	Grey willow	O
Sphagnum denticulatum	Cow-horn bog-moss	O
Sphagnum fallax	Flat-topped bog-moss	O
Sphagnum palustre	Blunt-leaved bog-moss	O
Sphagnum papillosum	Papillose bog-moss	O
Sphagnum rubellum	Red bog-moss	A
Sphagnum tenellum	Soft bog-moss	O
Succisa pratensis	Devil's-bit scabious	L A
Thuidium tamariscinum	Common tamarisk-moss	O
Trichophorum germanicum	Deergrass	O

Table 12: Species list for (PB4) Cutover bog

(WD4) Conifer plantation

The most extensive area of (WD4) Conifer plantation was in the north-east of the project site (**Plate 8**). This plantation is dominated by lodgepole pine (*Pinus contorta*). Several parcels of (WD4) Conifer plantation are located along the L5501'/'local road which traverses the project site, although these plantations are dominated by sitka spruce (*Picea sitchensis*). These habitats generally have low species diversity. However, remnant peatland species can persist in the understorey, especially towards the edge of the forestry where light levels are higher (**Table 13**).



Plate 8: (WD4) Conifer plantation near T03

Scientific Name	Common Name	DAFOR
Dicranum scoparium	Broom fork-moss	R
Dryopteris dilatata	Broad buckler-fern	O
Eriophorum angustifolium	Common cotton-grass	O
Eriophorum vaginatum	Hare's-tail cottongrass	O
Hypnum jutlandicum	Heath plait-moss	A
Lophocolea bidentata	Bifid crestwort	R
Odontoschisma sphagni	Bog-moss flapwort	R
Picea sitchensis	Sitka spruce	L D
Pinus contorta	Lodgepole pine	L D
Rubus fruticosus agg	Bramble	F
Sphagnum fallax	Flat-topped bog-moss	O
Sphagnum palustre	Blunt-leaved bog-moss	F
Sphagnum rubellum	Red bog-moss	O
Vaccinium myrtillus	Bilberry	O

Table 13: Species list for (WD4) Conifer plantation

(WL1) Hedgerows

(WL1) Hedgerows were not a prominent feature across the project site, although they were found bordering the network of unnamed roads and local roads within the project site (**Plate 9**). The hedgerows are dominated by shrubs and climbers, with a small margin (c. 30cm) for herbaceous species (Error! Reference source not found.).



Plate 9: (WL1) Hedgerow to the south of T10

Scientific Name	Common Name	DAFOR
Anthoxanthum odoratum	Sweet vernal-grass	O
Arrhenatherum elatius	False oat grass	O
Betula pubescens	Downy birch	F
Centaurea nigra	Common knapweed	O
Corylus avellana	Hazel	L A
Crataegus monogyna	Hawthorn	A
Cynosurus cristatus	Crested dog's-tail	O
Daucus carota	Wild carrot	O
Galium aparine	Cleavers	F
Hedera hibernica	Atlantic ivy	F
Heracleum sphondylium	Common hogweed	O
Holcus lanatus	Yorkshire-fog	F
Ilex aquifolium	Holly	F

Ligustrum vulgare	Common privet	O
Lolium perenne	Perennial ryegrass	F
Lonicera periclymenum	Honeysuckle	O
Picea sitchensis	Sitka spruce	O
Poa trivialis	Rough-stalked meadow-grass	O
Pteridium aquilinum	Bracken	F
Ranunculus acris	Meadow buttercup	R
Ranunculus repens	Creeping buttercup	O
Rubus fruticosus agg.	Bramble	F
Salix cinerea	Grey willow	F
Trifolium pratense	Red clover	O
Ulex europaeus	European gorse	O
Urtica dioica	Common nettle	F
Vicia sativa	Common vetch	O

Table 14: Species List for (WL1) Hedgerows

(WL2) Treeline

(WL2) Treeline habitat was identified to the south-east of T06, and on the access track near T10. The (WL2) Treeline is composed of semi-mature broadleaved trees which border a small land parcel and house (**Plate 10**). A species list for this habitat is provided (**Table 14**).



Plate 10: (WL2) Treeline to south-east of T06

Scientific Name	Common Name	DAFOR
Alnus glutinosa	Alder	A
Fraxinus excelsior	Ash	F
Hedera hibernica	Atlantic ivy	F
Juncus effusus	Soft-rush	O
Rubus fruticosus agg.	Bramble	F
Salix cinerea	Grey willow	F

Table 14: Species list for (WL2) Treeline

(WN7) Bog woodland

A parcel of (WN7) Bog woodland has developed on historically cutover bog along the unnamed road to the south of T10 (**Plate 11**). The stand was dominated by immature downy birch (*Betula pubescens*) (**Table 15**Error! Reference source not found.). The trees reached the 5m threshold for woodland parcels, however there were no mature trees in the stand. The trees formed a distinct canopy, although this was somewhat open. The stand was heavily infested with the invasive alien species, cherry laurel (*Prunus laurocerasus*). No *Sphagnum* species were noted, and the habitat was not peat forming. As this habitat was not located on intact raised bog, this habitat was not considered to qualify as Annex I habitat type 91D0 Bog woodland.



Plate 11: (WN7) Bog woodland along Turbine Component Haul Route

Scientific Name	Common Name	DAFOR
Betula pubescens	Downy birch	A
Pteridium aquilinum	Bracken	O
Rubus fruticosus agg.	Bramble	A
Salix cinerea	Grey willow	O
Thuidium tamariscinum	Common tamarisk-moss	F
Ulex europaeus	European gorse	F

Table 15: Species list for (WN7) Bog woodland

(WS1) Scrub

Pockets of (WS1) Scrub were found throughout the (PB4) Cutover bog habitat (**Plate 12**). Small parcels (<400 m^2) of (WS1) Scrub was not mapped. The dominant species associated with (WS1) Scrub habitat is variable and often include willow (*Salix* spp.), gorse (*Ulex europaeus*), and bramble (*Rubus fruticosus* agg.) (**Table 16**).



Plate 12: (WS1) Scrub

Scientific Name	Common Name	DAFOR
Betula pubescens	Downy birch	O
Corylus avellana	Hazel	R
Ilex aquifolium	Holly	O
Juncus effusus	Soft-rush	O
Molinia caerulea	Purple moor-grass	A
Myrica gale	Bog myrtle	R
Pseudoscleropodium purum	Neat feather-moss	O
Pteridium aquilinum	Bracken	F
Rubus fruticosus agg.	Bramble	A
Salix cinerea	Grey willow	O
Thuidium tamariscinum	Common tamarisk-moss	F
Ulex europaeus	European gorse	F

Table 16: Species list for (WS1) Scrub

5.3.2 IRISH VEGETATION CLASSIFICATION

The objective of the Irish Vegetation Classification (IVC) is to provide a unified framework for classifying, describing and mapping vegetation in Ireland (Perrin *et al.* 2015). The development of the IVC was a key action in the National Biodiversity Action Plan 2017-2021 (DCHG 2017). The IVC can be used to aid in the identification of Annex

l habitat types, inform impact assessments, and facilitate the monitoring of vegetation change (NBDC 2025a). The specially-designed web application tool, 'ERICA', can be used to classify collected vegetation data into recognised IVC communities ,

To facilitate this site assessment, the ERICA tool was used to allocate an IVC vegetative community to each quadrat sampled, and the results were tabulated (see **Appendix II, Table 23**). The vast majority of the quadrats fall within the division 'Bogs' (32 out of 51) with 'Heaths' being the second most commonly sampled division (15 out of 51). Two quadrats were classified into the 'Fens and Mires' division (T01vi and T02v). One quadrat was classified into the 'Grasslands' (T07v) division and one into the 'Freshwater' division (T02ii).

Of these quadrats, forty-four were allocated an *assigned* plot type, meaning the quadrat data relates to the core definition of that vegetation community. A further seven of the quadrats (T01v, T01vi, T02ii, T02v, T03ii, T08ii, T10iv) were designated a *transitional* plot type meaning the vegetative data falls within the scope of the current classification scheme but does not relate to the core definition of any of the vegetation communities. Four of the seven quadrats with a transitional plot type were located within the (PB4) Cutover bog where secondary re-growth has taken place. A further two of the quadrats with a transitional plot type were located within the (WD4) Conifer plantation (T02v, T03iii). The IVC relates to natural or semi-natural habitat types and as such (WD4) Conifer plantation falls beyond the scope of the classification system. Interestingly, T08ii was also assigned a transitional plot type, and this is likely a result of the drying effect from the drainage channel and expanse of (PB4) Cutover bog located to the north.

Of the fifteen quadrats assigned to the division Heaths, twelve of these are located within the (PB4) Cutover bog (T02i, T02iii, T03i, T04iv, T05iii, T05v, T06ii, T06v, T06vi, T07iii, T08ii, T09v, T09vi, T10iv, T10vii). A further two quadrats are located within (PB2) Upland blanket bog which has been prepared for forestry and can be considered highly modified from its natural state due to the extensive artificial drainage system implemented across the habitat in the form of furrows and ridges (T03i and T04iv). This drainage is likely having a notable impact on the vegetation composition so that the vegetation community has more in common with Heaths than Bogs. As noted in the habitat description collected for T08ii there is poor bog-moss cover and this likely has a bearing on its transitional plot type and tentative allotment to the Heaths division.

Of the twenty-nine quadrats with an *assigned* plot type (i.e. not *transitional*) in the Bogs division, eleven of them are assigned to the community BG2C *Erica tetralix - Molinia caerulea - Cladonia portentosa* peatland.

According to the IVC, this community is common and somewhat lacking in distinctive characteristics (NBDC 2025a). It is predominantly a community of lower mountain slopes and boglands (NBDC 2025a). Examples of the BG2C community have affinity to (PB3) Lowland blanket bog and potential affinity to qualify as Annex I habitat type 7130* Blanket bog (active). Several quadrats located upon the primary bog have been assigned to this community, namely: - T01i, T06i, T07i, and T08i. Other quadrats assigned to this community include: - T01ii, T01vii, T06iii, T06iv, T07ii, T09iii, T09iv, T10vi.

A further ten quadrats (including T01iii, T02iv, T04ii, T04iii, T05i, T05iv, T07iv, T08iii, T10ii, and T10v) are classified as BG2E *Calluna vulgaris - Eriophorum* spp. bog. According to the IVC the BG2E *Calluna vulgaris - Eriophorum* spp. community is usually located on deep, ombrogenous, oligotrophic, peats in the uplands. Most examples of this

community will correspond to (PB2) Upland blanket bog and will qualify as Annex I habitat type 7130* Blanket bog (active) (NBDC 2025a).

A further four quadrats are classified as BG2B *Erica tetralix - Andromeda polifolia* bog. The BG2B *Erica tetralix - Andromeda polifolia* community is predominantly a community of (PB1) Raised bog but can occasionally occur on blanket bog usually in the lowlands. Most examples of this vegetation community qualify as 7110* Raised bog (active) although there are instances of this community which qualify as Annex I 7130* Blanket bog (active) (NBDC 2025a). As such, this community has affinity to (PB1) Raised bog, (PB2) Upland blanket and (PB3) Lowland blanket bog. Several quadrats located upon the primary bog have been assigned to this community, namely: - T04i, T09i, and T10i. T01iv was also assigned to this community.

Three of the quadrats (T08iv, T09ii and T10iii) are classified as BG1D *Eriophorum angustifolium - Campylopus introflexus* bog. This is a community of degraded peatlands which have been subject to a combination of threats such as drainage, peat extraction, erosion, and burning (NBDC 2025a). Common cottongrass is the only constant species in this community with the non-native moss heath star-moss also present on drier peats. This community has affinity to the habitat (PB4) Cutover bog and most examples qualify as the non-priority form of the Annex I habitat type 7130 Blanket bog (inactive) (NBDC 2025a).

One quadrat (T05ii) is classified as BG2F *Trichophorum cespitosum/germanicum - Eriophorum angustifolium* peatland. This is a community of upland peatlands which can occur on deep or shallow soils. Most examples of this community on shallow soils correspond to (HH3) Wet heath and qualify as the Annex I habitat type 4010 Northern Atlantic wet heath with *Erica tetralix* (NBDC 2025a).

Eight quadrats (including T02i, T04iv, T05iii, T02iii, T06ii, T06vi, T07iii, T10vii) were classified as the vegetative community HE4E *Molinia caerulea - Calluna vulgaris - Erica tetralix* heath. This is a purple moor-grass *Molinia caerulea*-dominated community with a dwarf shrub component. This community occurs on the lower to middle slopes of hills and mountains. Most examples may qualify as the Annex I habitat type 4010 Northern Atlantic wet heaths with *Erica tetralix*.

Four quadrats (including T03i, T05v, T06v, and T09vi) were classified as HE2D *Calluna vulgaris - Molinia caerulea - Erica cinerea* heath. This habitat is characterised by dense stands of purple moor-grass with a sparse or absent bryophyte layer. This is a species-poor community often resulting from ongoing negative impacts, such as burning. Most examples represent the Annex I habitat type 7130 Blanket bog (inactive) or marginal types of 4010 Northern Atlantic wet heath with *Erica tetralix* (NBDC 2025a).

5.3.3 ANNEX I CONSERVATION ASSESSMENTS

The conservation assessment of Annex I peatland habitats takes into account three parameters:-

- Changes in area;
- Future prospects; and,
- Structure and function.

These parameters must be considered together to enable a judgement on the conservation status of an Annex I habitat to be made (**Table 17**). Structure and function are further sub-divided into three categories: -

- Vegetation composition;
- Vegetation structure; and,
- Physical structure.

The most prevalent Annex I habitat type identified within the project site is 7130* Blanket bog (active*) totalling c. 75.75 ha (

, Figure 2-5). The second most prevalent Annex I habitat type identified was the 7130 Blanket bog (inactive) totalling c. 15.26 ha (

, **Figure 3**). There was a small amount (0.63 ha) of the Annex I habitat type 4010 Northern Atlantic wet heaths with *Erica tetralix* located within the cutover, where the peat depth was identified as being less than 0.5m (

, Figure 6). An additional 22.68ha of (PB2) Upland blanket bog and 4.30ha of (PB4) Cutover bog occur but were not assessed against Annex I criteria as they will not be directly impacted by the construction works. Several areas of Annex I habitat type 7150 Depressions on peat substrates of the *Rhynchosporion* were also identified (**Table 17: Evaluation table for determining conservation status. Source: (Perrin *et al.* 2014)**

, **Figure 7**). These areas were not mapped due to the size of the habitat being below the threshold for minimum mapping units; however, the locations were target noted.

Parameter	Conservation Status		
	Favourable (green)	**Unfavourable – Inadequate (amber)**	**Unfavourable – Bad (red)**
Area	Stable (loss and expansion in balance)	Any other combination	Large decrease in surface area: Equivalent to a loss of more than 1% per year
Structure and function	Structures and functions (including typical species) in good condition and no significant deteriorations / pressures	Any other combination	More than 25% of the area is unfavourable as regards its specific structures and functions (including typical species)
Future prospects	The habitat's prospects for its future are excellent / good, no significant impact from threats expected; viability over the next twelve years assured.	Any other combination	The habitat's prospects are bad, severe impact from threats expected; viability over the next twelve years not assured
Overall conservation Status	All 'green' OR two 'green' and one 'unknown	One or more 'amber' but no 'red'	One or more 'red'

Table 17: Evaluation table for determining conservation status. Source: (Perrin *et al.* 2014)

Annex I Code & Habitat	Monitoring Stop	Fossitt 2000 Category	Ecological Valuation	Area (ha)	Monitoring Stops	Quadrat Number
7130* Blanket bog (active)	Pass	(PB2) Upland blanket bog (active)	National	26.81	7	T05i, T06i, T08i, T08ii, T08iii, T09i, T10i
7130* Blanket bog (active)	Fail	(PB2) Upland blanket bog (active)	National	22.88	8	T01i, T01ii, T02i, T02iii, T03ii, T04i, T04ii, T04iii
7130 Blanket bog (inactive)	Fail	(PB2) Upland blanket bog (inactive)	County	1.72	1	T04iv
7130* Blanket bog (active)	Pass/Fail	(PB4) Cutover bog (active)	County	26.06	16	T01iii, T01iv, T01v, T01vi, T0vii, T05iv, T06iii, T06iv, T06vi, T07i, T07ii, T09iii, T09iv, T09vi, T10ii, T10v
7130 Blanket bog (inactive)	Fail	(PB4) Cutover bog (inactive)	Local (high)	14.54	12	T02ii, T02iv, T05ii, T05iii, T06ii,T06v,T07iii, T07iv,T08iv, T09ii, T09v,T10iii
4010 Northern Atlantic wet heaths with *Erica tetralix*	Fail	(PB4) Cutover bog (inactive)	County	0.63	4	T05v, T10iv, T10vi, T10vii
7150 Depressions on peat substrates of the *Rhynchosporion*	N/A	(PB2) Upland blanket bog (active)/ (PB4) Cutover bog (active)	County	<0.5	0	N/A

Table 18: Annex I habitat types identified at the project site and corresponding Fossitt 2000 categories and the estimated coverage

Three additional monitoring stops (T02v, T03i, T07v) were located within non-peatland habitats namely (WD4) Conifer plantation and (GS4) Wet grassland. These habitats are likely to have previously been (PB2) Upland blanket bog corresponding to the Annex I habitat type 7130* Blanket bog (active). Quadrat data and monitoring stops for Annex I assessments were conducted at these locations to provide a complete data set across the project site, following best practice guidance (Perrin et al. 2014: 47). Each of these monitoring stops failed assessment criteria for Annex I habitat type 7130* Blanket bog.

Changes in area of Annex I habitat types

The area covered by the Annex I habitat type 7130* Blanket bog (active) is c. 75.75ha. The total coverage of bare peat, which is indicative of the area of peat likely extracted during 2024, is c. 3ha or c. 4% of the total coverage of Annex I habitat type 7130* Blanket bog (active) within the project site. As such, the annual loss of Annex I habitat type 7130* Blanket bog (active) is >1% per year, meaning the overall change in area is assessed as *Unfavourable – Bad*.

Google Earth was interrogated using the Historical Imagery function to estimate the annual cover of other Annex I habitat types. However, the resolution of the satellite imagery was not sufficient to accurately determine the changes in area within these other Annex I habitat types over time. As such, insufficient site data exists to make assumptions regarding the annual change in area of Annex I habitat type Annex I habitat types: - 7130 Blanket bog (inactive), 4010 Northern Atlantic wet heaths with *Erica tetralix,* and 7150 Depressions on peat substrates of the *Rhynchosporion*.

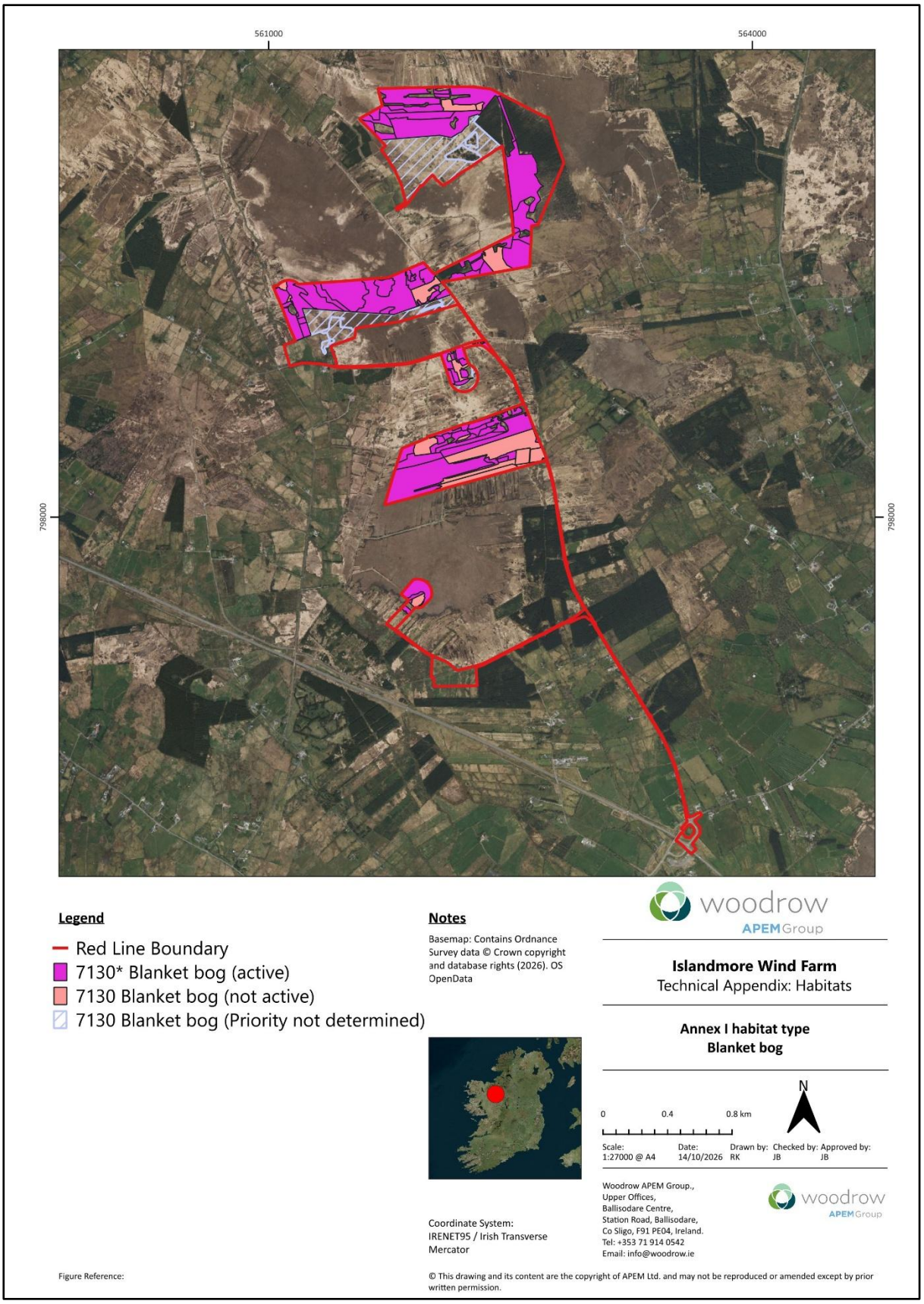


Figure 2: Location of Annex I Blanket bog

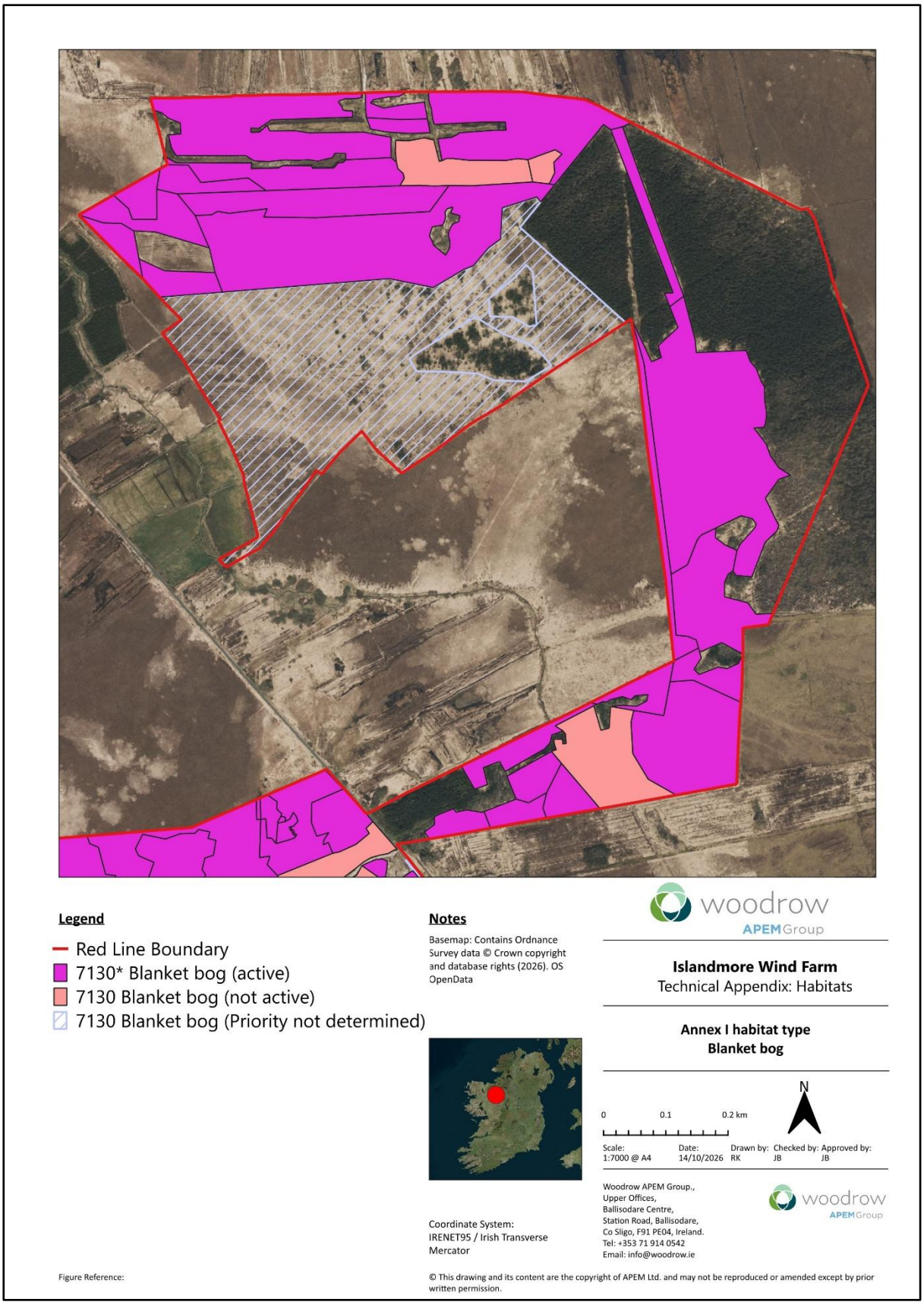


Figure 3: Location of Annex I Blanket bog

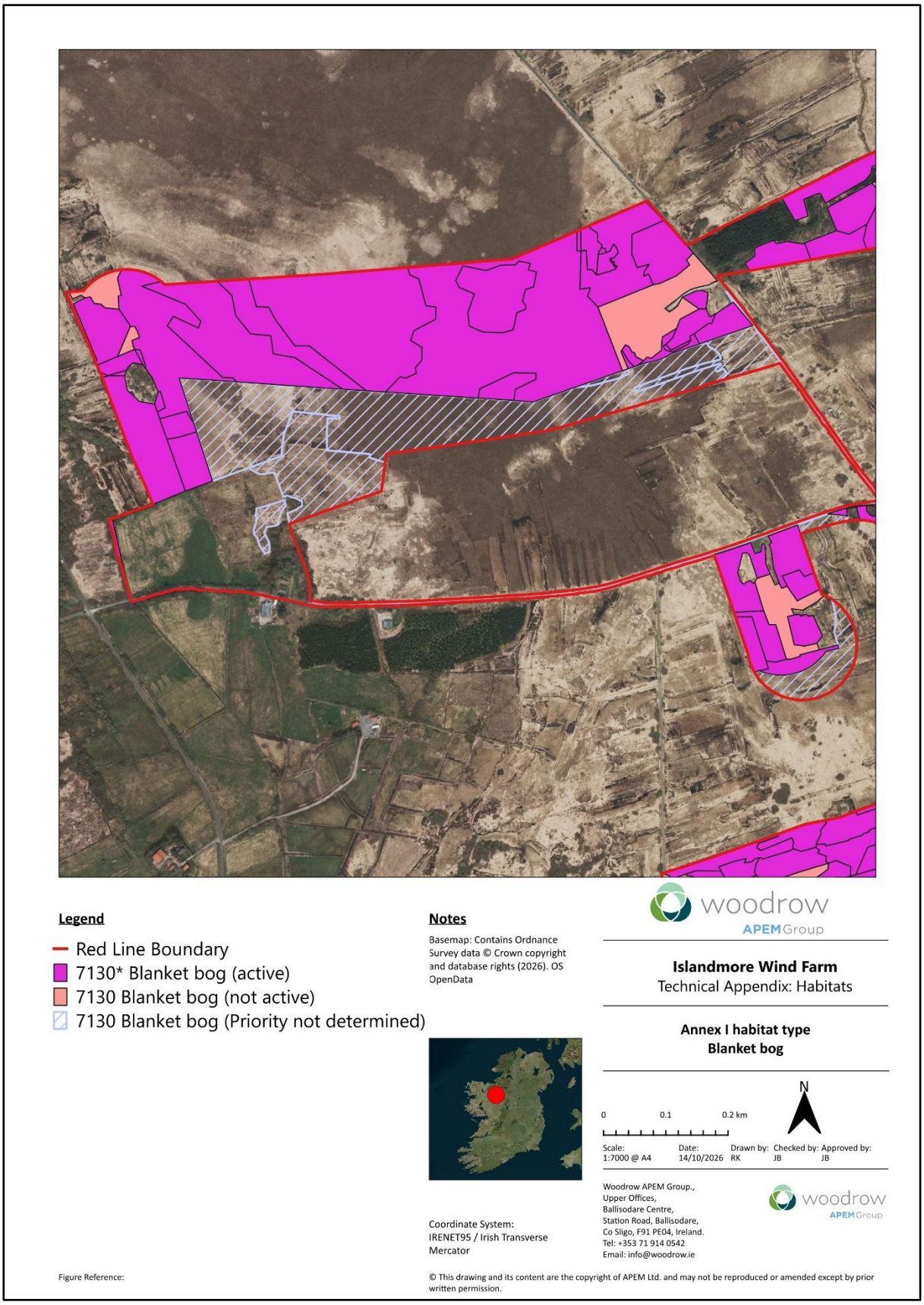


Figure 4: Location of Annex I Blanket bog

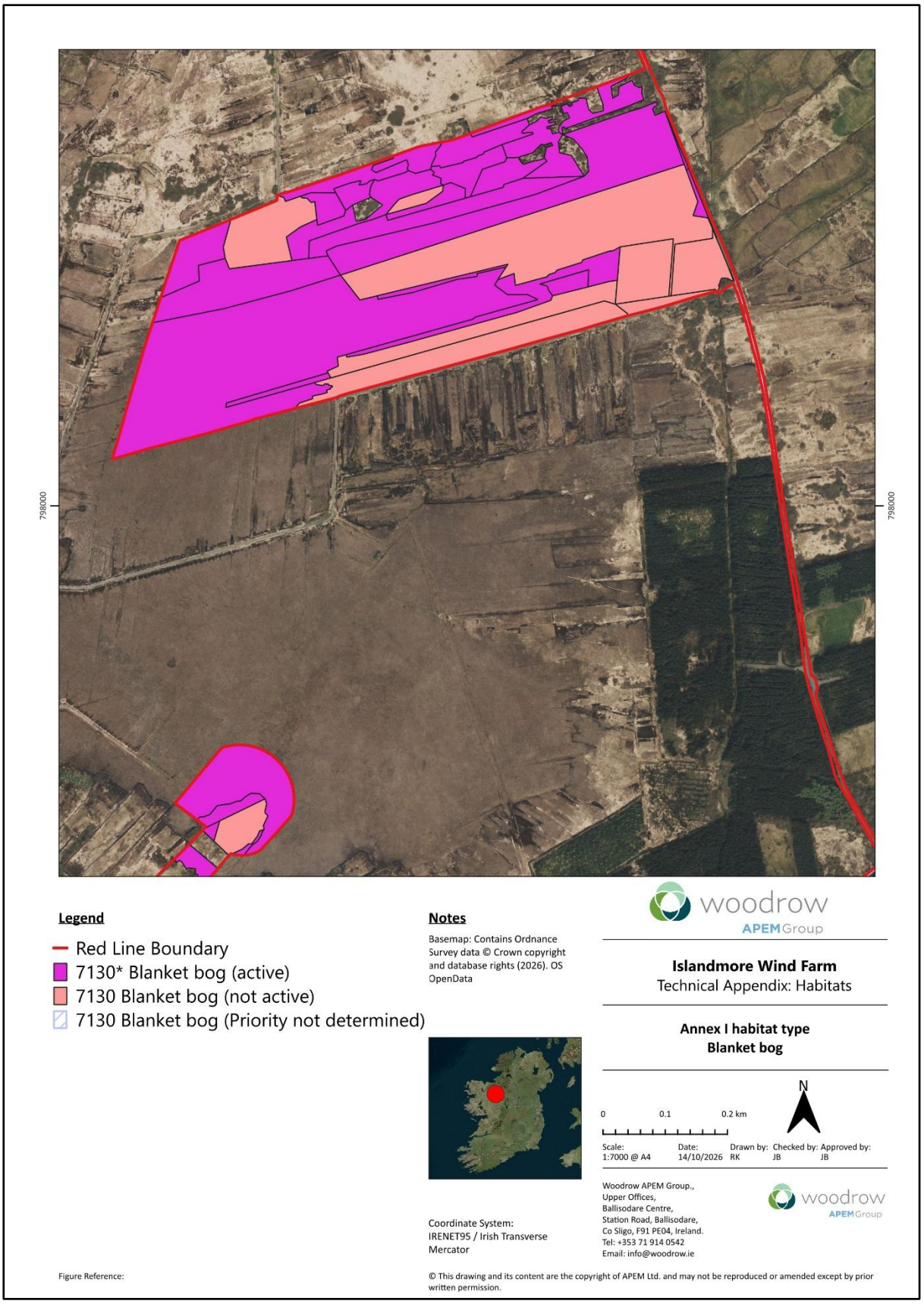


Figure 5: Location of Annex I Blanket bog

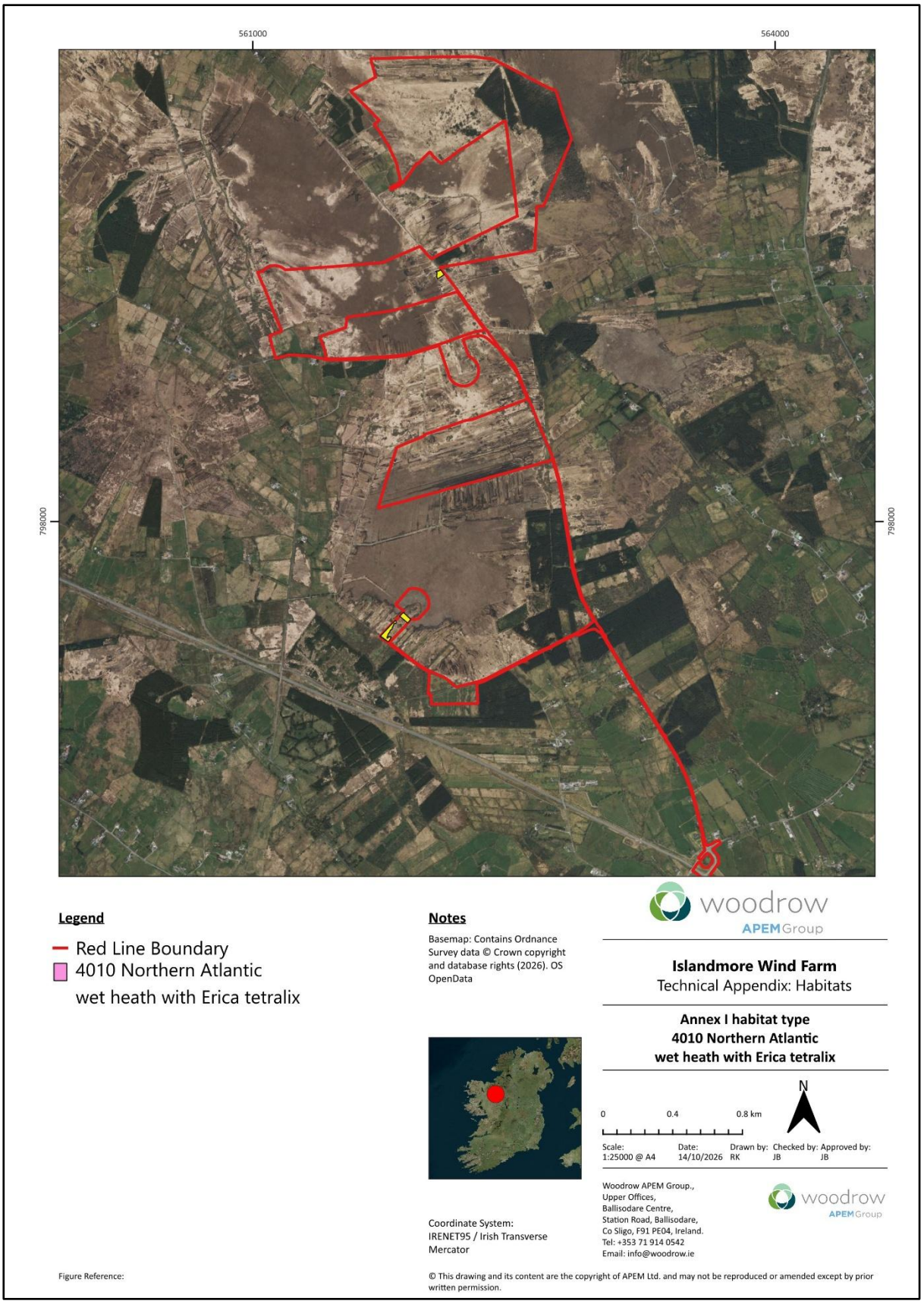


Figure 6: Location of Annex I habitat type 4010 Northern Atlantic wet heath with *Erica tetralix*

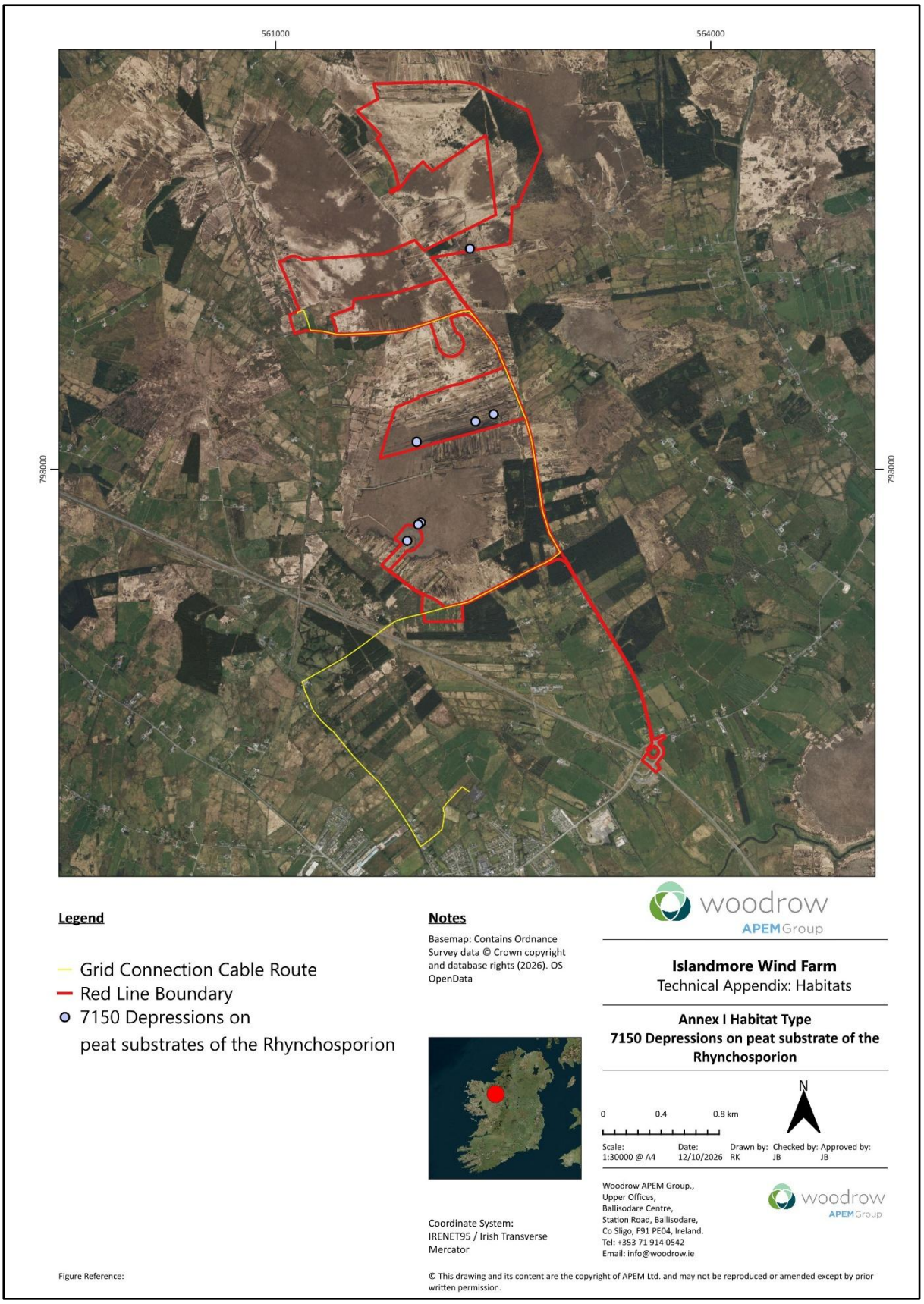


Figure 7: Locations of Annex I habitat type 7150 Depressions on peat substrates of the *Rhynchosporion*

Future prospects of Annex I habitat types

Four negative impacts on Annex I habitat types were identified during field surveys (

Table 19: Assessment of impacts on Annex I habitat type 7130* Blanket bog (active*)

). The overall score (-4.5) represents the current actual status of the habitat, which is considered *Unfavourable – Bad*. No distinction is made in the Annex I conservation assessment between primary (PB2) Upland blanket bog and (PB4) Cutover bog as both were assessed using the criteria for Annex I habitat type 7130* Blanket bog (active*).

The overall score (-9.5) for Annex I habitat type 7130 Blanket bog (inactive) is significantly below zero and as such the current status of the habitat is considered *Unfavourable – Bad* (**Table 20**). An additional negative impact, drainage for forestry was included within the assessment as c. 2ha of previously felled (WD4) Conifer plantation has regenerated to (PB2) Upland blanket bog but the associated furrow and ridge drainage system remains (**Table 20).** 11 were identified within the Annex I habitat type 4010 Northern Atlantic wet heath with *Erica tetralix* and the overall score (-7) resulted in an actual status of Unfavourable – Bad (Error! Reference source not found.). Although insufficient data exists from previous decades to assess trends over time, based on current results it is assumed that the future prospect for each of these Annex I habitat types is *Unfavourable-Bad* based on the survey results assessing *structure and function.*

Impact Code	Impact	Intensity	Influence	Habitat Area	Trend	Score
PC05	Peat extraction	High (1.5)	Negative (-1)	51-75% (2)	Ins.†	-2
PE01	Roads, paths, railroads and related infrastructure	Medium (1)	Negative (-1)	1-25% (1)	Ins.†	-1
PI02	Other invasive alien species (other than species of Union concern)	Medium (1)	Negative (-1)	<1% (0.5)	Ins.†	-0.5
PM03	Natural wildfire	Medium (1)	Negative (-1)	1-25% (1)	Ins.†	-1
Overall Score	-4.5					

†Insufficient data was collected to assess for ongoing trends.

Table 19: Assessment of impacts on Annex I habitat type 7130* Blanket bog (active*)

Impact Code	Impact	Intensity	Influence	Habitat Area	Trend	Score
PC05	Peat extraction	High (1.5)	Negative (-1)	100% (3)	Ins.†	-4.5
PE01	Roads, paths, railroads and related infrastructure	Medium (1)	Negative (-1)	1-25% (1)	Ins.†	-1
PI02	Other invasive alien species (other than species of Union concern)	Medium (1)	Negative (-1)	1-25% (1)	Ins.†	-1
PB24	Drainage for forestry	High (1.5)	Negative (-1)	1-25% (1)	Ins.†	-1.5
PM03	Natural wildfire	Medium (1)	Negative (-1)	25-50% (1.5)	Ins.†	-1.5

Overall Score	-9.5

†Insufficient data was collected to assess for ongoing trends.

Table 20: Assessment of impacts on Annex I habitat type 7130 Blanket bog (inactive).

Impact Code	Impact	Intensity	Influence	Habitat Area	Trend	Score
PC05	Peat extraction	High (1.5)	Negative (-1)	100% (3)	Ins.†	-4.5
PE01	Roads, paths, railroads and related infrastructure	Medium (1)	Negative (-1)	25-50% (1.5)	Ins.†	-1.5
PI02	Other invasive alien species (other than species of Union concern)	Medium (1)	Negative (-1)	1-25% (1)	Ins.†	-1
Overall Score	-7					

†Insufficient data was collected to assess for ongoing trends.

Table 21: Assessment of impacts on Annex I habitat type 4010 Northern Atlantic wet heaths with *Erica tetralix*

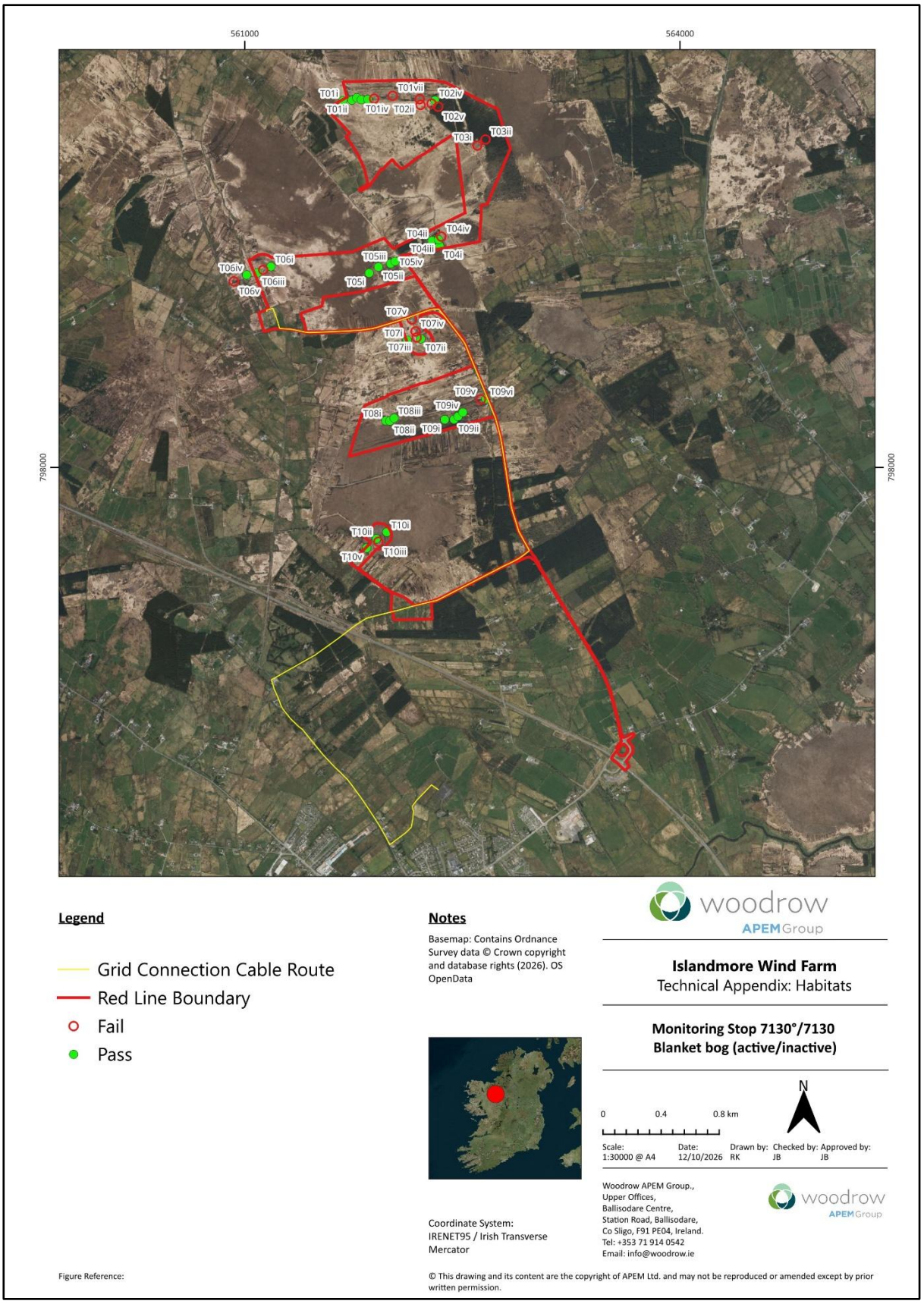


Figure 8: Location of monitoring stops for Annex I habitat type 7130*/7130 Blanket bog (active/inactive)

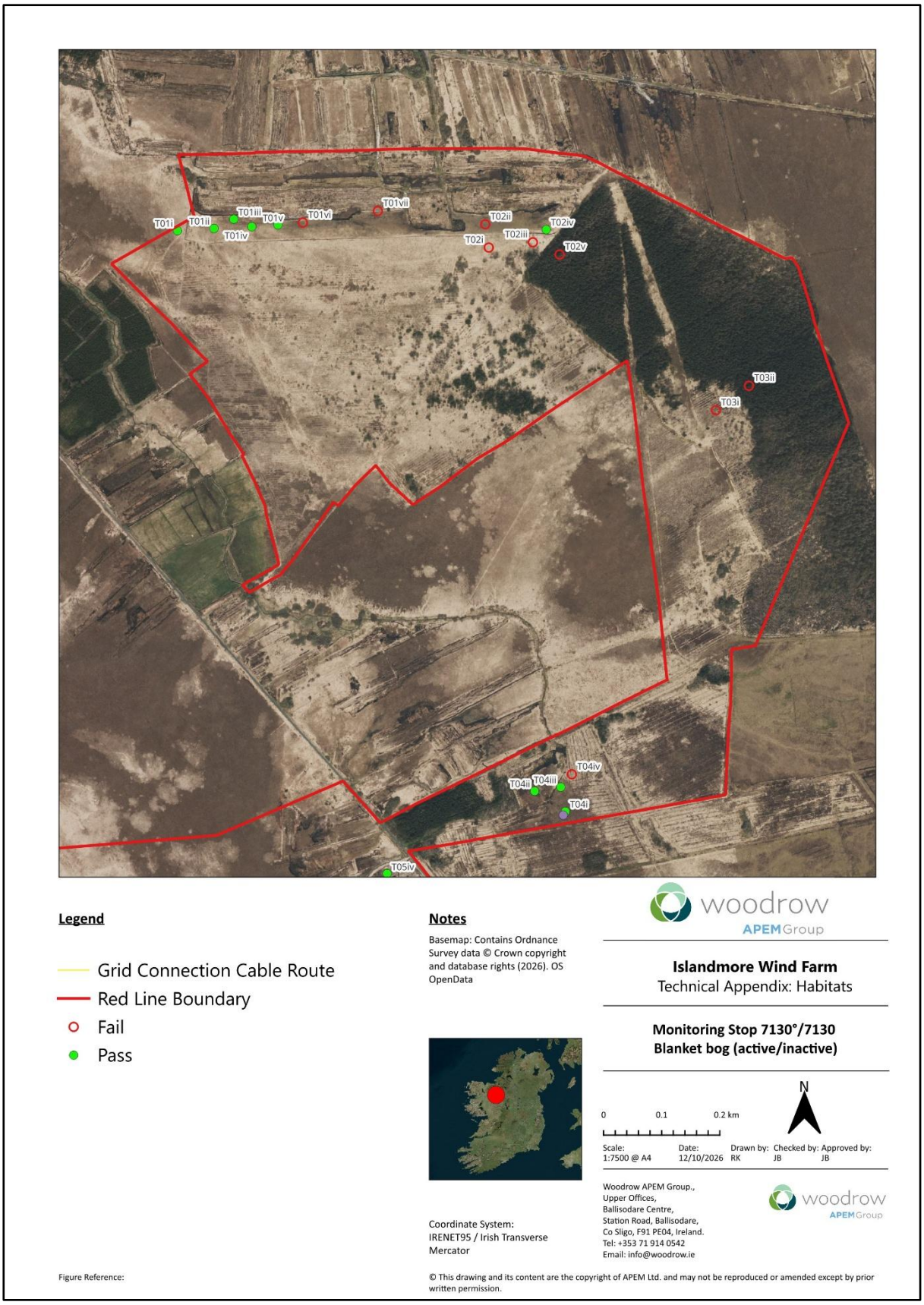


Figure 9: Location of monitoring stops between T01-T04 for Annex I habitat type 7130*/7130 Blanket bog (active/inactive)

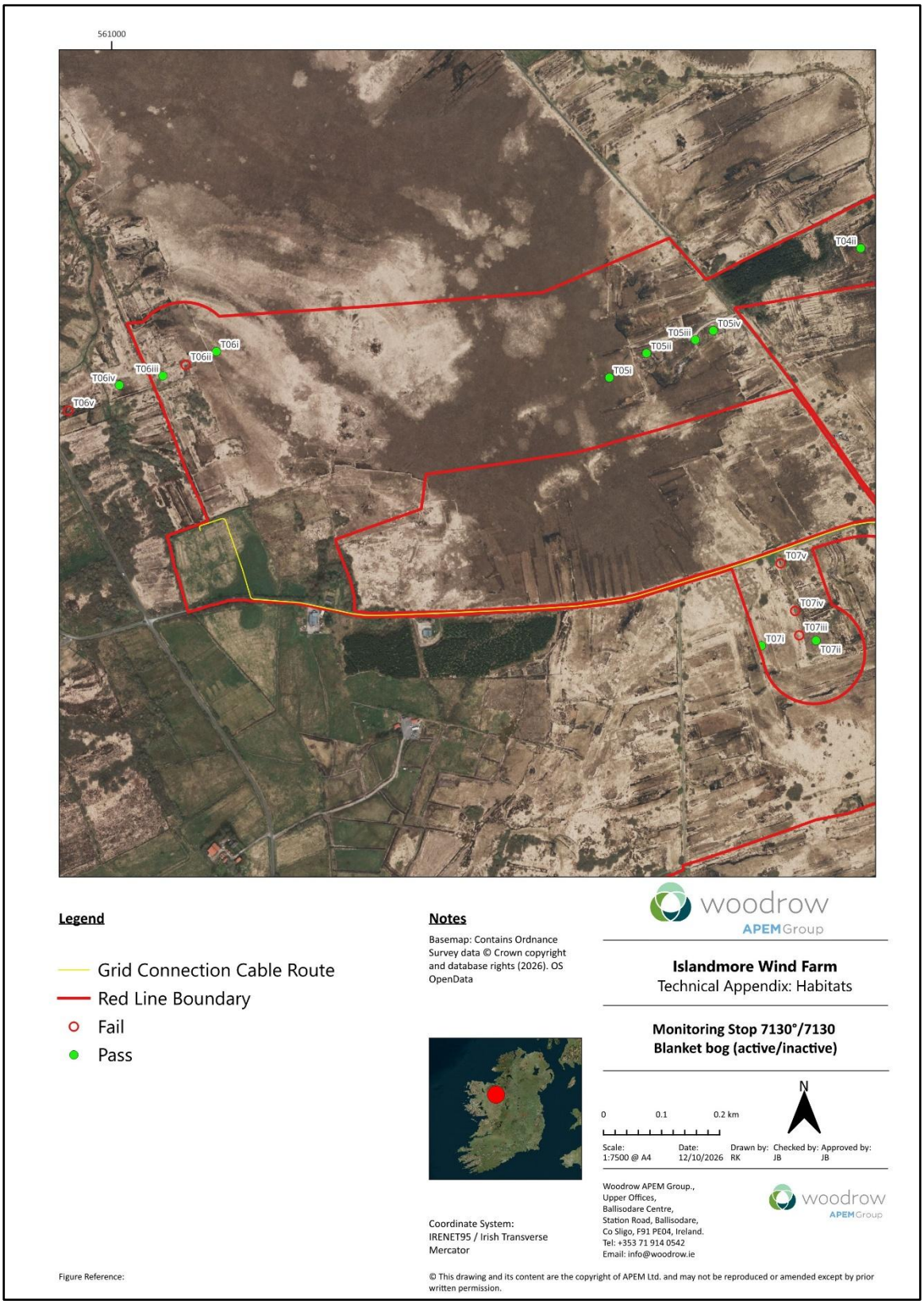


Figure 10: Location of monitoring stops between T05-T07 for Annex I habitat type 7130*/7130 Blanket bog (active/inactive)

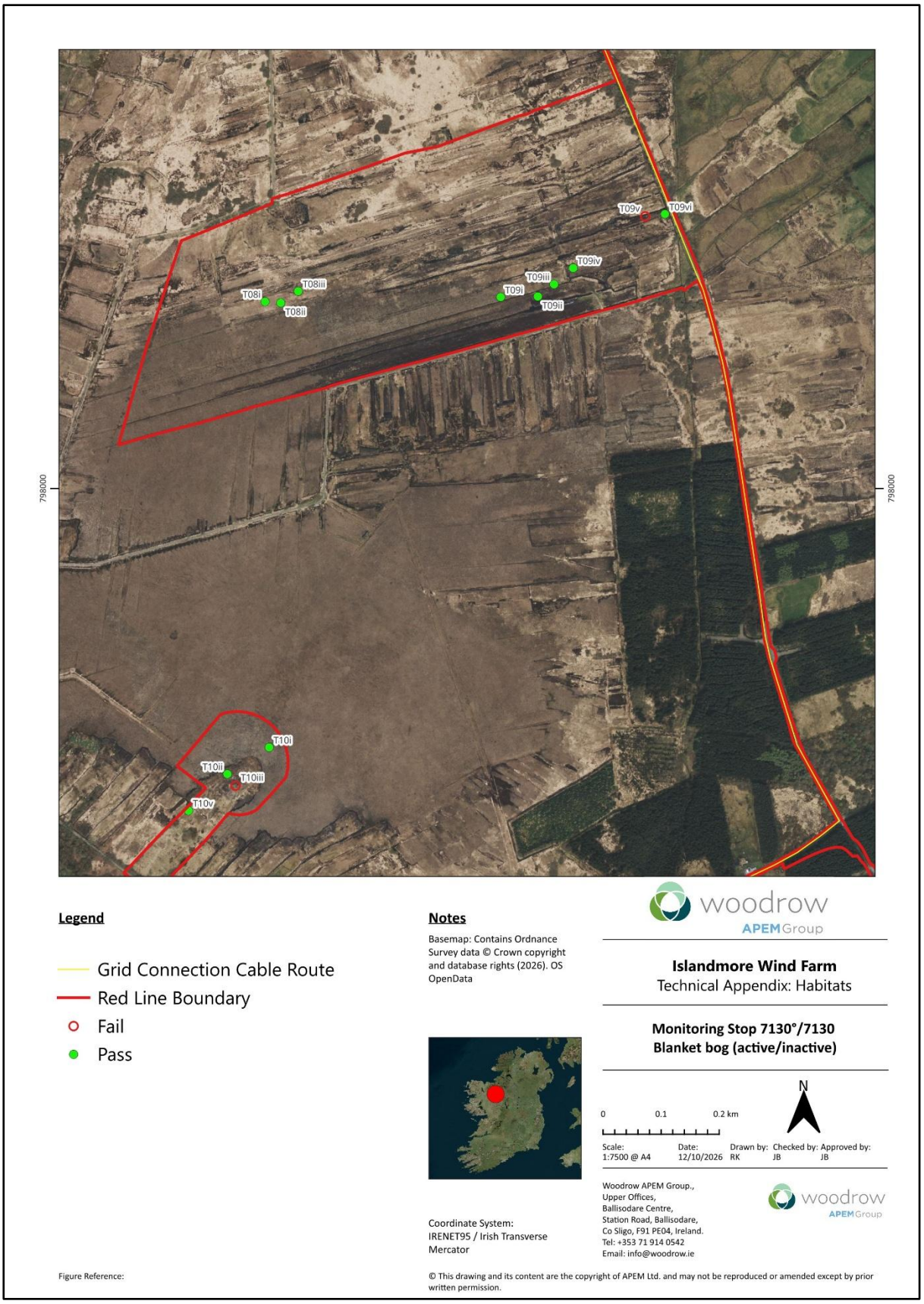


Figure 11: Location of monitoring stops between T08-T010 for Annex I habitat type 7130*/7130 Blanket bog (active/inactive)

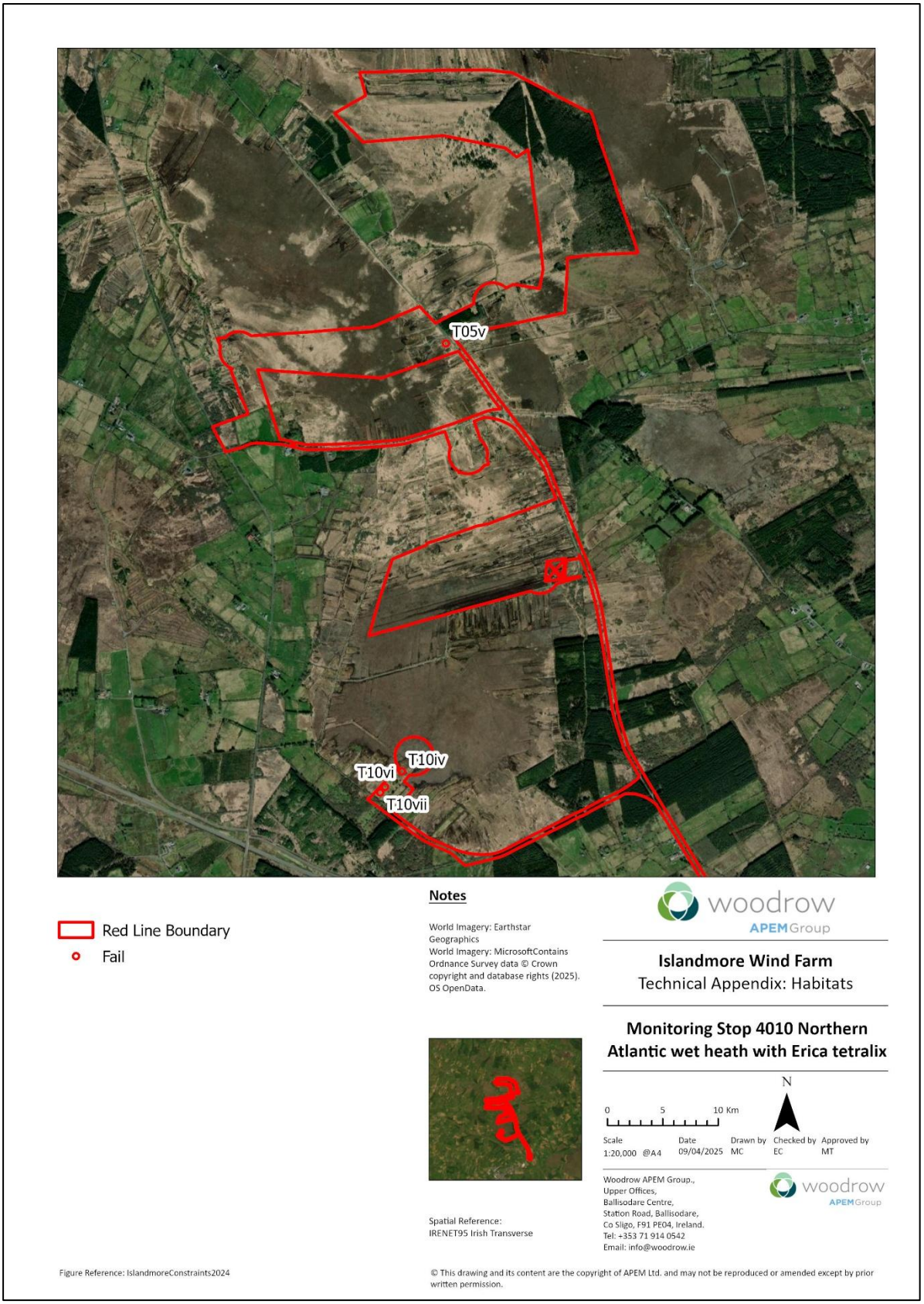


Figure 12: Location of monitoring stops for Annex I habitat type 4010 Northern Atlantic wet heaths with *Erica tetralix*

Structure and function of Annex I habitat types

The structure and function of an Annex I habitat type is assessed in the field by conducting a series of monitoring stops (**Figure 8-11**). The results of the monitoring stops assessed in the field for this study have been tabulated (**Appendix III**).

Annex I monitoring stops were carried out across all peatland habitats including (PB4) Cutover bog so that the condition of the habitat, as well as the threats to the habitat, could be evaluated. Best practice guidance does not provide sufficient clarity on the affinity of (PB4) Cutover bog to Annex I habitat types (Perrin *et al.* 2010, Perrin *et al.* 2014). There is no mention of peat extraction or regenerated peatlands within the Interpretation Manual (European Commission 2013). However, Fossitt 2000 defines (PB4) Cutover bog as a distinct habitat and lists it as having potential affinity to only one Annex I habitat type: 7150 Depressions on peat substrates of the *Rhynchosporio*n (Fossitt 2000).

The results for (PB2) Upland blanket bog and (PB4) Cutover bog are discussed separately in the following sections because the results differ markedly, even though the same monitoring criteria were used in the conservation assessments.

Overall structure and function of (PB2) Upland blanket bog

Six monitoring stops (T01i, T02i, T03i, T04i, T04iii, T04iv) located on (PB2) Upland blanket bog failed the assessment (**Appendix III**). These monitoring stops failed between five and seven criteria total indicating the habitat in the local vicinity of these locations in the north-east of the project site is in *poor* condition and somewhat degraded (**Figure 9**). For example, two of these monitoring stops (T03i and T04iv) were located on (PB2) Upland blanket bog which had been previously forested and clear-felled (pre-2014). These areas have since regenerated to (PB2) Upland blanket bog. The failed criteria provide insight into the threats and pressures negatively impacting the Annex I habitat type.

Fourteen monitoring stops (T01i, T02i, T03i, T04i, T04iii, T04iv, T05i, T06i, T07i, T08i, T08ii, T08iii, T09i, T10i) were located on (PB2) Upland blanket bog. Eight of these (T05i, T06i, T07i T08i, T08ii, T08iii, T09i, T10i) passed the assessment indicating that the Annex I habitat type Blanket bog (active*) in the vicinity of these locations is of favourable condition and of a high conservation value (**Figure 10 - 11**). Nine of the monitoring stops located on (PB2) Upland blanket bog (T01i, T02i, T03i, T04i, T05i, T06i, T07i, T09i, T10i) were deliberately located c. 50m beyond the footprint of the proposed development to allow for post-construction monitoring of indirect impacts.

Vegetation composition of (PB2) Upland Blanket Bog

Six monitoring stops (T05i, T08i, T08ii, T08iii, T09i, T10i) located on the (PB2) Upland blanket bog pass all seven criteria assessing the vegetation composition:-

- Number of positive indicator species present ≥7

Cover of bryophyte or lichen species, excluding Flat-topped Bog-moss *Sphagnum fallax* ≥10%

Cover of each of the following species: heather, many-stalked Spike-rush *Eleocharis multicaulis,* hare's-tail cottongrass, purple moor-grass, black bog-rush *Schoenus nigricans,* deergrass *Trichophorum germanicum* individually <75%

Cover of the following negative indicator species: common bent *Agrostis capillaris,* Yorkshire-fog*,* common reed *Phragmites australis,* bracken*,* creeping buttercup *Ranunculus repens* collectively <1%

Cover of non-native species <1%:-

- Cover of non-native species <1% in the local vicinity; and,
- Cover of scattered native trees and scrub <10% in the local vicinity.

This indicates the vegetation structure of T05i, T06i, T07i, T08i, T09i and T10i is in favourable condition. In addition, two monitoring stops (T06i and T07i) located on (PB2) Upland blanket bog only fail one criterion assessing the vegetation composition, namely: -

- Cover of scattered native trees and scrub <10% in the local vicinity.

Three monitoring stops (T01i, T04i, and T04iii) located on (PB2) Upland blanket bog failed two criteria assessing vegetation composition: -

- Cover of non-native species <1% in the local vicinity; and,
- Cover of scattered native trees and scrub <10% in the local vicinity.

These two failures combined result in an overall failure of these monitoring stops. Similarly, the monitoring stop located on previously felled (WD4) Conifer plantation (T03i and T04iv) also fail two or more criteria assessing vegetation composition. One of the monitoring stops (T02i) failed three of the vegetation composition criteria.

In summary, (WD4) Conifer plantations and (WS1) Scrub exerts a notable negative impact on the vegetation composition in the north-east of the project site, in the local vicinity of T01i, T02i, T03i, and T04i. Where the (WD4) Conifer plantation could be meaningfully seen from the monitoring stop and where self-seeded non-native conifers were noted on the (PB2) Upland blanket bog within c. 100m, then the cover of non-native species in the local vicinity was determined to be >1%, and the monitoring stop failed that criterion.

Vegetation structure of (PB2) Upland blanket bog

A burning event has had a notable impact on the vegetation structure of the (PB2) Upland blanket bog in the north-east of the project site, in the local vicinity of T01i, T02i, T03i, T04i. T04iii. These monitoring stops failed two criteria assessing fire damage:-

- Signs of burning into the moss, liverwort or lichen layer or exposure of peat surface due to burning in the local vicinity; and,
- Signs of burning inside boundaries of sensitive areas (including areas within 50m of functioning drains) in the local vicinity.

The burning event is assumed to be the result of a naturally occurring wildfire as extensive damage was caused to the (WD4) Conifer plantation. In addition, there is no evidence of grazing on the peatland within the project site, which can be associated with occasional controlled burning activities.

Physical structure of (PB2) Upland blanket bog

Four criteria are used to assess the physical structure of Annex I habitat type 7130* Blanket bog (active*):-

- Cover of disturbed bare ground <10%;

- Cover of disturbed bare ground <10% in the local vicinity;
- Area showing signs of drainage resulting from heavy trampling or tracking or ditches or peat cutting <10% in the local vicinity; and,
- Cover of erosion gullies and eroded areas within the greater bog mosaic‡ <5%

Of the fourteen monitoring stops located on (PB2) Upland blanket bog, all of them (T01i, T02i, T03i, T04i, T04iii, T04iv, T05i, T06i, T07i, T08i, T08ii, T08iii, T09i, T10i) fail the criterion for assessing drainage:-

- Area showing signs of drainage resulting from heavy trampling or tracking or ditches or peat cutting <10% in the local vicinity.

This result provides data to support the statement that (FW4) Drainage ditches are having a measurable effect on the integrity of the (PB2) Upland blanket bog across the project site. Artificial drainage channels have been excavated into the (PB2) Upland blanket bog across the project site, in most cases to prepare the peat for extraction. However, in the case of T03i and T04iv the drainage system is associated with forestry practices, not peat extraction.

For two of these monitoring stops, drainage was the only criterion failed and as such, T08i and T10i pass the monitoring stop for Annex I habitat type 7130* Blanket bog (active).

Structure and function of (PB4) Cutover bog

The majority (32 out of 51) of the monitoring stops were carried out within the (PB4) Cutover bog habitat. This includes one monitoring stop conducted within the <0.5ha of (GS4) Wet grassland. Only five of these monitoring stops (T06iii, T06iv, T07i, T07ii, T09iv) pass the overall assessment. The greatest threats to the integrity of the habitat in the local vicinity of these monitoring stops are:-

- Cover of scattered native trees and scrub <10% in the local vicinity; and,
- Area showing signs of drainage resulting from heavy trampling or tracking or ditches or peat cutting <10% in the local vicinity.

The remaining twenty-seven monitoring stops fail the assessment with between three to eight fails per stop, with the average with the mean number of fails being three. The widespread failure of the monitoring stops in the (PB4) Cutover bog indicates that the structure and functions necessary for the long-term maintenance of the habitat have been irreparably damaged and therefore the habitat is not likely to be self-sustaining (SNH 1995). The following sections address only the monitoring stops within the (PB4) Cutover bog which failed the assessment.

Vegetation composition of (PB4) Cutover bog

Thirteen of monitoring stops fail the criterion assessing species diversity:-

- Number of positive indicator species present ≥7.

This indicates a more impoverished flora relative to the (PB2) Upland blanket bog (e.g. T06ii, T06v, T06vi, T07iii, T07iv, T07v). Conversely, the other fourteen monitoring stops pass this criterion, suggesting a degree of resilience to the widespread peat extraction in the area (e.g. T01ii, T01iii, T01iv, T01v). The positive indicator species listed for this criterion can be found in best practice guidance (Perrin *et al*. 2014).

Encroachment from (WS1) Scrub is one of the greatest threats to the integrity of the (PB4) Cutover bog, with twenty-three monitoring stops failing the criterion assessing (WS1) Scrub cover: -

- Cover of scattered native trees and scrub <10% in the local vicinity

The proximity and widespread distribution of (WD4) Conifer plantation is another significant threat to the vegetation composition of the (PB4) Cutover bog habitat, with thirteen of the monitoring stops failing the criterion assessing the cover of non-native species: -

- Cover of non-native species <1%

Vegetation structure of (PB4) Cutover bog

The most significant threat to the vegetation structure of the habitat is fire. Other threats are considered to be more prevalent across the project site, as only six quadrats failed the assessment for burning events:-

- Signs of burning into the moss, liverwort or lichen layer or exposure of peat surface due to burning in the local vicinity; and,
- Signs of burning inside boundaries of sensitive areas (including areas within 50m of functioning drains) in the local vicinity.

Only two of the monitoring stops (T07iii, T09ii) located on (PB4) Cutover bog, identify crushed/pulled-up *Sphagnum* spp. and in both these cases the damage to the bryophyte layer was a result of mechanical action from heavy machinery.

Grazing (which was not noted at the project site) is not considered to be a threat to the (PB2) Upland blanket bog within the project site.

Physical structure of (PB4) Cutover bog

The widespread distribution of (FW4) Drainage ditches is likely the greatest threat to the integrity of the (PB4) Cutover bog at the project site, with twenty-four monitoring stops failing the criterion assessing drainage:-

- Area showing signs of drainage resulting from heavy trampling or tracking or ditches or peat cutting <10% in the local vicinity.

Disturbance events associated with turf cutting activities and the use of large machinery on the peatland is another significant threat to the habitat with a large proportion of the monitoring stops failing the criteria assessing bare ground:-

- Cover of disturbed bare ground <10%
- Cover of disturbed bare ground <10% in the local vicinity

As such, the physical structure of the (PB4) Cutover bog is in *Unfavourable* condition.

Structure and function of (WD4) Conifer plantation

A further two monitoring stops were located within the c. 22ha of (WD4) Conifer plantation itself (T02v and T03ii). Unsurprisingly, both monitoring stops fail the Annex I habitat type 7130 Blanket bog assessment. Prior to afforestation this habitat was likely (PB2) Upland blanket bog. The area was included in the assessment to ensure consistency in the methodology used across the project site.

Structure and function of (HH3) Wet heath

An additional four monitoring stops located within the (PB4) Cutover bog were assessed using the monitoring criteria for Annex 1 habitat type 4010 Northern Atlantic wet heaths with *Erica tetralix*, as peat depths at these locations were <50cm (**Appendix III**, **Table 26**). All four of the monitoring stops fail the assessment overall (**Figure 12**).

Vegetation composition of (HH3) Wet heath

Scrub encroachment is a threat to the longevity of the habitat and all four of the monitoring stops fail the criteria for:-

- Cover of scattered native trees and scrub <20% in the local vicinity.

The bryophyte layer is somewhat diminished as three monitoring stops (T05v, T10iv, T10vii) fail the criteria for: -

Total cover of *Cladonia* species, bog-mosses, woolly Fringe-moss *Racomitrium lanuginosum* and *pleurocarpous* mosses ≥10%

Self-seeded conifers from nearby plantations pose a threat to the habitat as three monitoring stops fail the criteria:-

- Cover of non-native species <1% in the local vicinity.

Significant cover of blacken *Pteridium aquilinum* (T10i and T10vii) and soft-rush (T05v and T10iv) were noted at two of the four monitoring stops and as such these stops failed the criteria:-

- Cover of blacken <10% in the local vicinity; and,
- Cover of soft-rush <10% in the local vicinity.

All four monitoring stops pass the following criteria for assessing vegetation composition:-

- Cover of dwarf shrub species <75%;
- Cover of the following negative indicator species: common bent, Yorkshire-fog, common reed, creeping buttercup collectively <1%; and,
- Cover of non-native species <1%.

Vegetation structure of (HH3) Wet heath

In terms of vegetation structure, all four quadrats pass the criteria assessing damage from grazing pressure and burning events: -

Last complete growing season's shoots of ericoids, crowberry *Empetrum nigrum;*

and bog-myrtle *Myrica gale* showing signs of browsing collectively <33%;

- No signs of burning into the moss, liverwort or lichen layer, or exposure of peat surface due to burning in the local vicinity; and,
- No signs of burning inside boundaries of sensitive areas in the local vicinity.

The use of machinery has resulted in localised damage to the bryophyte layer at one monitoring stop (T10iv) and the failure of one criterion: -

Crushed, broken and/or pulled up bog-mosses <10% of bog-moss cover <10% of area showing signs of drainage.

Physical structure of (HH3) Wet heath

The (HH3) Wet heath habitat is threatened by the presence of drainage ditches and all four monitoring stops failed the criterion:-

- Area showing signs of drainage resulting from heavy trampling or tracking or ditches <10% in the local vicinity

Two of the four monitoring stops (T05v and T10iv) fail the criteria assessing the cover of bare ground, which in this case indicates high levels of recent disturbance:-

- Cover of disturbed bare ground <10% in the local vicinity.

Overall conservation status of Annex I habitat types

The overall conservation status of Annex I 7130* Blanket bog across the project site is assessed as *Unfavourable – Bad*. This is result is based on several factors:-

- There is a >1% decrease in surface area;
- 75% of the monitoring stops fail the assessment, including:-
  - 43% of the monitoring stops for (PB2) Upland blanket bog fail the assessment;
  - 19% of the monitoring stops for (PB4) Cutover bog fail the assessment;
  - 100% of the monitoring stops located on (HH3) Wet heath fail the assessment;
- The future prospects are *Bad* as a result on on-going threats to the integrity of Annex I habitat types including:-
  - Peat extraction and associated drainage;
  - Invasive alien species (other than species of Union concern);
  - Forestry and drainage for forestry; and,
  - Natural wildfire.

5.3.4 INVASIVE ALIEN SPECIES

During botanical survey work, several invasive alien species were identified and target noted across the project site.

One stand of Japanese knotweed *Reynoutria japonica* formerly (syn. *Fallopia japonica*) was identified along the L5501 (**Figure 13**), where road widening works are proposed for the turbine component haul route. The stand is approximately 1m in width and 5m in length and is located along the boundary wall beside an access gate to an agricultural field.

Japanese knotweed is listed on the Third Schedule of the European Communities ('Birds and Natural Habitats') Regulations 2011 (S.I. No. 477/2011 (as amended). Regulations 49 and 50 prohibit the introduction and dispersal of the invasive species of flora and fauna that are included on the Third Schedule list appended to these Regulations. In addition, this species is considered a high impact invasive species by the NBDC (NBDC 2025b).

Rhododendron *Rhododendron ponticum* is a Third Schedule listed species and is considered a high impact invasive species by the NBDC (NBDC 2025c). Five stands of

rhododendron were identified across the project site (**Figure 13**). Two small stands (c. 5m x 2m) are located in close proximity to T10. One of these (E561754 N 797362) is located within the footprint of the proposed access track to T10. The other (E 561788 N797402) is located c. 12.5m to the north-west of the access track. A large stand (c. 20m x 20m) is located to c. 20m the west of the hardstand for T3 (E562631 N800178). Another large stand (c. 20m x 20m) is located in the (WD4) Commercial forestry to the west of the L5501'/'local road and the proposed road widening works along the turbine component haul route. Finally, one small shrub (c. 1m x 1m) is located on the (PB2) Upland blanket bog between T5 and T6 (E561526 N799427).

Several cherry-laurel shrubs were identified across the project site (**Figure 13**). Although this species is not listed within the Third Schedule, it is considered a 'High Impact' invasive species (NBDC 2025d). Two large shrubs (c. 5m x 5m) are located within the footprint of the proposed access track to T10 (E561746 N797342 and E561753 N797354). A thicket (c. 3m x 3m) of cherry-laurel is located within the (WN7) Bog woodland to the south of the unnamed road to T10 and falls within the site boundary for road widening works (E561993 N 797137). A second thicket (c. 8m x 8m) is located within the (WN7) Bog woodland but falls outside of the site boundary for road widening works by c. 5m (E561908 N797174). These records include one new roadside planting of the species (E562699 N798410), and one location where cut plant material was dumped by the side of the 'L5501'/'local road along the site boundary to the north of T5 (E561987 N799550). Furthermore, two stands of cherry-laurel are located along an unnamed road outside of the site boundary between T8 and T7.

Semi-mature sycamore *Acer pseudoplatanus* trees are frequently present within the hedgerows along the turbine component haul route and electricity line route (**Figure 14**). This species is considered to be a medium impact invasive species (NBDC 2025e).

A single stand of montbretia *Crocosmia x crocosmiiflora* was identified within the project site, along the L55018'/'local road where road widening works are proposed (**Figure 15**). This species is listed on the Invasive Species Ireland's Amber List (Invasive Species Ireland n.d.).

Red osier dogwood *Cornus sericea* was identified along the proposed access track to T10 (**Figure 15**). This species is listed on the Invasive Species Ireland's Amber List (Invasive Species Ireland n.d.). Two shrubs (c. 1m x 2m) were identified in close proximity to one another either side of a farm gate. One of the shrubs is located within the footprint of the proposed access track while the other is c. 1.5m to the east of the proposed access track.

Snowberry *Symphoricarpos albus* is a non-native species considered to have a low risk of impact (NBDC 2025f). This species is listed on the Invasive Species Ireland's Amber List (Invasive Species Ireland n.d.). A long linear hedge of snowberry was identified along the route of the underground electricity line, measuring approximately c. 1m in width and 50m in length (**Figure 15**).

Fuschia *Fuchsia magellanica* was identified at two locations along the electricity line route (**Figure 16**). Fuchsia is a non-native species, which has naturalised within Irish hedgerows, particularly in the south of the country. The invasiveness status of this species is listed as "not assessed" on the NBDC website, and it is not listed on the invasive species Ireland website.

Wilson's honeysuckle *Lonicera nitida* is a non-native species which is commonly considered a garden escape and has become somewhat naturalised within (WL1)

Hedgerows across the project site (**Figure 16**). The invasiveness status of this species is listed as "*not assessed*" on the NBDC website, and it is not listed on the invasive species Ireland website. It was identified along the L5501'/'local road and L55018'/'local road within the project site, including along the turbine component haul route, electricity line route, and the proposed access track to T6 and T10.

Best practice guidance on the control of Invasive Alien Species is publicly available (TII 2020 and https://invasives.ie/controlandmanagementguides/). It is advisable to engage a qualified Registered Pesticide Advisor with appropriate training, experience, and expertise in managing invasive alien species to support the planning and implementation of control measures for these Invasive Species.

Scientific Name	Common Name	Designation	Location	Date of Record	Photograph
High Impact					
Reynoutria japonica (syn. *Fallopia japonica*)	Japanese knotweed	NBDC: Invasive species – High risk of Impact Invasive Species Ireland: High Impact Legal Status: Third Schedule listed species under Regulations 49 & 50 in the European Communities (Birds and Natural Habitats) Regulations	E563564 N796280	13 May 2025	
Rhododendron ponticum	Rhododendron	NBDC: High Impact Invasive Invasive Species Ireland: N/A Legal Status: Third Schedule listed species under Regulations 49 & 50 in the European Communities (Birds and Natural Habitats) Regulations	E561526 N799427 E562797 N798017 E561788 N797401 E561754 N797362 E562631 N800178	25 Sep. 2023 6 Mar 2025	
Prunus laurocerasus	Cherry-laurel	NBDC: High Impact Invasive Invasive Species Ireland: N/A Legal Status: N/A	E561980 N798707 E561982 N798668 E561753 N797354 E561746 N797342 E561993 N797137 E562699 N798410 E561987 N799550 E561908 N797174 E561336 N796625 E561488 N 796713	12 Sep. 2024 20 Mar 2025 13 May 2025	

			E561335 N 796624		
Medium Impact					
Acer pseudoplatanus	Sycamore	NBDC: Medium Risk Invasive Species Invasive Species Ireland: Amber list	E561497 N797513 E561247 N797915 E561254 N798014 E561299 N796288 E561311 N796277 E561329 N796265 E561399 N796195 E563564 N796295 E563551 N796348 E563545 N796373 E563545 N796373 E563485 N796546 E563482 N796557 E563478 N796565 E563478 N796566 E563472 N796574 E563465 N796589 E563264 N796925 E563183 N797068 E563167 N797089 E563097 N797210 E562953 N797408 E563568 N796281	13 May 2025	
Low Impact					

Cornus sericea	Red-osier Dogwood	NBDC: Non-native species - Low risk of Impact Invasive Species Ireland: Amber list	E561772 N797317 E561779 N797308	20 Mar 2025	
Crocosmia X *crocosmiiflora*	Montbretia	NBDC: Non-native species - Low risk of Impact Invasive Species Ireland: Amber List	E561223 N798960 E561221 N798963	11 Jul. 2024	
Symphoricarpos albus	Snowberry	NBDC: Non-native species - Low risk of Impact Invasive Species Ireland: Amber List	E561549 N796024	13 May 2025	
Not Assessed					

Fuchsia magellanica	Fuchsia	NBDC: N/A Invasive Species Ireland: N/A	E561500 N796717 E561596 N796795	13 May 2025	
Lonicera nitida	Wilson's honeysuckle	NBDC: N/A Invasive Species Ireland: N/A	E561740 N797334 E561754 N797322 E561384 N798944 E561375 N798948 E561343 N798956 E561279 N798962 E561198 N798963 E561232 N798962 E561122 N798935 E562058 N799475 E563200 N797030 E563186 N797053 E563146 N797123 E563058 N797266 E561352 N796636 E561436 N796684 E561240 N797890 E562702 N797267	20 Mar 2025 13 May 2025	

Table 22: Location of invasive alien species

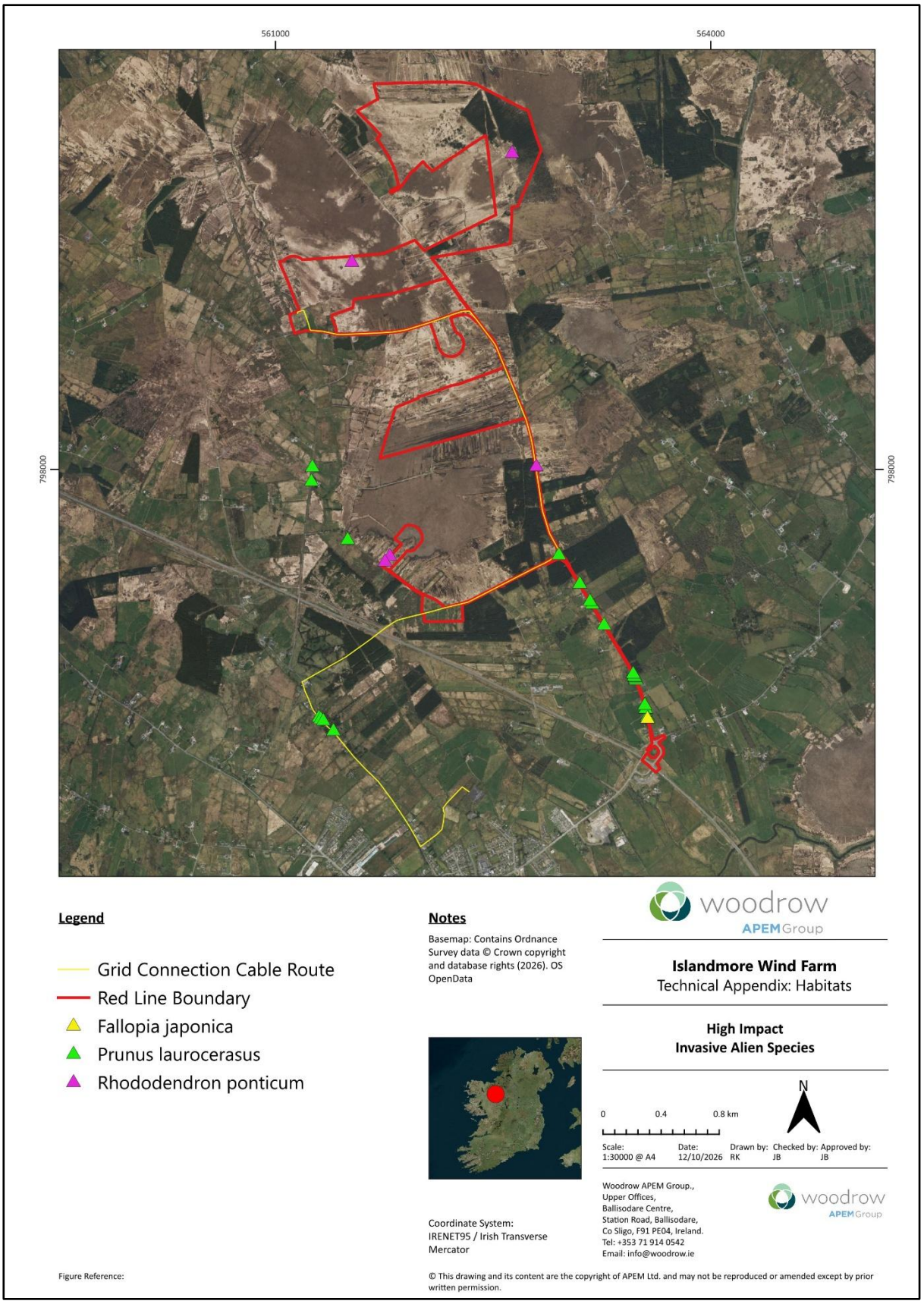


Figure 13: Location of high impact invasive species

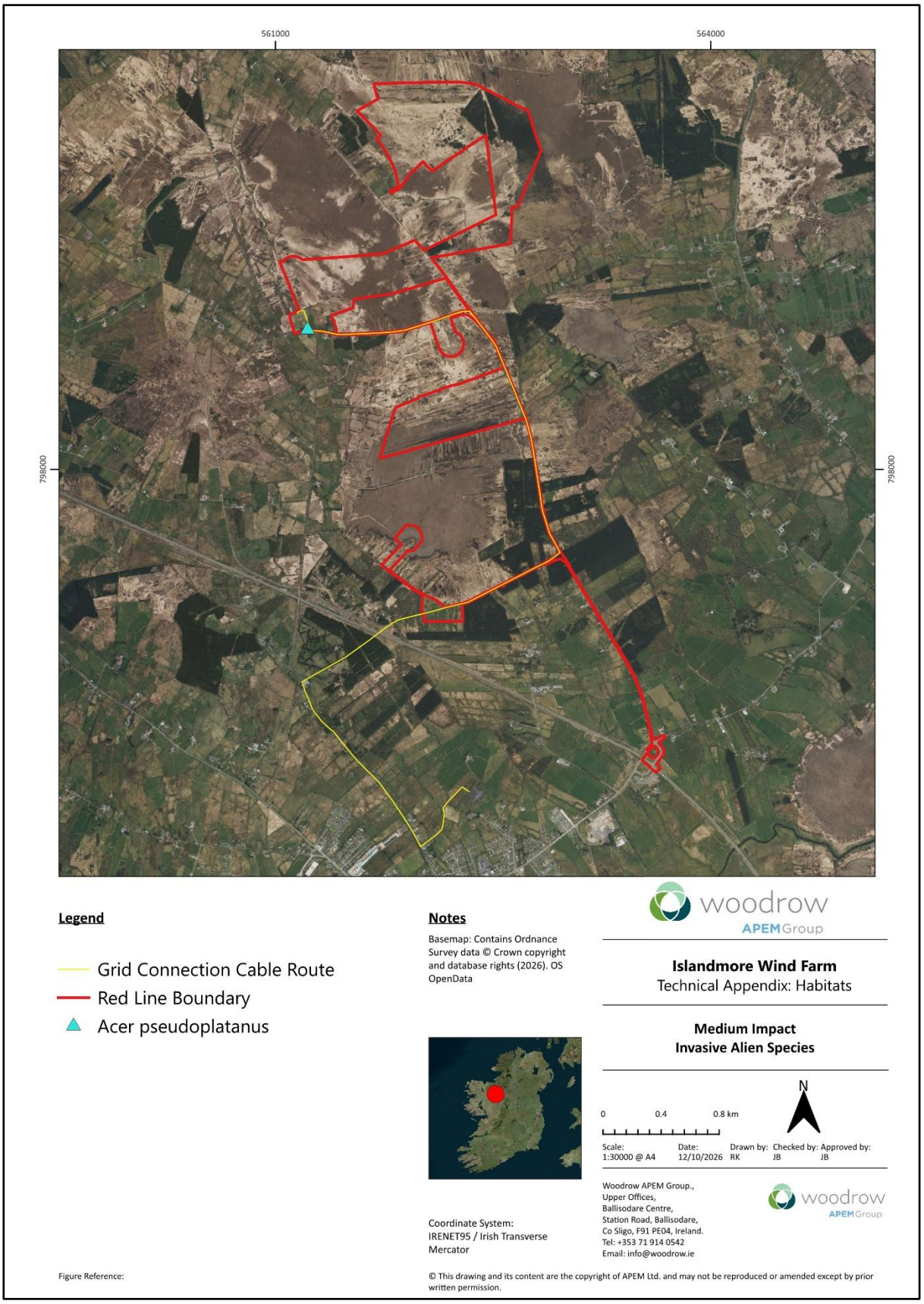


Figure 14: Location of medium impact invasive species

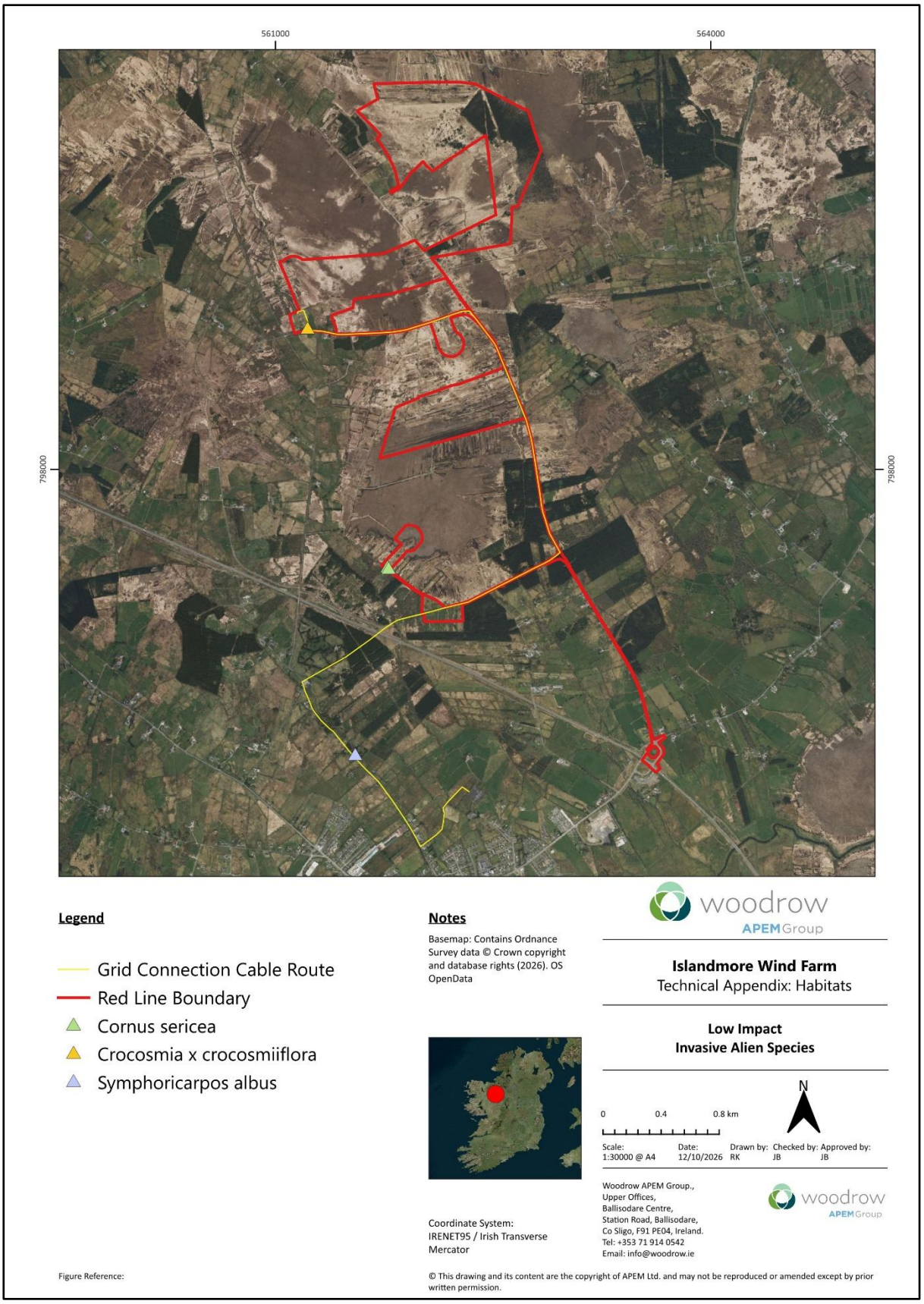


Figure 15: Location of low impact invasive species

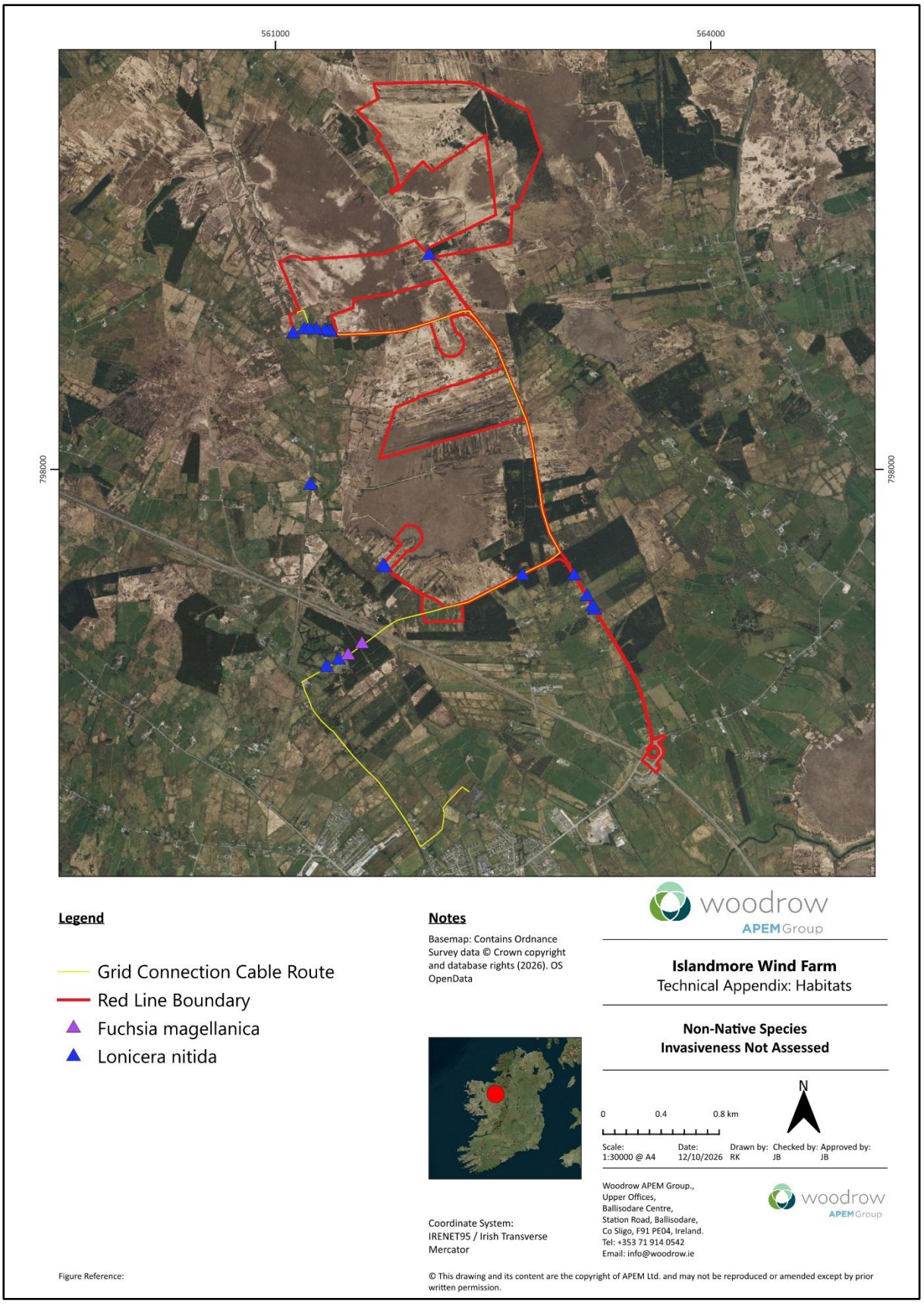


Figure 16: Location of non-native species which have not been assessed

5.3.5 RARE AND NOTABLE SPECIES

Brown beak-sedge *Rhynchospora fusca* was identified near quadrat T08iii (**Plate 13**). The location of the species was recorded (E562035 N798341, **Figure 17**). Brown beak-sedge has a disparate distribution in Ireland. It has been identified within the two 100km grid squares (M and G) over which the project site spans. However, the species has not been previously identified within either of the two 10km grid squares which the project site spans (M69 and G60).

Rusty bog-moss *Sphagnum fuscum* was identified on the (PB2) Upland blanket bog between T05 and T06 (E561639 N799327, **Figure 17**). This moss species formed a small, highly localised cluster and was not identified elsewhere in the local vicinity. Its location was target noted, and a photo was taken (**Plate 14**). Rusty bog-moss has a disparate distribution with four records existing in the National Biodiversity Data Centre website. A previous record does exist for Co. Roscommon (G80) approximately 30km to the east of the project site.

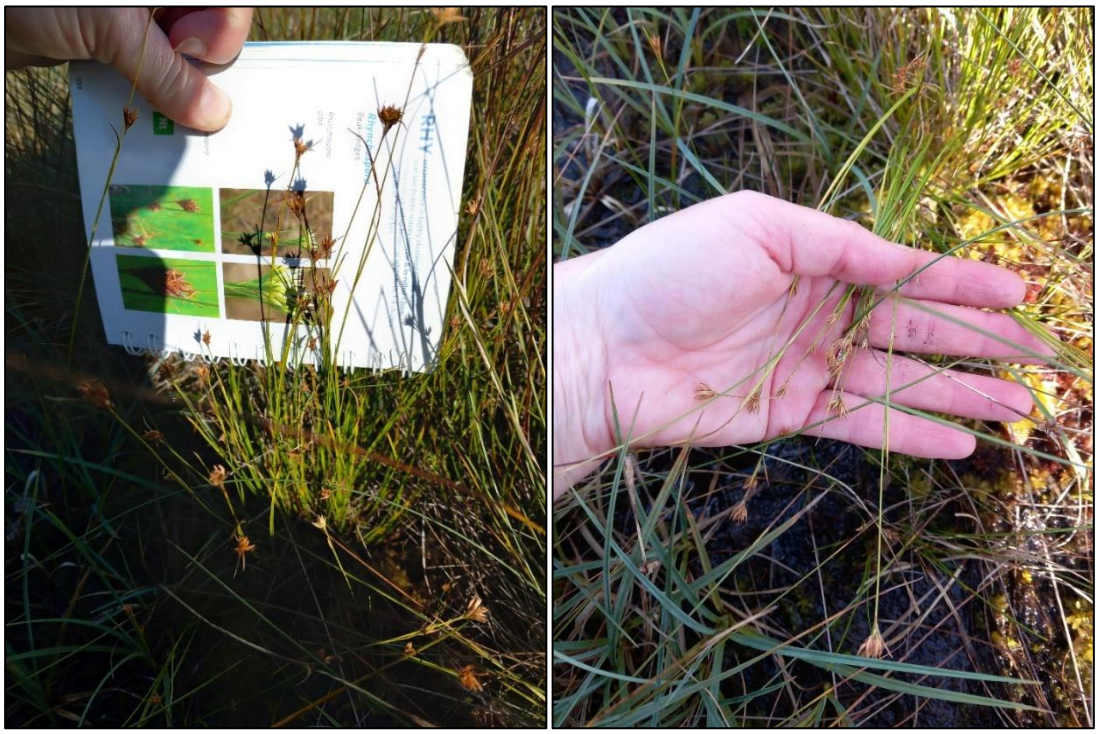


Plate 13: Brown beak-sedge in close proximity to quadrat T08iii



Plate 14: Rusty bog-moss located between T05 and T06

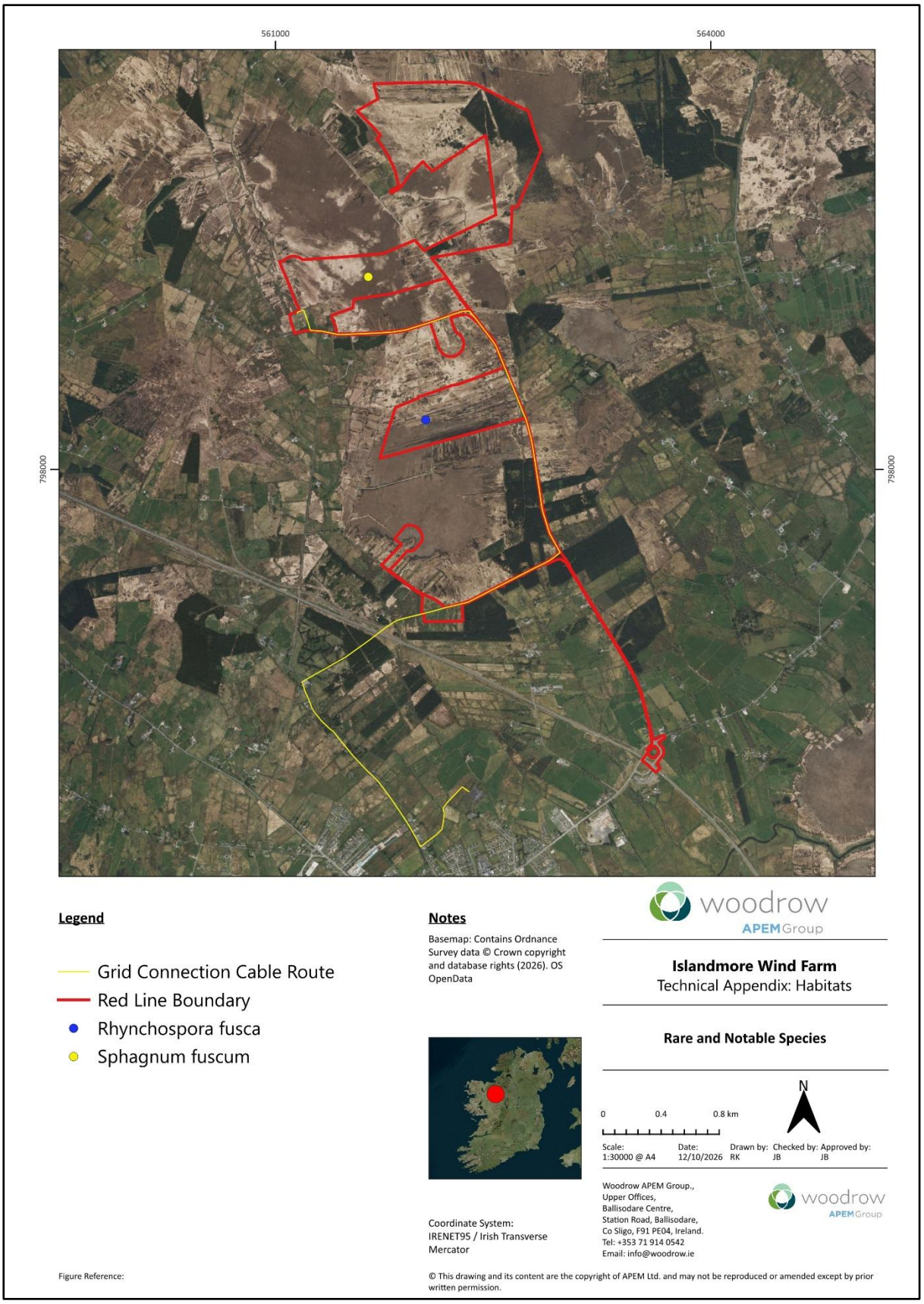


Figure 17: Location of rare and notable species identified

5.4 CONCLUSION

The project site is dominated by (PB2) Upland blanket bog, (PB4) Cutover bog, and (WD4) Conifer plantation, with a minor contribution from several other habitats. The (PB2) Upland blanket bog supports good species diversity and active peat formation. The majority of the (PB4) Cutover peat is also active, but the habitat is more degraded especially in areas where turf extraction is on-going.

A sample of 51 quadrats were taken, and the Irish Vegetation Classification system was used to identify the vegetative communities across the project site. The vast majority of the quadrats fall within the division Bogs, with Heaths being the second most commonly sampled division. Assigned communities include:-

- BG2C *Erica tetralix - Molinia caerulea - Cladonia portentosa* peatland;
- BG2E *Calluna vulgaris - Eriophorum* spp. bog;
- BG2B *Erica tetralix - Andromeda polifolia* bog;
- BG1D *Eriophorum angustifolium - Campylopus introflexus* bog;
- BG2F *Trichophorum cespitosum/germanicum - Eriophorum angustifolium* peatland;
- HE4E *Molinia caerulea - Calluna vulgaris - Erica tetralix* heath; and
- HE2D *Calluna vulgaris - Molinia caerulea - Erica cinerea* heath.

According to the IVC, these communities likely equate to Annex I habitat types, including:-

- 7130* Blanket bog (active);
- 7130 Blanket bog (inactive); and
- 4010 Northern Atlantic wet heaths with *Erica tetralix*.

These results are supported by observations made in the field, and the mapped extent of these Annex I habitats have been provided.

A sample of fifty-one Annex I monitoring stops were taken across the project site. This allows for more a detailed ecological valuation of the conservation status of the assessed Annex I habitat types. Large decreases in *surface area* were established for the Annex I habitat type 7130* Blanket bog, with industrial scale peat extraction taking place within the vicinity of proposed T09. Insufficient data existed to determine the changes in area for Annex I habitat type 7130 Blanket bog (inactive) and Annex I habitat type 4010 Northern Atlantic wet heaths with *Erica tetralix*.

The *Future prospects* of all assessed Annex I habitat types are *Bad* with significant in-going threats impacting the integrity of the habitats, including:-

- peat extraction;
- drainage;
- forestry;
- invasive alien species;
- scrub encroachment;
- natural wildfire; and,

- roads.

The overall results of the monitoring stops reveal an *Unfavourable-Bad* condition for all assessed Annex I habitat types. The Annex I habitat type Blanket bog (active*) in the local vicinity of the following eight monitoring stops passed the *Structure and function* assessment which indicates the habitat is in *Favourable* condition and of a high conservation value:-

- T05i, T06i, T07i T08i, T08ii, T08iii, T09i, T10i.

The Annex I habitat type 7150 Depressions on peat substrates of the *Rhynchosporion* was identified at five locations within the project site (plus two beyond the Red Line Boundary). No monitoring stops were conducted at these locations and as such the conservation status of the habitat was not assessed.

During botanical survey work, several invasive alien species were identified and target noted across the project site, including:-

- Rhododendron;
- Japanese knotweed
- Cherry-laurel;
- Red-osier dogwood; and,
- Montbretia.

Japanese knotweed and rhododendron are listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011, as amended). Regulations 49 and 50 prohibit the introduction and dispersal of Third Schedule species. A single stand of Japanese knotweed (c. 1 m x 5 m) was recorded along the L5501, where road widening works are proposed for the turbine component haul route. This stand will require management to prevent its spread during construction.

Two rare and notable species were identified during botanical surveys, namely:-

- Brown beak-sedge; and
- Rusty bog-moss.

In conclusion, the habitats within the project site include areas of notable ecological value and merit conservation efforts through the careful application of the mitigation hierarchy, to avoid, mitigate and compensate negative ecological impacts and effects. However, the project site also includes some habitat areas that are more highly degraded due to activities such as turf cutting, drainage and afforestation and these are considered to have a lower ecological value. Development activities on these habitat areas will have lower ecological impact. Some of these more degraded habitats also have the potential for enhancement if habitat restoration measures are incorporated into the development to mitigate for its impacts.

REFERENCES

CIEEM (2017) Guide to Ecological Surveys and Their Purpose. Chartered Institute of Ecology and Environmental Management. Accessed: 12 March 2025. Available: Guide-to-Ecological-Surveys-and-Their-Purpose-Dec2017.pdf

Department of Culture, Heritage and the Gaeltacht (2017) National Biodiversity Action Plan. Accessed: 03 March 2025. Available: National Biodiversity Action Plan English.pdf

European Commission (2013) Interpretation Manual of European Union Habitats - EUR28, European Commission, DG Environment. Accessed: 10 April 2025. Available: The Habitats Directive - European Commission

ESRI (2009) World Imagery. Accessed: 11 February 2025. Available: https://www.arcgis.com/home/item.html?id=10df2279f9684e4a9f6a7f08febac2a9

Fossitt, J. (2000) A Guide to Habitats in Ireland. 2nd Edition. The Heritage Council, Kilkenny. Accessed: 10 March 2025. Available: https://www.heritagecouncil.ie/content/files/A-Guide-to-Habitats-2nd-Edition.pdf

Invasive Species Ireland (no date) Amber list: Recorded species. Available: Amber list: Recorded species. Accessed: 08 April 2025.

Invasive Species Ireland (2013) Rapid Risk Assessments. Risk of High Impact invasive species in Ireland. Available: Invasives_taggedlist_website_pdfs.xls Accessed: 08 April 2025.

Nature Scot (2023) Advising on peatland, carbon-rich soils and priority peatland habitats in development management. Accessed: 13 March 2025. Available: https://www.nature.scot/doc/advising-peatland-carbon-rich-soils-and-priority-peatland-habitats-development-management

NBDC (2025a) Irish Vegetation Classification. Accessed: 12 March 2025. Available: https://biodiversityireland.ie/projects/ivc-classification-explorer/ Accessed: 08 April 2025

National Biodiversity Data Centre (2025b) National Biodiversity Data Centre, Species profile: Japanese Knotweed (Fallopia japonica). Biodiversity Ireland. Available at: https://species.biodiversityireland.ie/profile.php?taxonId=41674&taxonDesignationGroupId=25 Accessed: 08 April 2025.

NBDC (2025c) National Biodiversity Data Centre, Species profile: Rhododendron ponticum – Róslabhras. Biodiversity Ireland. Available at: https://species.biodiversityireland.ie/profile.php?taxonDesignationGroupId=25&taxonId=29245 Accessed: 08 April 2025.

NBDC (2025d) National Biodiversity Data Centre, Species profile: Cherry Laurel (Prunus laurocerasus). Available: https://maps.biodiversityireland.ie/Species/28940

NBDC (2025e) National Biodiversity Data Centre, Species profile: Acer pseudoplatanus (Sycamore). Biodiversity Ireland. Available at: https://species.biodiversityireland.ie/profile.php?taxonId=28773 Accessed: 08 April 2025.

NBDC (2025F) National Biodiversity Data Centre, Species Profile: *Symphoricarpos albus* Snowberry. Available at: https://species.biodiversityireland.ie/profile.php?taxonId=45555&taxonName=snowberry (Accessed: 13 August 2025).

NIEA (2012) Natural Heritage, Development Management Team Advice Note Active Peatland and PPS18. Accessed: 04 April 2025. Available: natural-guidance-NIEA-natural-heritage-development-management-team-advice-note-2012.pdf

Perrin, P.M., Barron, S.J., Roche, J.R. & O'Hanrahan, B. (2010) Guidelines for a national survey and conservation assessment of upland vegetation and habitats in Ireland. Version 1.0. Irish Wildlife Manuals, No. XX. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland. Accessed: 12 March 2025. Available: https://www.npws.ie/sites/default/files/publications/pdf/IWM48-1.pdf

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. Accessed: 05 March 2025. Available: https://www.npws.ie/sites/default/files/publications/pdf/IWM79_0.pdf

Perrin, P. M. (2015) Irish Vegetation Classification Technical Progress Report No. 1. Accessed: 10 March 2025. Available: IVC_Technical-Progress-Report-No.1.pdf

Perrin, P. M. (2019) Irish Vegetation Classification ERICA – Engine for Relevés to Irish Communities Assignment V5.0 User's Manual. Accessed: 04 February 2025. Available: https://biodiversityireland.shinyapps.io/vegetation-classification/_w_3e34a9a7/manual.pdf

Rodwell, S. (2006) National Vegetation Classification: User's handbook. Joint Nature Conservation Committee. Accessed: 10 March 2025. Available: National Vegetation Classification: Users' handbook

Scottish Natural Heritage (1995) Bogs: The Ecology, Classification and Conservation of Ombrotrophic Mires. Accessed: 28 Mar 2025, Available: https://repository.uel.ac.uk/download/2f461f04b474b8ed02900189b7437bdf8d9079115036a93e3e78e2cc0bec7a8b/39338095/Bogs_%20The%20Ecology.pdf

Smith, G. F., O'Donoghue, P., O'Hora, K., Delaney E. (2011) Best practice guidance for habitat survey and mapping. Accessed: 10 March 2025. Available: https://www.heritagecouncil.ie/content/files/best_practice_guidance_habitat_survey_mapping_onscreen_version_2011_8mb.pdf

Stace, C.A. (2019). New Flora of the British Isles. 4th edition. Cambridge University Press, Cambridge.

Transport Infrastructure Ireland (TII) 2020 The Management of Invasive Alien Plant Species on National Roads – Technical Guidance GE□ENV□01105. Dublin: Transport Infrastructure Ireland. Accessed: 04 August 2025. Available at: https://cdn.tii.ie/publications/GE-ENV-01105-01.pdf

APPENDIX I: QUADRAT DATA

Quadrat No. T01i



Quadrat Description:

(PB2) Upland blanket bog. The vegetation has abundant *Molinia caerulea* and a conspicuous dwarf shrub layer which is composed of *Myrica gale* and *Calluna vulgaris*. *Sphagnum* carpets have a patchy distribution throughout, evidently negatively impacted by past fire damage. A nearby area was seemingly unaffected by fire and shows large *Sphagnum papillosum* hummocks suggesting a rich *Sphagnum* layer existed in the local vicinity before the fire damage. Elsewhere the dry fire-damaged hummocks are now colonised by *Campylopus introflexus*. Fire damage is also evident in the form of standing deadwood in the nearby scrub and conifer plantation. A drainage channel to the east is active and visible on the satellite imagery. The peat is deep, active, and spongy underfoot. The quadrat is likely species poor in comparison to some other quadrats located on blanket bog, as it only just passes the species diversity criteria for Annex 1 habitats.

Date	10 Sep 2024	
GPS reading	E 561675 N 800528	
Size m^2	2m x 2m	
Slope (degrees)	10	
Aspect	W	
Altitude (m)	147	
Height of vegetation (cm) – Max and Mean	120, 45	
Vegetation cover %	100	
Bare rock cover %	0	
Bare peat cover %	0	
Shrub/ericoid cover %	40	
Herbaceous/Graminoid cover %	30.5	
Bryophyte cover %	87.5	
No. plant species in quadrat	14	
Substrate	Active deep peat	
Species	% cover	DOMIN
Calluna vulgaris	20	5
Campylopus introflexus	5	4

Cladonia portentosa	0.5 several	2
Dicranum scoparium	0.5 few	1
Diplophyllum albicans	0.5 few	1
Erica tetralix	5	4
Eriophorum vaginatum	10	4
Hypnum jutlandicum	0.5 few	1
Molinia caerulea	20	5
Myrica gale	15	5
Odontoschisma sphagni	0.5 few	1
Potentilla erecta	0.5 several	2
Sphagnum rubellum	70	8
Sphagnum papillosum	10	4

Quadrat No. T01ii



Quadrat Description:

(PB2) Upland blanket bog. Even though the elevation of the quadrat is just shy of the 150 m threshold of (PB2) Upland blanket bog, the vegetation better fits this upland category as no *Schoenus nigricans* was identified, which is a species indicative of hyper-oceanic (PB3) Lowland blanket bog. This habitat is similar to quadrat T01ii as *Molinia caerulea* is abundant with the dwarf shrub component conspicuous and composed of *Myrica gale* and *Calluna vulgaris.* This quadrat may be located on previous cutover as there is an area to the east where the acrotelm has been completely removed, although it's unclear if that has been the case here. If so, the vegetation has fully regenerated with no bare peat present and good *Sphagnum* cover. But the height of the peatland surface is at the same level as the highly disturbed cutover so uncertainty remains. There is an area of exhausted cutover in depression to north.

Date	10 Sep 2024
GPS reading	E 561738 N 800532
Size m^2	2m x 2m
Slope (degrees)	0
Aspect	0
Altitude (m)	147 m

Height of vegetation (cm) – Max and Mean	130, 30	
Vegetation cover %	100	
Bare rock cover %	0	
Bare peat cover %	0	
Shrub/ericoid cover %	35	
Herbaceous/Graminoid cover %	39.5 (plus 20 *Molinia caerulea* leaf litter)	
Bryophyte cover %	76.5	
No. plant species in quadrat	15	
Substrate	Active deep peat	
Species	% cover	DOMIN
Calluna vulgaris	15	5
Carex panicea	0.5 few	1
Erica tetralix	5	4
Eriophorum vaginatum	5	4
Hypnum jutlandicum	1 many	3
Molinia caerulea	30	6
Myrica gale	15	5
Narthecium ossifragum	1 several	2
Odontoschisma sphagni	5	4
Pedicularis sylvatica	1 several	2
Potentilla erecta	1 many	3
Sphagnum rubellum	60	8
Sphagnum papillosum	10	4
Succisa pratensis	1 several	2
Vaccinium oxycoccos	0.5 several	2

Quadrat No. T01 iii



Quadrat Description:

(PB4) Cutover bog. It seems likely that the acrotelm has previously been removed and the area has re-vegetated. Several factors support the evaluation of a disturbance event: the peat is firm underfoot, there is high coverage (25%) of the opportunistic neophyte moss species *Campylopus introflexus,* and a reduction in *Sphagnum* coverage relative to quadrat T01i and T01ii. *Sphagnum* coverage is patchy but consistent throughout the local vicinity and the peat is likely active. This area is c. 1.5 m higher than the exhausted cutover to north.		
Date	10 Sep 2024	
GPS reading	E 561772 N 800548	
Size m^2	2m x 2m	
Slope (degrees)	10	
Aspect	N	
Altitude (m)	148	
Height of vegetation (cm) – Max and Mean	90, 30	
Vegetation cover %	95	
Bare rock cover %	0	
Bare peat cover %	5	
Shrub/ericoid cover %	35	
Herbaceous/Graminoid cover %	40 (plus 20 various leaf litter)	
Bryophyte cover %	95	
No. plant species in quadrat	12	
Substrate	Active deep peat	
Species	% cover	DOMIN
Calluna vulgaris	15	5
Campylopus introflexus	25	5
Carex panicea	10	4
Erica tetralix	5	4
Eriophorum angustifolium	10	4
Eriophorum vaginatum	10	4
Hypnum jutlandicum	10	4
Molinia caerulea	10	4
Myrica gale	15	5
Sphagnum rubellum	10	4
Sphagnum denticulatum	40	7
Sphagnum papillosum	10	4

Quadrat No. T01 iv



Quadrat Description:

(PB4) Cutover bog. The quadrat is located on cutover but is at a higher elevation relative to the exhausted cutover to the north. It is classified as (PB4) Cutover bog as the acrotelm seems to have been removed, as in quadrat T01iii. The peat is soft and wet underfoot and likely active. The quadrat contains 10% bare peat with algal growth noted. There is good species diversity and the vegetation is recovering well. Dwarf shrubs are much less abundant here in comparison to T01i-T01iii with the height of the sward generally lower and with a more open vegetative community. The sward is somewhat grassy with *Carex panicea* conspicuous. *Molinia caerulea* is less abundant than previous quadrats.

Date	10 Sep 2024	
GPS reading	E 561803 N 800535	
Size m^2	2m x 2m	
Slope (degrees)	10	
Aspect	N	
Altitude (m)	148	
Height of vegetation (cm) – Max and Mean	70, 30	
Vegetation cover %	90	
Bare rock cover %	0	
Bare peat cover %	10	
Shrub/ericoid cover %	20	
Herbaceous/Graminoid cover %	61.5	
Bryophyte cover %	70.5	
No. plant species in quadrat	14	
Substrate	Active deep peat.	
Species	% cover	DOMIN
Calluna vulgaris	5	4
Carex panicea	25	5
Drosera rotundifolia	0.5 many	3
Erica tetralix	5	4
Eriophorum angustifolium	0.5 few	1

Eriophorum vaginatum	15	5
Hypnum jutlandicum	5	4
Melampyrum pratense	0.5 few	1
Molinia caerulea	5	4
Myrica gale	10	4
Narthecium ossifragum	15	5
Odontoschisma sphagni	0.5 many	3
Sphagnum rubellum	50	7
Sphagnum tenellum	15	5

Quadrat No. T01 v



Quadrat Description:

(PB4) Cutover bog. The peat is somewhat firm underfoot but it is considered active as there is good *Sphagnum* cover with peat forming species including *Sphagnum papillosum*. The dwarf shrub cover is reduced significantly here (compare with quadrat T01i-T01iii) giving way to a more grassy open sward. The *Agrostis canina* and *Carex* spp. may be suggestive of drying, likely from the large drain and the expanse of exhausted cutover located c. 5 m to the north of the quadrat.

Date	10 Sep 2024	
GPS reading	E 561848 N 800538	
Size m^2	2m x 2m	
Slope (degrees)	10	
Aspect	N	
Altitude (m)	148	
Height of vegetation (cm) – Max and Mean	75, 20	
Vegetation cover %	95	
Bare rock cover %	0	
Bare peat cover %	5	
Shrub/ericoid cover %	1.5	
Herbaceous/Graminoid cover %	63.5	
Bryophyte cover %	81	
No. plant species in quadrat	17	
Substrate	Active deep peat	
Species	% cover	DOMIN
Agrostis canina	5	4
Aulacomnium palustre	0.5 few	1
Calluna vulgaris	0.5 few	1
Carex echinata	1 several	2
Carex nigra	5	4
Carex panicea	10	4
Erica tetralix	0.5 few	1

Eriophorum angustifolium	10	4
Eriophorum vaginatum	10	4
Juncus bulbosus	2 many	3
Molinia caerulea	10	4
Myrica gale	0.5 few	1
Narthecium ossifragum	10	4
Potentilla erecta	0.5 few	1
Sphagnum rubellum	10	4
Sphagnum denticulatum	0.5 few	1
Sphagnum papillosum	70	8

Quadrat No. T01vi



Quadrat Description:

(PB4) Cutover bog. It is dominated by graminoids including a significant cover of *Carex panicea* (35%). The peat is somewhat firm underfoot but still qualifies as active with good *Sphagnum papillosum* coverage. *Myrica gale* is the only dwarf shrub recorded in this quadrat.

Date	10 Sep 2024
GPS reading	E 561891 N 800542
Size m^2	2m x 2m
Slope (degrees)	5
Aspect	N
Altitude (m)	151
Height of vegetation (cm) – Max and Mean	90, 30
Vegetation cover %	100
Bare rock cover %	0
Bare peat cover %	0
Shrub/ericoid cover %	5
Herbaceous/Graminoid cover %	72.5
Bryophyte cover %	82.5

No. plant species in quadrat	18	
Substrate	Active deep peat	
Species	% cover	DOMIN
Agrostis canina	10	4
Anthoxanthum odoratum	0.5 few	1
Aulacomnium palustre	10	4
Carex echinata	2 many	3
Carex panicea	35	7
Eriophorum angustifolium	0.5 few	1
Hylocomium splendens	0.5 few	1
Hypochaeris radicata	1 several	2
Juncus bulbosus	10	4
Molinia caerulea	10	4
Myrica gale	5	4
Odontoschisma sphagni	0.5 few	1
Polygala serpyllifolia	0.5 several	2
Polytrichum commune	0.5 few	1
Potentilla erecta	3 many	3
Rhytidiadelphus squarrosus	0.5 few	1
Sphagnum rubellum	0.5 few	1
Sphagnum papillosum	70	8

Quadrat No. T01 vii



Quadrat Description:

(PB4) Cutover bog. This habitat is comfortably classed as (PB4) Cutover bog as it is located on exhausted cutover at a lower elevation c. 1.5 m than previous quadrats (T01i-vi). No recent turf cutting has taken place here. It is a heath like habitat with *Calluna vulgaris* and *Molinia caerulea* co-dominant. The habitat is located on deep peat (c. 1 m) which is firm underfoot. Threats to the habitat include frequent encroachment form scrub along with *Pinus contorta* saplings which are occasional to locally abundant throughout. The peat is soft and spongy underfoot with an uneven profile throughout

indicative of past extraction. *Juncus effusus* is frequent throughout which is a non-typical species for bog communities.		
Date	11 Sep 2024	
GPS reading	E 562020 N 800562	
Size m^2	2m x 2m	
Slope (degrees)	10	
Aspect	S	
Altitude (m)	154	
Height of vegetation (cm) – Max and Mean	100, 45	
Vegetation cover %	100	
Bare rock cover %	0	
Bare peat cover %	0	
Shrub/ericoid cover %	37	
Herbaceous/Graminoid cover %	34 (Plus 30% leaf litter)	
Bryophyte cover %	71	
No. plant species in quadrat	14	
Substrate	Active deep peat	
Species	% cover	DOMIN
Aulacomnium palustre	0.5 few	1
Blechnum spicant	5	4
Calluna vulgaris	35	7
Cladonia portentosa	0.5 several	2
Equisetum fluviatile	0.5 few	1
Erica tetralix	2 many	2
Hypnum jutlandicum	35	7
Juncus effusus	1 few	1
Molinia caerulea	25	5
Polygala serpyllifolia	0.5 few	1
Polytrichum commune	1 several	2
Potentilla erecta	1 several	2
Sphagnum rubellum	30	6
Sphagnum papillosum	5	4

Quadrat No. T02 i



Quadrat Description:

(PB2) Upland blanket bog. This is a heath-like habitat on deep peat dominated by *Molinia caerulea*. The *Molinia caerulea* dominance may be suggestive of fire damage, which is still evident in the scorched conifer trees to the south. A dwarf shrub layer is present. The peat is deep and somewhat firm underfoot, but it remains active as the *Sphagnum* layer is present although much diminished from previous quadrats (T01i-vii).

Date	11 Sep 2024	
GPS reading	E 562211 N 800499	
Size m^2	2m x 2m	
Slope (degrees)	10	
Aspect	W	
Altitude (m)	158	
Height of vegetation (cm) – Max and Mean	120, 50	
Vegetation cover %	100	
Bare rock cover %	0	
Bare peat cover %	0	
Shrub/ericoid cover %	30	
Herbaceous/Graminoid cover %	79 (Plus 25% leaf litter)	
Bryophyte cover %	27.5	
No. plant species in quadrat	14	
Substrate	Active deep peat	
Species	% cover	DOMIN
Calluna vulgaris	15	5
Campylopus introflexus	1 many	3
Dicranum scoparium	0.5 few	1
Erica tetralix	5	4
Eriophorum vaginatum	1 several	2
Galium saxatile	0.5 few	1
Hypnum jutlandicum	1 many	3

Molinia caerulea	75	8
Odontoschisma sphagni	5	4
Polygala serpyllifolia	0.5 few	1
Potentilla erecta	1 many	3
Sphagnum rubellum	15	5
Sphagnum fallax	5	4
Vaccinium_oxycoccos	1 many	3

Quadrat No.T02 ii



Quadrat Description:

(PB4) Cutover bog. The acrotelm has been removed, with very little *Sphagnum* cover remaining throughout. Significant bare peat exists throughout the habitat (c. 30%). The peat is firm underfoot. A such, the peat is considered inactive. However, the peat may only be temporarily inactive – meaning the *Sphagnum* component may recover if disturbance events were halted due to the significant depth of remaining peat (c. >1 m) coupled with the close proximity of active peat (T01i-T02i), providing the water table is <10cm from the surface.

The sward is short with abundant *Carex panicea*. Due to the dominance of sedges and rushes the vegetation community may more closely align with poor fen habitat. The dwarf shrub component has not yet recovered.

Date	11 Sep 2024
GPS reading	E 562205 N 800539
Size m^2	2m x 2m
Slope (degrees)	0
Aspect	0
Altitude (m)	158
Height of vegetation (cm) – Max and Mean	15, 10
Vegetation cover %	70
Bare rock cover %	0
Bare peat cover %	30

Shrub/ericoid cover %	0	
Herbaceous/Graminoid cover %	61.5	
Bryophyte cover %	7	
No. plant species in quadrat	9	
Substrate	Temporarily inactive deep peat	
Species	% cover	DOMIN
Campylopus introflexus	2 many	3
Carex echinata	5	4
Carex panicea	25	5
Drosera rotundifolia	0.5 few	1
Eriophorum angustifolium	0.5 few	1
Juncus bulbosus	20	5
Narthecium ossifragum	10	4
Potentilla erecta	0.5 few	1
Sphagnum papillosum	5	4

Quadrat No. T02 iii



Quadrat Description:

(PB2) Upland blanket bog. This vegetation community is a typical example of a *Molinia caerulea - Potentilla erecta* blanket mire. *Molinia caerulea* is dominant. The bryophyte layer is dominated by pleurocarpous mosses and is devoid of *Sphagnum*. The dwarf shrub layer is much diminished but there is occasional *Calluna vulgaris* and *Vaccinium myrtillus* in the local vicinity. The vegetation composition may be a result of fire damage. It is a heath-like habitat on deep peat. The peat is not active. Scrub is encroaching into the habitat along with self-seeded saplings from the conifer plantation to the south.

Date	11 Sep 2024
GPS reading	E 562287 N 800508
Size m^2	2m x 2m
Slope (degrees)	10
Aspect	W
Altitude (m)	158

Height of vegetation (cm) – Max and Mean	120, 50	
Vegetation cover %	100	
Bare rock cover %	0	
Bare peat cover %	0	
Shrub/ericoid cover %	0	
Herbaceous/Graminoid cover %	76.5 (Plus 30% leaf litter)	
Bryophyte cover %	25.5	
No. plant species in quadrat	5	
Substrate	Inactive deep peat.	
Species	% cover	DOMIN
Hypnum jutlandicum	25	5
Molinia caerulea	75	8
Polygala serpyllifolia	0.5 few	1
Polytrichum commune	0.5 several	2
Potentilla erecta	1 many	3

Quadrat No. T02 iv



Quadrat Description:

(PB4) Cutover bog. This vegetation community has an open grassy sward with good *Sphagnum* cover. The peat is active, spongy and wet underfoot. There is a significant expanse of bare peat to the north as a result of mechanical damage from heavy machinery – possibly a result of turf cutting. Further to the north is an expanse of exhausted cutover with large drainage ditches. This is likely having a drying effect on the habitat. Similarly, the conifer plantation to the south is likely having a negative impact on the structure and function of the habitat. There is evidence of past fire damage in the standing deadwood to south-west.

Date	11 Sep 2024
GPS reading	E 562310 N 800530
Size m^2	2m x 2m
Slope (degrees)	5
Aspect	N

Altitude (m)	164	
Height of vegetation (cm) – Max and Mean	120, 20	
Vegetation cover %	100	
Bare rock cover %	0	
Bare peat cover %	0	
Shrub/ericoid cover %	10	
Herbaceous/Graminoid cover %	62	
Bryophyte cover %	92	
No. plant species in quadrat	16	
Substrate	Active deep peat	
Species	% cover	DOMIN
Calluna vulgaris	5	4
Campylopus introflexus	0.5 few	1
Carex panicea	15	5
Dicranum scoparium	0.5 few	1
Drosera rotundifolia	1 many	3
Erica tetralix	5	4
Eriophorum angustifolium	10	4
Eriophorum vaginatum	10	4
Hypnum jutlandicum	0.5 few	1
Molinia caerulea	10	4
Narthecium ossifragum	15	5
Potentilla erecta	2 many	3
Sphagnum rubellum	15	5
Sphagnum fallax	0.5 few	1
Sphagnum papillosum	75	8
Succisa pratensis	1 few	1

Quadrat No. T02 v



Quadrat Description:

(WD4) Conifer plantation. This habitat is a semi-mature *Pinus contorta* commercial forest. No evidence of thinning works or access tracks was noted so the plot is seemingly unmanaged. The trees are planted c. 2 m x 2 m apart and their diameter at breast height measures c. 30 cm. There are plenty of smaller trees which have fallen over and standing dead wood is frequent throughout. The understorey shows some affinity with peatland habitat in the bryophyte layer and herbaceous/graminoid layer. However, elsewhere *Rubus fruticosus* agg. is locally dominant in the understorey. The peat is inactive, deep, soft, and wet underfoot. The quadrat was only partially laid out due to the difficulty of accurately positioning it within the inaccessible vegetation.

Date	11 Sep 2024	
GPS reading	E 562333 N 800487	
Size m^2	2m x 2m	
Slope (degrees)	5	
Aspect	N	
Altitude (m)	164	
Height of vegetation (cm) – Max and Mean	600, 250	
Vegetation cover %	100	
Bare rock cover %	0	
Bare peat cover %	0	
Tree cover %	50 (plus 20% leaf litter)	
Shrub/ericoid cover %	20	
Herbaceous/Graminoid cover %	31	
Bryophyte cover %	60	
No. plant species in quadrat	9	
Substrate	Inactive deep peat.	
Species	% cover	DOMIN
Dryopteris dilatata	30	6
Eriophorum angustifolium	1 few	1
Hypnum jutlandicum	10	4
Lophocolea bidentata	5	4

Odontoschisma sphagni	5	4
Pinus contorta	50	7
Rubus fruticosus agg.	15	5
Sphagnum fallax	40	7
Vaccinium myrtillus	5	4

Quadrat No. T03 i



Quadrat Description:

(PB2) Upland blanket bog. This area was prepared for forestry planting, and an extensive system of artificial drainage channels is evident throughout with 30 cm wide drains every 1 m. This area was likely burnt in a fire, indicated by standing deadwood which is locally frequent. Self-seeded *Pinus contorta* saplings are frequent throughout. It is considered likely that this habitat may be indicative of what the (WD4) Conifer plantation habitat could be expected to revert to, following the successful implementation of restoration measures.

Date	11 Sep	
GPS reading	E 562602 N 800219	
Size m^2	2m x 2m	
Slope (degrees)	10	
Aspect	W	
Altitude (m)	165	
Height of vegetation (cm) – Max and Mean	120, 45	
Vegetation cover %	100	
Bare rock cover %	0	
Bare peat cover %	0	
Shrub/ericoid cover %	51	
Herbaceous/Graminoid cover %	25 (plus 10% leaf litter)	
Bryophyte cover %	58	
No. plant species in quadrat	10	
Substrate	Active peat. Depth unknown.	
Species	% cover	DOMIN

Aulacomnium palustre	0.5 few	1
Calluna vulgaris	50	7
Erica tetralix	1 few	1
Eriophorum vaginatum	10	5
Hypnum jutlandicum	35	7
Molinia caerulea	15	5
Odontoschisma sphagni	0.5 many	3
Polytrichum commune	1 several	2
Rhytidiadelphus loreus	1 many	3
Sphagnum rubellum	20	5

Quadrat No. T03 ii



Quadrat Description:

(WD4) Conifer plantation. This is a semi-mature pine forest with trees measuring c. 30 cm diameter at breast height. Low light levels on canopy floor give rise to low cover of herbaceous species. However, there is a well-developed bryophyte layer with *Hypnum jutlandicum* dominant but often inconspicuous as it is covered by a layer of pine needle litter. A limited quantity of *Sphagnum* persists in the understorey despite the ecological changes brought about through commercial forestry. Stands of *Molinia caerulea* persist at the forest edge where light levels are higher.

Date	11 Sep 2024
GPS reading	E 562659 N 800261
Size m^2	2m x 2m
Slope (degrees)	5
Aspect	N
Altitude (m)	171
Height of vegetation (cm) – Max and Mean	600, 300
Vegetation cover %	100
Bare rock cover %	0
Bare peat cover %	0
Tree cover %	50 (plus 65% leaf litter)

Shrub/ericoid cover %	0	
Herbaceous/Graminoid cover %	2	
Bryophyte cover %	70.5	
No. plant species in quadrat	6	
Substrate	Inactive peat. Depth unknown.	
Species	% cover	DOMIN
Dicranum scoparium	0.5 several	2
Eriophorum vaginatum	2 few	1
Hypnum jutlandicum	60	8
Pinus contorta	50	7
Sphagnum rubellum	5	4
Sphagnum palustre	5	4

Quadrat No. T04 i



Quadrat Description:

(PB2) Upland blanket bog. This is high-quality habitat with good species diversity which is consistent throughout. However, its extent is limited by drainage channels from previously harvested forestry to the east and south, as well as evidence of burning and disturbance to the north and west. The habitat is dominated by conspicuous coverage of *Trichophorum germanicum* and *Sphagnum* rich carpets. The peat is active, deep, soft and wet underfoot. There are some localised areas of bare peat and algal mats. There is also some limited *Carex panicea* and *Campylopus introflexus* present in the sward. The presence of the Annex I habitat type *7150 Depressions on peat substrates of the Rhynchosporion* has been target noted several meters west of the quadrat. Without intervention, this habitat is likely to experience further decline due to ongoing pressures from surrounding land use.

Date	1 Aug 2024
GPS reading	E 562343 N 799528
Size m^2	2m x 2m
Slope (degrees)	0
Aspect	-
Altitude (m)	160
Height of vegetation (cm) – Max and Mean	35, 15

Vegetation cover %	95	
Bare rock cover %	0	
Bare peat cover %	5	
Shrub/ericoid cover %	30	
Herbaceous/Graminoid cover %	48	
Bryophyte cover %	81	
No. plant species in quadrat	16	
Substrate	Active deep peat.	
Species	% cover	DOMIN
Calluna vulgaris	20	5
Campylopus introflexus	1 few	1
Carex panicea	2 several	2
Cladonia portentosa	1 few	1
Drosera rotundifolia	1 few	1
Erica tetralix	10	4
Eriophorum vaginatum	10	4
Narthecium ossifragum	10	4
Odontoschisma sphagni	1 several	2
Sphagnum rubellum	30	6
Sphagnum fallax	1 few	1
Sphagnum palustre	1 few	1
Sphagnum papillosum	1 few	1
Sphagnum subnitens	40	7
Sphagnum tenellum	5	4
Trichophorum germanicum	25	5

Quadrat No. T04 ii



Quadrat Description:

(PB4) Cutover bog. The area surrounding the quadrat is degraded and significantly impacted by ongoing disturbance. The area is used to dry turves of peat. A fresh drainage channel has been dug c. 10 m to the east of the quadrat. There is significant cover of bare peat (10%) throughout the habitat. The peat is dry and firm underfoot but deep (> 120cm). The graminoid layer within the quadrat is dominated by *Eriophorum vaginatum (50%)*. Nearby there are stands of *Eriophorum angustifolium* indicating these areas were previously expanses of disturbed bare peat, which were colonised by this pioneer species. There is also significant cover (20%) of the neophyte *Campylopus introflexus,* another pioneer species known to colonise disturbed bare peat and likely indicative here of past burning .

Date	1 Aug 2024	
GPS reading	E 562290 N 799563	
Size m^2	2m x 2m	
Slope (degrees)	2	
Aspect	E	
Altitude (m)	155	
Height of vegetation (cm) – Max and Mean	50, 25	
Vegetation cover %	90	
Bare rock cover %	0	
Bare peat cover %	10	
Shrub/ericoid cover %	26	
Herbaceous/Graminoid cover %	67	
Bryophyte cover %	48	
No. plant species in quadrat	14	
Substrate	Active deep peat.	
Species	% cover	DOMIN
Calluna vulgaris	25	5
Campylopus introflexus	20	5
Carex panicea	5	4
Erica tetralix	1 several	2
Eriophorum angustifolium	5	4
Eriophorum vaginatum	50	7
Hypnum jutlandicum	1 many	3
Molinia caerulea	1 few	1
Odontoschisma sphagni	1 many	3
Sphagnum rubellum	10	4
Sphagnum denticulatum	10	4
Sphagnum papillosum	1 few	1
Sphagnum subnitens	5	4
Trichophorum cespitosum / germanicum	5	4

Quadrat No. T04 iii



Quadrat Description:

(PB2) Upland Blanket Bog. Blanket bog with *Eriophorum vaginatum* and *Trichophorum germanicum* co-dominant. The cover of *Calluna vulgaris* is relatively low. This area has not been previously cutover, drained or forested. Active peat is likely as *Sphagnum* cover is high (70%) and the peat is soft, spongy, and deep (<120 cm). Several threats to the condition of the habitat were identified in the local vicinity including, drainage channels, self-seeded non-native conifers, and areas of disturbed bare ground. A Rhynchospora hollow, which is a natural depression dominated by *Rhynchospora alba,* was target noted nearby, which corresponds to the Annex I habitat type *7150 depressions on peat substrates of the Rhynchosporion*.

Date	1 Aug 2024	
GPS reading	E 562335 N 799570	
Size m^2	2m x 2m	
Slope (degrees)	2	
Aspect	N	
Altitude (m)	155	
Height of vegetation (cm) – Max and Mean	50, 35	
Vegetation cover %	100	
Bare rock cover %	0	
Bare peat cover %	0	
Shrub/ericoid cover %	20	
Herbaceous/Graminoid cover %	78	
Bryophyte cover %	72	
No. plant species in quadrat	12	
Substrate	Active deep peat.	
Species	% cover	DOMIN
Calluna vulgaris	10	4
Carex panicea	1 several	2
Drosera rotundifolia	1 several	2
Erica tetralix	10	4
Eriophorum vaginatum	20	5

Hypnum jutlandicum	1 few	1
1Molinia caerulea	5	4
Narthecium ossifragum	10	4
Odontoschisma sphagni	1 few	1
Potentilla erecta	1 few	1
Sphagnum rubellum	70	8
Trichophorum germanicum	40	7

Quadrat No. T04 iv



Quadrat Description:

(PB2) Upland blanket bog. This habitat has re-vegetated with peatland species following removal of (WD4) Conifer plantation. The ground is uneven underfoot with old stumps from preceding forestry, secondary regrowth of self-seeded *Picea sitchensis,* and *Pinus contorta* regrowth present throughout. *Salix aurita* is also frequent throughout There are drains at regular c. 5 m intervals, with dimensions c. 1m deep and c. 1m wide. The peatland vegetation is heath-like, but it is on deep peat (>120 cm). *Molinia caerulea* and *Calluna vulgaris* are co-dominant. The habitat would benefit from restoration measures including resurfacing and drain blocking as well as the removal of conifer saplings. There is a large area of (PB4) Cutover bog c. 20 m to the west of the quadrat. The peat Is deep but likely inactive due to low cover of peat-forming vegetation such as *Sphagnum* spp. and *Eriophorum* spp.

Date	1 Aug 2024
GPS reading	E 562354 N 799592
Size m^2	2m x 2m
Slope (degrees)	5
Aspect	N
Altitude (m)	155
Height of vegetation (cm) – Max and Mean	60, 50
Vegetation cover %	100
Bare rock cover %	0
Bare peat cover %	0
Shrub/ericoid cover %	31
Herbaceous/Graminoid cover %	58 (plus 20% leaf litter)

Bryophyte cover %	88	
No. plant species in quadrat	12	
Substrate	Inactive deep peat.	
Species	% cover	DOMIN
Calluna vulgaris	30	6
Dryopteris dilatata	1 few	1
Erica tetralix	1 few	1
Eriophorum vaginatum	1 few	1
Hylocomium splendens	1 few	1
Hypnum jutlandicum	75	8
Luzula multiflora	1 few	1
Molinia caerulea	50	7
Polytrichum commune	10	4
Potentilla erecta	5	4
Pseudoscleropodium purum	1 few	1
Sphagnum subnitens	1 many	3

Quadrat No. T05 i



Quadrat Description:

(PB2) Upland blanket bog. This expanse of bog appears to be hydrologically intact as there are no deep drains tracking through the habitat, the habitat lacks encroachment from scrub, and there are no significant expanses of bare peat. *Trichophorum.germanicum* and *Narthecium ossifragum* are present in the local vicinity but not inside the quadrat. There is good coverage of *Sphagnum rubellum* (35%) and *Sphagnum subnitens* (40%) with other *Sphagnum* species also present in lower quantities including *Sphagnum denticulatum* and *Sphagnum papillosum*. This habitat corresponds to the Annex I habitat type 7130* Blanket bog (active).

Date	31 July 2024
GPS reading	E 561857 N 799340
Size m^2	2m x 2m
Slope (degrees)	5

Aspect	N	
Altitude (m)	166	
Height of vegetation (cm) – Max and Mean	60, 20	
Vegetation cover %	100	
Bare rock cover %	0	
Bare peat cover %	10	
Shrub/ericoid cover %	35	
Herbaceous/Graminoid cover %	40	
Bryophyte cover %	89	
No. plant species in quadrat	13	
Substrate	Deep active peat	
Species	% cover	DOMIN
Calluna vulgaris	30	6
Campylopus introflexus	1 few	1
Carex panicea	10	4
Cladonia portentosa	1 few	1
Drosera rotundifolia	5	4
Erica tetralix	5	4
Eriophorum angustifolium	5	4
Eriophorum vaginatum	20	5
Hypnum jutlandicum	10	4
Odontoschisma sphagni	1 many	3
Sphagnum rubellum	35	7
Sphagnum denticulatum	1 several	2
Sphagnum papillosum	1 few	1
Sphagnum subnitens	40	7

Quadrat No. T05 ii



Quadrat Description:

(PB4) Cutover bog. Extensive industrial drains (c. 4 m wide x 2 m deep) with standing water are present in the local vicinity and are likely having a drying effect on the peat and supporting vegation community. There is a high degree of disturbance with in the area with extensive bare peat and crushed *Sphagnum* noted in the local vicinity from machinery action. There is a spoil heap (c. 50 m x 50 m) located to south of the quadrat. Occasional *Juncus effusus* and *Salix* spp. were also noted in the wider habitat.

The vegetation within the quadrat is representative of the surrounding habitat. It is composed of a low growing immature sward of peatland species. The bryophyte layer is much diminished with low *Sphagnum* cover (2%). The peat is firm and dry underfoot with the surface layer of peat forming a crust. The vegetation is not peat forming.

Date	31 July 2024	
GPS reading	E 561921 N 799382	
Size m^2	2m x 2m	
Slope (degrees)	0	
Aspect	0	
Altitude (m)	166	
Height of vegetation (cm) – Max and Mean	35, 15	
Vegetation cover %	60	
Bare rock cover %	0	
Bare peat cover %	35	
Shrub/ericoid cover %	18	
Herbaceous/Graminoid cover %	44	
Bryophyte cover %	3	
No. plant species in quadrat	12	
Substrate	Inactive deep peat	
Species	% cover	DOMIN
Calluna vulgaris	15	5
Carex panicea	15	5
Cladonia portentosa	1 few	1
Erica tetralix	3 several	2
Eriophorum angustifolium	3 many	3
Eriophorum vaginatum	5	4
Molinia caerulea	5	4
Narthecium ossifragum	5	4
Potentilla erecta	1 few	1
Sphagnum rubellum	2 many	3
Trichophorum germanicum	10	4

Quadrat No. T05 iii



Quadrat Description:

(PB4) Cutover bog comprising a low sward of typical wet heath species on deep peat (c. 70 cm). This area has been disturbed by heavy machinery tracking over it. There is occasional encroachment of *Salix* spp. and *Ulex europaeus* scrub c. 10 m to the south of the quadrat. The access track to the north of the quadrat is largely unvegetated and is likely having a drying effect on the habitat. The peat is hard underfoot with the surface layer forming a crust and *Sphagnum* cover is low here. The peat is not active.

Date	31 July 2024	
GPS reading	E 562005 N 799405	
Size m^2	2m x 2m	
Slope (degrees)	5	
Aspect	E	
Altitude (m)	165	
Height of vegetation (cm) – Max and Mean	70, 15	
Vegetation cover %	85	
Bare rock cover %	0	
Bare peat cover %	15	
Shrub/ericoid cover %	16	
Herbaceous/Graminoid cover %	(plus 10% leaf litter)	
Bryophyte cover %	33	
No. plant species in quadrat	10	
Substrate	Inactive deep peat	
Species	% cover	DOMIN
Calluna vulgaris	15	5
Campylopus introflexus	2 many	3
Erica tetralix	1 many	3
Eriophorum vaginatum	5	4
Hypnum jutlandicum	20	5

Molinia caerulea	30	6
Potentilla erecta	2 many	3
Sphagnum rubellum	10	4
Sphagnum denticulatum	1 several	2
Trichophorum germanicum	10	4

Quadrat No. T05 iv



Quadrat Description:

(PB4) Cutover bog. This quadrat is located within an area of re-vegetated cutover bog. The vegetation featured 30% coverage of *Sphagnum subnitens*. The graminoid layer is dominated by *Trichophorum germanicum* and the dwarf shrub layer is largely composed of *Calluna vulgaris*. There is good species diversity, with 18 species recorded within the quadrat. Within close proximity of the quadrat is encroaching *Salix* spp. scrub and a sward of *Juncus effusus*.

Date	1 Aug 2025	
GPS reading	E 562036 N 799421	
Size m^2	2m x 2m	
Slope (degrees)	5	
Aspect	N	
Altitude (m)	165	
Height of vegetation (cm) – Max and Mean	65, 45	
Vegetation cover %	100	
Bare rock cover %	0	
Bare peat cover %	0	
Shrub/ericoid cover %	26	
Herbaceous/Graminoid cover %	74	
Bryophyte cover %	41	
No. plant species in quadrat	18	
Substrate	Active deep peat	
Species	% cover	DOMIN
Anthoxanthum odoratum	1 few	1

Calluna vulgaris	25	5
Campylopus introflexus	1 several	2
Carex panicea	10	4
Cladonia portentosa	1 few	1
Erica tetralix	1 several	2
Eriophorum angustifolium	1 several	2
Eriophorum vaginatum	25	5
Hylocomium splendens	1 few	1
Hypnum jutlandicum	5	4
Molinia caerulea	5	4
Polygala serpyllifolia	1 many	3
Pedicularis palustris	1 many	3
Potentilla erecta	1 several	2
Rhytidiadelphus squarrosus	1 many	3
Sphagnum denticulatum	1 many	3
Sphagnum subnitens	30	6
Trichophorum germanicum	30	6

Quadrat No. T05 v



Quadrat Description:

(PB4) Cutover bog. Typical wet heath vegetation on previously cutover bog with a peat depth between 15-50 cm. *Molinia caerulea* and *Calluna vulgaris* are co-dominant in this habitat. The bryophyte layer is impoverished and devoid of *Sphagnum*. The ground is sloping towards the road along which is an associated drain. The quadrat is in close proximity to the conifer plantation located across the road to the east; however no self-seeded *Picea sitchensis* saplings were noted in the vicinity of the quadrat. *Salix* aurita is frequent throughout the habitat with *Salix cinerea* scrub encroachment was noted along the roadside. A nearby stand of *Juncus effusus* non-typical bog community species was also noted along with some spoil.

Date	1 Aug 2024
GPS reading	E 562072 N 799416
Size m^2	2m x 2m

Slope (degrees)	10	
Aspect	E	
Altitude (m)	165	
Height of vegetation (cm) – Max and Mean	120, 45	
Vegetation cover %	95	
Bare rock cover %	5	
Bare peat cover %	0	
Shrub/ericoid cover %	61	
Herbaceous/Graminoid cover %	42	
Bryophyte cover %	11	
No. plant species in quadrat	9	
Substrate	Inactive peat	
Species	% cover	DOMIN
Calluna vulgaris	50	7
Campylopus introflexus	1 many	3
Erica tetralix	1 few	1
Eriophorum vaginatum	10	4
Hypochaeris radicata	1 several	2
Molinia caerulea	30	6
Polytrichum commune	10	4
Potentilla erecta	1 several	2
Salix aurita	10	4

Quadrat No. T06 i



Quadrat Description:

(PB2) Upland blanket bog. The quadrat is representative of wider habitat located across the bog proper. Blanket bog can also be seen on the higher ground to the west. The surface of the bog is largely flat with a rise in elevation to the south east. The peat is deep peat (> 120 cm), spongy, and saturated so that water pools underfoot. There is occasional *Myrica gale* throughout the habitat. Some *Betula pubescens* seedlings have established themselves nearby, which likely indicates some degree

of drying as a result of the cut hagg faces to the west. As the *Betula pubescens* seedlings mature, they will promote further drying of the habitat and contribute to changes in vegetation composition. This habitat corresponds to the Annex I habitat type 7130* Blanket bog (active).		
Date	28 Aug 2024	
GPS reading	E 561180 N 799385	
Size m^2	2m x 2m	
Slope (degrees)	10	
Aspect	W	
Altitude (m)	156	
Height of vegetation (cm) – Max and Mean	70, 30	
Vegetation cover %	100	
Bare rock cover %	0	
Bare peat cover %	0	
Shrub/ericoid cover %	35	
Herbaceous/Graminoid cover %	25	
Bryophyte cover %	76	
No. plant species in quadrat	12	
Substrate	Active deep peat	
Species	% cover	DOMIN
Calluna vulgaris	25	5
Carex panicea	5	4
Erica tetralix	10	4
Eriophorum angustifolium	10	4
Eriophorum vaginatum	1 several	2
Molinia caerulea	25	5
Narthecium ossifragum	5	4
Polygala serpyllifolia	1 several	2
Potentilla erecta	2 many	3
Sphagnum rubellum	75	8
Sphagnum papillosum	1 several	2
Succisa pratensis	1 several	2

Quadrat No. T06 ii



Quadrat Description:

(PB4) Cutover bog. This historic cutover has re-vegetated to form a wet heath habitat dominated by *Molinia caerulea*. The vegetation is rank with the average vegetation height > 1 m. There is frequent scrub encroachment throughout the habitat with *Salix cinerea* and *Salix aurita* both frequent with some occasional *Rubus fruticosus* agg. *Juncus effusus*, a species not representative of high-quality bog communities, is occasional throughout. The bryophyte layer is underdeveloped with only 1% *Sphagnum* cover noted within the quadrat.

Date	28 Aug 2024	
GPS reading	E 561127 N 799362	
Size m^2	2m x 2m	
Slope (degrees)	10	
Aspect	S	
Altitude (m)	153	
Height of vegetation (cm) – Max and Mean	120, 80	
Vegetation cover %	100	
Bare rock cover %	0	
Bare peat cover %	0	
Shrub/ericoid cover %	47	
Herbaceous/Graminoid cover %	76	
Bryophyte cover %	2	
No. plant species in quadrat	8	
Substrate	Inactive deep peat	
Species	% cover	DOMIN
Dryopteris dilatata	1 many	3
Molinia caerulea	75	8
Myrica gale	40	7
Odontoschisma sphagni	0.5 many	3
Rubus fruticosus agg.	2 few	1
Salix aurita	5	4

Sphagnum tenellum	1 several	2
Thuidium tamariscinum	0.5 many	3

Quadrat No. T06 iii



Quadrat Description:

(PB4) Cutover bog. This habitat has regenerated on historic cutover bog. The habitat quality and species diversity are better here than the previous quadrat (T06ii). The peat is deep (> 120 cm) and saturated underfoot. There is significant *Sphagnum* cover within the quadrat, with 25% *Sphagnum papillosum* cover indicating the vegetation is likely actively peat forming. There is no active turf cutting nearby. Scrub encroachment is frequent throughout the habitat. A significant cover of *Aulacomnium palustre* (15%) was noted within the quadrat along with a single *Carex rostrata* plant.

Date	26 Aug 2024	
GPS reading	E 561088 N 799343	
Size m^2	2m x 2m	
Slope (degrees)	5	
Aspect	W	
Altitude (m)	-	
Height of vegetation (cm) – Max and Mean	80, 50	
Vegetation cover %	100	
Bare rock cover %	0	
Bare peat cover %	0	
Shrub/ericoid cover %	55	
Herbaceous/Graminoid cover %	25 (plus 10% leaf litter)	
Bryophyte cover %	72	
No. plant species in quadrat	15	
Substrate	Active deep peat	
Species	% cover	DOMIN
Aulacomnium palustre	15	5
Calluna vulgaris	50	7
Carex rostrata	1 few	1

Drosera rotundifolia	0.5 few	1
Erica tetralix	5	4
Eriophorum vaginatum	3 many	3
Hypnum jutlandicum	1 several	2
Molinia caerulea	10	4
Narthecium ossifragum	5	4
Odontoschisma sphagni	0.5 several	2
Polytrichum commune	5	4
Potentilla erecta	2 several	2
Sphagnum rubellum	25	5
Sphagnum papillosum	25	5
Sphagnum tenellum	1 several	2

Quadrat No. T06 iv



Quadrat Description:

(PB4) Cutover bog. The area is re-vegetated cutover blanket bog. It is likely peat-forming due to the presence of *Sphagnum* spp. and *Eriophorum spp*. However, the future prospects for the habitat are poor and it is likely to continue drying out over time. The peat is deep (> 120 cm) but hard underfoot and this is likely due to fire damage, as suggested by the aerial imagery. There are several drains of various sizes throughout the area that are likely having a drying effect on the peat. Furthermore, there is significant cover of scrub in the vicinity. *Calluna vulgaris* (40%) and *Molinia caerulea* (25%) are co-dominant in this habitat.

Date	28 Aug 2024
GPS reading	E 561013 N 799327
Size m^2	2m x 2m
Slope (degrees)	10
Aspect	N
Altitude (m)	152
Height of vegetation (cm) – Max and Mean	70, 30

Vegetation cover %	100	
Bare rock cover %	0	
Bare peat cover %	0	
Shrub/ericoid cover %	45	
Herbaceous/Graminoid cover %	36 (plus 10% leaf litter)	
Bryophyte cover %	55	
No. plant species in quadrat	13	
Substrate	Active deep peat	
Species	% cover	DOMIN
Aulacomnium palustre	1 many	3
Calluna vulgaris	40	7
Cladonia portentosa	1 few	1
Erica tetralix	5	4
Eriophorum angustifolium	5	4
Eriophorum vaginatum	5	4
Hypnum jutlandicum	10	4
Molinia caerulea	25	5
Odontoschisma sphagni	1 few	1
Polytrichum commune	1 few	1
Potentilla erecta	1 several	2
Sphagnum rubellum	40	7
Sphagnum denticulatum	1 few	1

Quadrat No. T06 v



Quadrat Description:

(PB4) Cutover bog. *Molinia caerulea* and *Calluna vulgaris* are co-dominant. The *Calluna vulgaris* is leggy and senescent and the *Molinia caerulea* is rank. There is frequent *Myrica gale* contributing the shrub layer. The habitat is species poor with only 5 species recorded within the quadrat.

Scrub is encroaching scrub on all sides of the quadrat with drainage channels and embankments noted throughout the wider habitat. These features likely contributing to the continued degradation of the habitat. There is also evidence of fire damage close to the watercourse. This habitat is not peat forming as there are no *Sphagnum* spp. or *Eriophorum* spp. noted, and the peat is hard underfoot.		
Date	28 Aug 2024	
GPS reading	E 560925 N 799283	
Size m^2	2m x 2m	
Slope (degrees)	5	
Aspect	N	
Altitude (m)	154	
Height of vegetation (cm) – Max and Mean	110, 80	
Vegetation cover %	100	
Bare rock cover %	0	
Bare peat cover %	0	
Shrub/ericoid cover %	76	
Herbaceous/Graminoid cover %	26	
Bryophyte cover %	45	
No. plant species in quadrat	5	
Substrate	Inactive deep peat.	
Species	% cover	DOMIN
Calluna vulgaris	50	7
Erica tetralix	1 few	1
Hypnum jutlandicum	45	7
Molinia caerulea	25	5
Myrica gale	25	5
Potentilla erecta	1 several	2

Quadrat No. T06 vi



Quadrat Description:

(PB4) Cutover bog. *Molinia caerulea* and *Calluna vulgaris* are co-dominant, with *Myrica gale* conspicuous throughout and notable scrub encroachment from the north-west. The peat surface is uneven underfoot and somewhat firm, likely as a result of historical peat extraction activity. The peat is deep and remains active with water pooling in places. Large, soft hummocks of *Sphagnum capillifolium* are frequent throughout the intact bryophyte layer. *Narthecium ossifragum* is frequent to occasional elsewhere within the habitat.		
Date	20 Mar 2025	
GPS reading	E561077 N798980	
Size m^2	2m x 2m	
Slope (degrees)	5	
Aspect	N	
Altitude (m)	-	
Height of vegetation (cm) – Max and Mean	120, 40	
Vegetation cover %	0	
Bare rock cover %	0	
Bare peat cover %	0	
Shrub/ericoid cover %		
Herbaceous/Graminoid cover %	(including 70% leaf litter)	
Bryophyte cover %		
No. plant species in quadrat		
Substrate	Active deep peat.	
Species	% cover	DOMIN
Calluna vulgaris	25	5
Erica tetralix	4 many	3
Eriophorum vaginatum	10	4
Hypnum jutlandicum	5	4
Molinia caerulea	70	8
Myrica gale	10	3
Pleurozium schreberi	1 few	1
Sphagnum rubellum	70	8

Quadrat No. T07 i



Quadrat Description:

(PB4) Cutover bog. This habitat is cutover blanket bog on deep peat. *Molinia caerulea* and *Calluna vulgaris* are co-dominant. The areas of primary (uncut) bog to the east, west and south are at c. 1 m higher elevation. *Sphagnum* coverage is consistent but patchy throughout. The peat somewhat hard underfoot and there is an uneven topography as a result of past extraction.

Date	12 Sep 2024	
GPS reading	E 562119 N 798878	
Size m^2	2m x 2m	
Slope (degrees)	20	
Aspect	W	
Altitude (m)	164	
Height of vegetation (cm) – Max and Mean	100, 45	
Vegetation cover %	100	
Bare rock cover %	0	
Bare peat cover %	0	
Shrub/ericoid cover %	70	
Herbaceous/Graminoid cover %	26 (Plus 25% leaf litter)	
Bryophyte cover %	45.5	
No. plant species in quadrat	10	
Substrate	Active deep peat.	
Species	% cover	DOMIN
Calluna vulgaris	50	7
Cladonia portentosa	5	4
Erica tetralix	5	4
Eriophorum vaginatum	10	4
Hypnum jutlandicum	15	5
Molinia caerulea	15	5
Odontoschisma sphagni	0.5 few	1
Potentilla erecta	1 several	2

Sphagnum rubellum	20	5
Sphagnum papillosum	5	4

Quadrat No.T07 ii



Quadrat Description:

(PB4) Cutover bog. This habitat is composed of blanket bog vegetation on previous cutover area. The cutover peat was likely left bare for some time as the peat is hard underfoot. The peat is likely active due to the good cover of *Sphagnum* spp. and *Eriophorum* spp. There is good species diversity throughout the habitat when compared to the more rank vegetation surveyed to the west (T07i). There is significant scrub encroachment from the east and large active drains to the north, east and south of the parcel.

Date	12 Sep 2024	
GPS reading	E 562213 N 798887	
Size m^2	2m x 2m	
Slope (degrees)	10	
Aspect	E	
Altitude (m)	164	
Height of vegetation (cm) – Max and Mean	100, 50	
Vegetation cover %	90	
Bare rock cover %	10	
Bare peat cover %	0	
Shrub/ericoid cover %	30	
Herbaceous/Graminoid cover %	37	
Bryophyte cover %	57	
No. plant species in quadrat	12	
Substrate	Active deep peat.	
Species	% cover	DOMIN
Calluna vulgaris	25	5
Carex panicea	1 few	1
Erica tetralix	5	4

Eriophorum angustifolium	10	4
Eriophorum vaginatum	5	4
Hypnum jutlandicum	2 several	2
Molinia caerulea	15	5
Myrica gale	20	5
Narthecium ossifragum	5	4
Potentilla erecta	1 several	2
Sphagnum rubellum	50	7
Trichophorum germanicum	5	4

Quadrat No. T07 iii



Quadrat Description:

(PB4) Cutover bog. The vegetation is heath like as *Molinia caerulea* and *Myrica gale* are co-dominant and there is no *Sphagnum* layer. The habitat is located on deep peat and the ground is uneven underfoot from past extraction. The ground is saturated from the recent heavy rain. *Calluna vulgaris* is occasional to frequent in the local vicinity. Stands of *Juncus effusus* (which is a non-typical bog community species) are present throughout the habitat. The bryophyte later is underdeveloped likely due to the rank *Molinia caerulea*-dominated vegetation and thick leaf litter (75%) from the species. There is an area of primary (uncut) bog to the west which is c. 1 m higher than the cutover where this quadrat is located.

Date	12 Sep 2024
GPS reading	E 562184 N 798896
Size m^2	2m x 2m
Slope (degrees)	10
Aspect	S
Altitude (m)	164
Height of vegetation (cm) – Max and Mean	150, 100
Vegetation cover %	100
Bare rock cover %	0
Bare peat cover %	0
Shrub/ericoid cover %	45

Herbaceous/Graminoid cover %	51 (Plus 75% leaf litter)	
Bryophyte cover %	1	
No. plant species in quadrat	7	
Substrate	Inactive deep peat.	
Species	% cover	DOMIN
Erica tetralix	5	4
Eriophorum vaginatum	1 several	2
Hypnum jutlandicum	1 few	1
Juncus effusus	5	4
Molinia caerulea	40	7
Myrica gale	40	7
Potentilla erecta	5	4

Quadrat No. T07 iv



Quadrat Description:

(PB4) Cutover bog. This area is an abandoned access track, likely previously associated with peat extraction. The habitat is composed of heath-like vegetation on deep peat. The peat is hard underfoot and is likely active due to the presence of *Sphagnum* spp. and *Eriophorum* spp. cover. The area is raised above the cutover on either side by c. 0.5 m.

Date	12 Sep 2024
GPS reading	E 562177 N 798938
Size m^2	2m x 2m
Slope (degrees)	10
Aspect	E
Altitude (m)	164
Height of vegetation (cm) – Max and Mean	100, 30
Vegetation cover %	100
Bare rock cover %	0
Bare peat cover %	0
Shrub/ericoid cover %	35

Herbaceous/Graminoid cover %	46 (Plus 25% leaf litter)	
Bryophyte cover %	35	
No. plant species in quadrat	9	
Substrate	Active deep peat.	
Species	% cover	DOMIN
Calluna vulgaris	30	6
Erica tetralix	5	4
Eriophorum angustifolium	10	4
Eriophorum vaginatum	15	5
Hypnum jutlandicum	25	5
Molinia caerulea	15	5
Potentilla erecta	1 few	1
Sphagnum rubellum	10	4
Trichophorum germanicum	5	4

Quadrat No. T07 v



Quadrat Description:

(GS4) Wet grassland. This habitat is best described as (GS4) Wet grassland. The substrate is soil rather than peat and is c. 50 cm deep. A likely explanation is that the peat has eroded away from this sloped ground as a result of extraction to reveal the underlying soil. The grassland sward is rank with abundant *Juncus effusus* and *Agrostis canina*. There is scrub encroaching throughout the habitat. The habitat is of low conservation value.

Date	12 Sep 2024
GPS reading	E 562152 N 799020
Size m^2	2m x 2m
Slope (degrees)	25
Aspect	S
Altitude (m)	164
Height of vegetation (cm) – Max and Mean	140, 100
Vegetation cover %	100

Bare rock cover %	0	
Bare peat cover %	0	
Shrub/ericoid cover %	0	
Herbaceous/Graminoid cover %	90	
Bryophyte cover %	35	
No. plant species in quadrat	11	
Substrate	Inactive. Soil c. 50 cm deep.	
Species	% cover	DOMIN
Agrostis canina	30	6
Anthoxanthum odoratum	1 few	1
Carex flacca	0.5 few	1
Carex leporina	0.5 few	1
Cynosurus cristatus	1 few	1
Dactylis glomerata	1 few	1
Hylocomium splendens	10	4
Juncus effusus	30	6
Molinia caerulea	25	5
Potentilla anserina	1 few	1
Rhytidiadelphus squarrosus	25	5

Quadrat No. T08 i



Quadrat Description:

(PB2) Upland blanket bog. The bryophyte layer is dominated by a *Sphagnum* hummock. *Sphagnum* coverage is patchy but constant throughout. The peat is somewhat firm underfoot. There is evidence of surface water flow across the surface of the bog. The acrotelm may have been removed previously for peat cutting purposes, but uncertainty remains. The drying effect may be from the extensive cutover area c. 15 m to the north acting as a large drain. This habitat corresponds to the Annex I habitat type 7130* Blanket bog (active).

Date	12 Sep 2025	
GPS reading	E 561972 N 798322	
Size m^2	2m x 2m	
Slope (degrees)	10	
Aspect	S	
Altitude (m)	146	
Height of vegetation (cm) – Max and Mean	130, 50	
Vegetation cover %	100	
Bare rock cover %	0	
Bare peat cover %	0	
Shrub/ericoid cover %	40	
Herbaceous/Graminoid cover %	40.5	
Bryophyte cover %	70.5	
No. plant species in quadrat	10	
Substrate	Active deep peat.	
Species	% cover	DOMIN
Calluna vulgaris	15	5
Cladonia portentosa	5	4
Erica tetralix	20	5
Eriophorum angustifolium	0.5 few	1
Hypnum jutlandicum	5	4
Molinia caerulea	30	6
Myrica gale	5	4
Sphagnum rubellum	65	8
Sphagnum papillosum	0.5 few	1
Trichophorum germanicum	5	4

Quadrat No. T08 ii



Quadrat Description:

(PB4) Cutover bog. This habitat is good quality active blanket bog located on a flat lying expanse. There is good species diversity within the quadrat. The peat is deep and spongy underfoot. Even though the elevation of the habitat is below 150 m the vegetation composition has more affinity with (PB2) Upland blanket bog as there is no *Schoenus nigricans* and the habitat is not a lowland oceanic bog along the western seaboard. The sward height is low and fairly open. *Carex panicea* is present. There is poor *Sphagnum* cover which suggests the acrotelm was removed here at some point. But uncertainty remains as the drying effect could be coming from the large expanse of cutover c. 20 m to the north. This habitat corresponds to the Annex I habitat type 7130* Blanket bog (active).		
Date	12 Sep 2025	
GPS reading	E 561999 N 798320	
Size m^2	2m x 2m	
Slope (degrees)	5	
Aspect	N	
Altitude (m)	146	
Height of vegetation (cm) – Max and Mean	120, 30	
Vegetation cover %	100	
Bare rock cover %	0	
Bare peat cover %	0	
Shrub/ericoid cover %	35	
Herbaceous/Graminoid cover %	34 (Plus 20% leaf litter)	
Bryophyte cover %	20	
No. plant species in quadrat	11	
Substrate	Active deep peat.	
Species	% cover	DOMIN
Calluna vulgaris	15	5
Carex panicea	1 several	2
Dicranum scoparium	5	4
Erica tetralix	15	5
Eriophorum angustifolium	2 many	3
Molinia caerulea	15	5
Myrica gale	5	4
Narthecium ossifragum	15	5
Odontoschisma sphagni	10	4
Potentilla erecta	1 several	1
Sphagnum rubellum	5	4

Quadrat No. T08 iii



Quadrat Description:

(PB2) Upland blanket bog. The habitat is composed of an open *Sphagnum*-rich carpet with a high diversity of typical blanket bog species. The quadrat is located in an area of slow surface water runoff. There has likely been some subsidence of peat in this area as the peat slopes towards the cutover bog located c. 15 m to the north. There is some evidence to support historic removal of the acrotelm as the peat is somewhat hard underfoot. However, uncertainty remains as this could be due to the drying effect of the cutover. Nevertheless, a rich *Sphagnum* carpet persists. The rare brown beak-sedge *Rhynchospora fusca* was noted nearby. This habitat corresponds to the Annex I habitat type 7130* Blanket bog (active).

Date	12 Sep 2024	
GPS reading	E 562029 N 798340	
Size m^2	2m x 2m	
Slope (degrees)	5	
Aspect	N	
Altitude (m)	-	
Height of vegetation (cm) – Max and Mean	120, 25	
Vegetation cover %	100	
Bare rock cover %	0	
Bare peat cover %	0	
Shrub/ericoid cover %	35	
Herbaceous/Graminoid cover %	36	
Bryophyte cover %	80.5	
No. plant species in quadrat	13	
Substrate	Active deep peat.	
Species	% cover	DOMIN
Calluna vulgaris	10	4
Carex panicea	0.5 few	1
Drosera rotundifolia	0.5 few	1
Erica tetralix	10	4
Eriophorum angustifolium	10	4

Eriophorum vaginatum	15	5
Hypnum jutlandicum	0.5 few	1
Molinia caerulea	10	4
Myrica gale	15	5
Odontoschisma sphagni	5	4
Sphagnum rubellum	20	5
Sphagnum cuspidatum	25	5
Sphagnum papillosum	30	6

Quadrat No.T08 iv



Quadrat Description:

(PB4) Cutover bog. This habitat is revegetating following removal of the acrotelm. There are notable areas of bare peat throughout the habitat. Species diversity is relatively low. The sward is grassy with *Eriophorum angustifolium* dominating the community. The peat is hard and dry underfoot. The peat is deep but not active. The bryophyte layer is much diminished, with only 1% cover of *Sphagnum* spp noted within the quadrat. There are extensive industrial sized drains spaced every c. 20 m throughout the wider habitat. There is an area of more extensively extracted cutover to the south.

Date	20 Mar 2025
GPS reading	E561077 N798980
Size m^2	2m x 2m
Slope (degrees)	0
Aspect	-
Altitude (m)	148
Height of vegetation (cm) – Max and Mean	30, 15
Vegetation cover %	
Bare rock cover %	-
Bare peat cover %	25
Shrub/ericoid cover %	10
Herbaceous/Graminoid cover %	(including 5% leaf litter)
Bryophyte cover %	3

No. plant species in quadrat	6	
Substrate	Inactive deep peat.	
Species	% cover	DOMIN
Calluna vulgaris	10	4
Campylopus introflexus	2 many	3
Eriophorum angustifolium	40	7
Eriophorum vaginatum	2 several	1
Molinia caerulea	15	5
Sphagnum papillosum	1 several	1

Quadrat No.T09 i



Quadrat Description:

(PB2) Upland blanket bog. The habitat displays good floristic diversity with *Sphagnum*-rich carpets constant throughout. Hollows dominated by *Rhynchospora alba* are present throughout the habitat, which correspond to the Annex I habitat type 7150 depressions on peat substrates of the *Rhynchosporion*. The peat is active, being wet and spongy underfoot. Bare peat is occasional to frequent throughout the habitat, but the habitat is of higher quality, with less disturbance, to the west. Drainage and disturbance are major threats to this Annex I habitat type 7130* Blanket bog (active).

Date	30 Jul 2024
GPS reading	E 562378 N 798330
Size m^2	2m x 2m
Slope (degrees)	0
Aspect	-
Altitude (m)	142
Height of vegetation (cm) – Max and Mean	45, 15
Vegetation cover %	95
Bare rock cover %	0
Bare peat cover %	5
Shrub/ericoid cover %	16
Herbaceous/Graminoid cover %	61 (Plus 5% leaf litter)

Bryophyte cover %	51	
No. plant species in quadrat	14	
Substrate	Active deep peat.	
Species	% cover	DOMIN
Calluna vulgaris	10	4
Carex panicea	20	5
Cladonia portentosa	10	4
Drosera rotundifolia	5	4
Erica tetralix	5	4
Eriophorum angustifolium	5	4
Hypnum jutlandicum	5	4
Melampyrum pratense	1 several	2
Myrica gale	1 few	1
Narthecium ossifragum	15	5
Sphagnum rubellum	30	6
Sphagnum papillosum	1 several	2
Sphagnum subnitens	5	4
Trichophorum germanicum	15	5

Quadrat No. T09 ii



Quadrat Description:

(PB4) Cutover bog. Turf cutting on an industrial scale using large machinery takes place within the vicinity of this quadrat and the wider mapped (PB4) Cutover bog. This habitat is mostly likely being viewed the first year following removal of the acrotelm, which is likely a recurring process here. The area is composed mostly of bare peat (70%) and has recently been disturbed by wide tracked machinery. The remaining vegetation within the quadrat shows good floristic diversity including species such as *Sphagnum papillosum* and *Drosera rotundifolia,* suggesting the habitat was in good condition before the acrotem was removed. Consideration was given to classifying the peat as temporarily inactive, however extraction is likely to continue at scale, so "inactive deep peat" is likely a more representative classification.

Date	30 Jul 2024	
GPS reading	E 562442 N 798331	
Size m^2	2m x 2m	
Slope (degrees)	0	
Aspect	-	
Altitude (m)	142	
Height of vegetation (cm) – Max and Mean	30, 10	
Vegetation cover %	30	
Bare rock cover %	0	
Bare peat cover %	70	
Shrub/ericoid cover %	7	
Herbaceous/Graminoid cover %	17	
Bryophyte cover %	4	
No. plant species in quadrat	11	
Substrate	Inactive deep peat.	
Species	% cover	DOMIN
Calluna vulgaris	5	4
Campylopus introflexus	3 many	3
Carex panicea	5	4
Drosera rotundifolia	1 few	1
Erica tetralix	1 few	1
Eriophorum angustifolium	5	4
Eriophorum vaginatum	5	4
Juncus bulbosus	1 many	3
Myrica gale	1 few	1
Narthecium ossifragum	2 several	2
Sphagnum papillosum	1 several	2

Quadrat No. T09 iii



Quadrat Description:

The habitat has been damaged by large scale machinery but so far, no peat cutting has taken place here. Some *Sphagnum*-rich carpets are present in the local vicinity. The habitat is surrounded on 3 sides by deep active drains threatening the integrity of the habitat. There is large scale extensive damage to the (PB4) Cutover bog to the south. This peat extraction will likely occur at this quadrat location once the parcel has been sufficiently drained. Bare peat is consistent throughout this habitat as well as crushed and broken *Sphagnum*. The peat is still soft and wet under foot.

Date	30 Jul 2024	
GPS reading	E 562470 N 798352	
Size m^2	2m x 2m	
Slope (degrees)	0	
Aspect	-	
Altitude (m)	142	
Height of vegetation (cm) – Max and Mean	60, 30	
Vegetation cover %	90	
Bare rock cover %	0	
Bare peat cover %	10	
Shrub/ericoid cover %	35	
Herbaceous/Graminoid cover %	38 (Plus 20% leaf litter)	
Bryophyte cover %	52	
No. plant species in quadrat	14	
Substrate	Active deep peat.	
Species	% cover	DOMIN
Calluna vulgaris	25	5
Carex panicea	10	4
Cladonia portentosa	1 many	3
Erica tetralix	5	4
Eriophorum angustifolium	1 several	2
Eriophorum vaginatum	1 several	2

Hypnum jutlandicum	10	4
Molinia caerulea	20	5
Myrica gale	5	4
Potentilla erecta	1 several	2
Sphagnum rubellum	35	7
Sphagnum papillosum	1 few	1
Sphagnum subnitens	5	4
Trichophorum germanicum	5	4

Quadrat No. T09 iv



Quadrat Description:

(PB4) Cutover bog. This habitat is located on an embankment surrounded on 3 sides by large industrial drains, with the drain to the north c. 10 m wide and 2 m high. The ground is uneven underfoot suggesting previous cutover. The peat is soft underfoot and is likely active with some *Sphagnum* spp. and *Eriophorum* spp. cover. The vegetation here is typical (HH3) Wet heath vegetation, however it is located on deep peat (> 120 cm). *Molinia caerulea, Calluna vulgaris,* and *Myrica gale* are co-dominant and the shrub layer is the most prominent component of the habitat. The *Calluna vulgaris* plants are largely devoid of foliage and as such they may have been host to heather beetle. A *Rhynchospora alba* hollow was target noted nearby, and corresponds to the Annex I habitat type 7150 depressions on peat substrates of the *Rhynchosporion*.

Date	30 Jul 2024
GPS reading	E 562503 N 798380
Size m^2	2m x 2m
Slope (degrees)	0
Aspect	-
Altitude (m)	142
Height of vegetation (cm) – Max and Mean	100, 50
Vegetation cover %	95
Bare rock cover %	0
Bare peat cover %	5

Shrub/ericoid cover %	60	
Herbaceous/Graminoid cover %	33 (Plus 25% leaf litter)	
Bryophyte cover %	76	
No. plant species in quadrat	11	
Substrate	Active deep peat.	
Species	% cover	DOMIN
Calluna vulgaris	30	6
Cladonia portentosa	15	5
Erica tetralix	10	4
Eriophorum vaginatum	1 many	2
Hypnum jutlandicum	25	5
Melampyrum pratense	1 many	2
Molinia caerulea	30	6
Myrica gale	20	5
Odontoschisma sphagni	1 many	3
Potentilla erecta	1 several	2
Sphagnum rubellum	10	4

Quadrat No. T09v



Quadrat Description:

(PB4) Cutover bog. The quadrat is located along a remnant peat bank within a large cutover area. There are drains either side of the embankment. The quadrat is species poor. The bryophyte layer is dominated by *Hypnum jutlandicum* and the shrub layer is dominated by *Calluna vulgaris*. This vegetation is typical of (HH3) Wet heath but it is located on deep peat (> 120 cm). The peat is not active as there are no *Sphagnum* spp. or *Eriophorum* spp. noted in the local vicinity. The peat is uneven underfoot likely as a result of past extraction activities.

Date	30 Jul 2024
GPS reading	E 562627 N 798469
Size m^2	2m x 2m
Slope (degrees)	0

Aspect	-	
Altitude (m)	140	
Height of vegetation (cm) – Max and Mean	70, 50	
Vegetation cover %	100	
Bare rock cover %	0	
Bare peat cover %	0	
Shrub/ericoid cover %	50	
Herbaceous/Graminoid cover %	10	
Bryophyte cover %	74	
No. plant species in quadrat	5	
Substrate	Inactive deep peat.	
Species	% cover	DOMIN
Calluna vulgaris	50	7
Cladonia portentosa	3 few	1
Hylocomium splendens	1 few	1
Hypnum jutlandicum	70	8
Molinia caerulea	10	4

Quadrat No. T09 vi



Quadrat Description:

(PB4) Cutover bog. The quadrat is located on a lower cutover area between two embankments. The ground is uneven underfoot suggestive of past extraction activities. Similar to the previous quadrat (T09v), this vegetation is typical of (HH3) Wet heath; however, it is located on deep peat. *Molinia caerulea* and *Calluna vulgaris* are co-dominant throughout and the species diversity within the quadrat is low. The peat is wet and waterlogged, even though the habitat is surrounded by drains. *Sphagnum palustre and Sphagnum denticulatum* occur within a waterlogged depression within the quadrat. Active peat is likely.

Date	30 Jul 2024
GPS reading	E 562661 N 798473
Size m^2	2m x 2m

Slope (degrees)	0	
Aspect	-	
Altitude (m)	140	
Height of vegetation (cm) – Max and Mean	100, 60	
Vegetation cover %	100	
Bare rock cover %	0	
Bare peat cover %	0	
Shrub/ericoid cover %	57	
Herbaceous/Graminoid cover %		
Bryophyte cover %		
No. plant species in quadrat	12	
Substrate	Active deep peat.	
Species	% cover	DOMIN
Calluna vulgaris	50	7
Erica tetralix	5	4
Eriophorum vaginatum	1 many	3
Hypnum jutlandicum	40	7
Juncus effusus	1 several	2
Molinia caerulea	25	5
Myrica gale	2 few	1
Potentilla erecta	5	4
Sphagnum rubellum	10	4
Sphagnum denticulatum	1 several	2
Sphagnum palustre	5	4
Vaccinium myrtillus	1 few	1

Quadrat No. T10 i



Quadrat Description:

(PB2) Upland blanket bog. A drying effect from the peat extraction c. 50 m to the south-west is evident in this area of primary (uncut) bog. The bryophyte layer is impoverished with *Sphagnum rubellum* being the only *Sphagnum* species noted within the quadrat; its presence is inconspicuous and was only revealed once the leaf litter was removed. Within the wider habitat, *Sphagnum papillosum* and *Sphagnum cuspidatum* were occasionally noted. Both *Eriophorum vaginatum* and *Eriophorum angustifolium* are occasional throughout. The habitat is in urgent need of intervention and hydrological restoration to prevent further degradation. A large marginal drain is located under the hagg face and drains the (PB2) Upland blanket bog. This habitat corresponds to the Annex I habitat type 7130* Blanket bog (active).		
Date	30 Jul 2024	
GPS reading	E 561979 N 797554	
Size m^2	2m x 2m	
Slope (degrees)	0	
Aspect	-	
Altitude (m)	146	
Height of vegetation (cm) – Max and Mean	45, 20	
Vegetation cover %	100	
Bare rock cover %	0	
Bare peat cover %	0	
Shrub/ericoid cover %	10	
Herbaceous/Graminoid cover %	(Plus 20% leaf litter)	
Bryophyte cover %	51	
No. plant species in quadrat	10	
Substrate	Active deep peat.	
Species	% cover	DOMIN
Calluna vulgaris	10	4
Carex panicea	5	4
Cladonia portentosa	20	5
Erica tetralix	10	4
Eriophorum angustifolium	2 many	3
Eriophorum vaginatum	3 many	3
Hypnum jutlandicum	15	5
Narthecium ossifragum	50	7
Odontoschisma sphagni	1 many	3
Sphagnum rubellum	15	5

Quadrat No. T10 ii



Quadrat Description:

(PB4) Cutover bog. This habitat extends for c. 5 m to the north and south and c. 15 m to the west of the quadrat. This habitat is located on deep peat (> 120 cm) and is actively peat forming with *Sphagnum*-rich carpets present and frequent *Eriophorum* spp. *Sphagnum rubellum* is abundant and *Sphagnum papillosum* is frequent throughout. The habitat is recovering well from previous peat extraction and the quadrat displays good floristic diversity (15 species). Bare peat is frequent within the habitat and signals continued disturbance from heavy machinery.

The marginal drain which delineates the (PB4) Cutover bog habitat from the (PB2) Upland blanket bog is c. 2.5 m wide and c. 0. 5 m deep, with the primary (uncut) bog at an elevation c. 1 m higher than the (PB4) Cutover.

The Annex I habitat type 7150 depressions on peat substrates of the *Rhynchosporion* was target noted nearby the quadrat.

Date	29 Jul 2024	
GPS reading	E 561907 N 797508	
Size m^2	2m x 2m	
Slope (degrees)	0	
Aspect	-	
Altitude (m)	145	
Height of vegetation (cm) – Max and Mean	70, 30	
Vegetation cover %	95	
Bare rock cover %	0	
Bare peat cover %	5	
Shrub/ericoid cover %	30	
Herbaceous/Graminoid cover %	66.5	
Bryophyte cover %	93	
No. plant species in quadrat	15	
Substrate	Active deep peat.	
Species	% cover	DOMIN
Calluna vulgaris	25	5
Campylopus introflexus	1 several	2

Carex panicea	10	4
Cladonia portentosa	1 several	2
Drosera rotundifolia	1 many	3
Erica tetralix	5	4
Eriophorum angustifolium	5	4
Eriophorum vaginatum	50	7
Hypnum jutlandicum	1 several	2
Rhynchospora alba	0.5 few	1
Sphagnum rubellum	50	7
Sphagnum cuspidatum	10	4
Sphagnum denticulatum	5	4
Sphagnum papillosum	15	5
Sphagnum subnitens	10	4

Quadrat No. T10 iii



Quadrat Description:

(PB4) Cutover peat. This quadrat is not representative of typical peatland vegetation community. It best aligns with (GS4) Wet grassland dominated by *Juncus effusus* with some coverage of peatland species including *Molinia caerulea* and *Erica tetralix*. The area is a patchy non-uniform matrix of (GS4) Wet grassland, bare peat, and swards of *Eriophorum angustifolium*. The peat is dry and hard underfoot and has been exhausted with variable peat depths noted within the area, all of them below c. 20 cm. There is no *Sphagnum* coverage, and the peat is inactive. This area is used to dry turves and disturbance with heavy machinery appears to be frequent and ongoing. There has been recent drain widening activity to the west.

Date	29 Jul 2024
GPS reading	E 561921 N 797488
Size m^2	2m x 2m
Slope (degrees)	5
Aspect	N
Altitude (m)	145

Height of vegetation (cm) – Max and Mean	50, 25	
Vegetation cover %	75	
Bare rock cover %	0	
Bare peat cover %	25	
Shrub/ericoid cover %	1	
Herbaceous/Graminoid cover %	63	
Bryophyte cover %	2	
No. plant species in quadrat	10	
Substrate	Inactive peat <20 cm deep.	
Species	% cover	DOMIN
Agrostis canina	1 few	1
Campylopus introflexus	1 many	3
Carex nigra	15	5
Carex panicea	1 few	1
Erica tetralix	1 few	1
Eriophorum angustifolium	20	5
Hypochaeris radicata	1 several	2
Juncus effusus	15	5
Molinia caerulea	10	4
Polytrichum commune	1 many	3

Quadrat No. T10 iv



Quadrat Description:

(PB4) Cutover. As in the previous quadrat (T10iii), this area of (PB4) Cutover bog is composed of a matrix of transitional habitats including (GS4) Wet grassland, (HH3) Wet heath, as well as bare peat. Due to the coverage of peatland species, the vegetation within this quadrat better aligns with (HH3) Wet heath. The peat is hard underfoot, inactive, and almost fully exhausted (c. 20 cm).

Date	29 Jul 2024
GPS reading	E 561871 N 797453
Size m^2	2m x 2m

Slope (degrees)	2	
Aspect	W	
Altitude (m)	145	
Height of vegetation (cm) – Max and Mean	50, 15	
Vegetation cover %	90	
Bare rock cover %	0	
Bare peat cover %	10	
Shrub/ericoid cover %	15	
Herbaceous/Graminoid cover %	61	
Bryophyte cover %	15	
No. plant species in quadrat	10	
Substrate	Inactive peat c. 20 cm deep.	
Species	% cover	DOMIN
Calluna vulgaris	15	5
Campylopus introflexus	2 many	3
Carex nigra	10	4
Eriophorum angustifolium	25	5
Hypnum jutlandicum	10	4
Molinia caerulea	25	5
Polytrichum commune	1 many	3
Potentilla erecta	1 many	3
Pseudoscleropodium purum	1 few	1
Sphagnum rubellum	1 many	3

Quadrat No. T10 v



Quadrat Description:

(PB4) Cutover bog. This habitat is best described as fully regenerated (PB2) Upland blanket bog located on (PB4) Cutover bog. The peat is deep (c. 85 cm) and active, with good *Sphagnum* spp. and *Eriophorum* spp. cover. The sward is grassy in appearance and the graminoid layer is co-

dominated by *Molinia caerulea* and *Eriophorum vaginatum*. The shrub layer is dominated by *Calluna vulgaris,* with *Erica tetralix* and *Vaccinium myrtillus* also contributing to shrub cover. The presence of encroaching scrub and self-seeded *Picea sitchensis* were noted within the wider habitat, which are both negative indicators for blanket bog.		
Date	29 Jul 2024	
GPS reading	E 561840 N 797445	
Size m^2	2m x 2m	
Slope (degrees)	0	
Aspect	-	
Altitude (m)	145	
Height of vegetation (cm) – Max and Mean	100, 35	
Vegetation cover %	100	
Bare rock cover %	0	
Bare peat cover %	0	
Shrub/ericoid cover %	33	
Herbaceous/Graminoid cover %	56	
Bryophyte cover %	97	
No. plant species in quadrat	12	
Substrate	Active deep peat.	
Species	% cover	DOMIN
Aulacomnium palustre	10	4
Calluna vulgaris	30	6
Campylopus introflexus	1 many	2
Carex echinata	1 few	1
Erica tetralix	2 several	3
Eriophorum angustifolium	5	4
Eriophorum vaginatum	35	7
Hypnum jutlandicum	10	4
Molinia caerulea	15	5
Sphagnum rubellum	75	8
Sphagnum papillosum	1 few	1
Vaccinium myrtillus	1 few	1

Quadrat No. T10 vi



Quadrat Description:

(PB4) Cutover bog. This habitat is best described as regenerated (HH3) Wet heath on (PB4) Cutover peat. The remaining peat depth is c. 20 cm. The peat is active with 20% *Sphagnum rubellum* cover and 5% *Eriophorum angustifolium* cover, albeit it is hard underfoot. The cover of *Calluna vulgaris* (30%) is sufficient to meet the dwarf shrub cover criteria for classification as wet heath, but *Erica tetralix* and *Myrica gale* also contribute. This vegetation community forms a matrix with heath dominated by *Molinia caerulea* (see T10vii). There are drains on three sides of this land parcel, which are likely having a continued drying effect on these peatland habitats. Encroachment from scrub is also a noted threat to the future prospects of this habitat.

Date	29 Jul 2024	
GPS reading	E 561793 N 797382	
Size m^2	2m x 2m	
Slope (degrees)	5	
Aspect	W	
Altitude (m)	138	
Height of vegetation (cm) – Max and Mean	70, 30	
Vegetation cover %	100	
Bare rock cover %	0	
Bare peat cover %	0	
Shrub/ericoid cover %	45	
Herbaceous/Graminoid cover %	58	
Bryophyte cover %	40	
No. plant species in quadrat	12	
Substrate	Active peat c. 20 cm.	
Species	% cover	DOMIN
Calluna vulgaris	30	6
Carex demissa	1 few	1
Erica tetralix	10	4
Eriophorum angustifolium	5	4
Hylocomium splendens	5	4

Hypnum jutlandicum	15	5
Juncus conglomeratus	1 few	1
Molinia caerulea	10	4
Myrica gale	5	4
Potentilla erecta	1 few	1
Sphagnum rubellum	20	5
Trichophorum germanicum	40	7

Quadrat No. T10 vii



Quadrat Description:

(PB4) Cutover bog. This habitat is best described as (HH3) Wet heath on (PB4) Cutover bog. The community is dominated by *Molinia caerulea,* which forms a dense sward and produces considerable leaf litter (20%). The bryophyte layer is underdeveloped, likely due to shading from the *Molinia caerulea* foliage. The dwarf shrub layer is absent. Encroaching *Salix aurita* and *Betula pubescens* saplings were noted in the quadrat and local vicinity, suggestive of ecological succession to scrub. Several sedge species were identified in the quadrat.

Date	29 Jul 2024
GPS reading	E 561771 N 797357
Size m^2	2m x 2m
Slope (degrees)	5
Aspect	S
Altitude (m)	138
Height of vegetation (cm) – Max and Mean	120, 80
Vegetation cover %	100
Bare rock cover %	0
Bare peat cover %	0
Shrub/ericoid cover %	25
Herbaceous/Graminoid cover %	99 (Plus 20% leaf litter)
Bryophyte cover %	1
No. plant species in quadrat	11

Substrate	Inactive peat c. 50 cm deep.	
Species	% cover	DOMIN
Betula pubescens	5	4
Carex binervis	5	4
Carex echinata	1 few	1
Carex panicea	2 several	2
Hylocomium splendens	1 several	2
Hypericum pulchrum	1 few	1
Juncus conglomeratus	5	4
Molinia caerulea	70	
Potentilla erecta	5	4
Salix aurita	20	
Succisa pratensis	10	4

APPENDIX II: IRISH VEGETATION CLASSIFICATION DATA

Quadrat No.	Division	Code	Community	Plot Membership	Fossitt Habitat Type Affinities	Annex I Habitat Type Affinities	IXM X	ITM Y
T01i	Bog	BG2C	*Erica tetralix-Molinia caerulea-Cladonia portentosa*	Assigned#	HH3 Wet heath/ PB3 Lowland blanket bog	4010 Wet heath / 7130* Blanket bog (active)	E561675	N800528
T01ii	Bog	BG2C	*Erica tetralix-Molinia caerulea-Cladonia portentosa*	Assigned#	HH3 Wet heath/ PB3 Lowland blanket bog	4010 Wet heath / 7130* Blanket bog (active)	E561738	N800532
T01iii	Bog	BG2E	*Calluna vulgaris-Eriophorum* spp.	Assigned#	PB1 Raised bog/ PB2 Upland blanket bog	7110* Raised bog (active)/ 7130* Blanket bog (active)	E561772	N800548
T01iv	Bog	BG2B	*Erica tetralix-Andromeda polifolia*	Assigned#	PB1 Raised bog/ PB2 Upland blanket bog / PB3 Lowland blanket bog	7110* Raised bog (active)/ 7130* Blanket bog (active)	E561803	N800535
T01v	Bog	BG2E	*Calluna vulgaris-Eriophorum* spp.	Transitional†	PB2 Upland blanket bog/ PB1 Raised bog	7130* Blanket bog (active)/ 7110 Raised bog (active)	E561848	N800538
T01vi	Fens and Mires	FE1C	*Carex panicea-Carex viridula*	Transitional†	PF1 Rich fen and flush/ PF2 Poor fen and flush	7230 Alkaline fens	E561891	N800542
T01vii	Bogs	BG2C	*Erica tetralix-Molinia caerulea-Cladonia portentosa*	Assigned#	HH3 Wet heath/ PB3 Lowland blanket bog	4010 Wet heath/ 7130* Blanket bog (active)	E562020	N800562
T02i	Heaths	HE4E	*Molinia caerulea-Calluna vulgaris-Erica tetralix*	Assigned#	HH3 Wet heath/ PB2 Upland blanket bog / PB3 Lowland blanket bog	4010 Wet heath/ 7120 Degraded raised bogs/ 7130* Blanket bog (active)	E562211	N800499
T02ii	Freshwater	FW1C	*Juncus bulbosus*	Transitional†	FL1 Dystrophic lakes/ FL2 Oligotrophic lakes/ PB4 Cutover bog/ PF2 Poor fen and flush	3160 Acid oligotrophic lake habitat/ 7130* Blanket bog (active)	E562205	N800539
T02iii	Heaths	HE4D	*Molinia caerulea-Potentilla erecta-Erica tetralix*	Assigned#	GS4 Wet grassland/ HH3 Wet heath/ PB3 Lowland blanket bog	4010 Wet heath/ 7120 Degraded raised bogs/ 7130* Blanket bog (active)	E562287	N800508
T02iv	Bogs	BG2E	*Calluna vulgaris-Eriophorum* spp.	Assigned#	PB2 Upland blanket bog/ PB1 Raised bog	7130* Blanket bog (active)/ 7110* Raised bog (active)	E562310	N800530
T02v	Fens and Mires	FE2E	*Menyanthes trifoliata-Sphagnum fallax.*	Transitional†	PF2 Poor fen and flush/ PF3 Transition mire and quaking bog	7140 Transition mires	E562333	N800487
T03i	Heaths	HE2D	*Calluna vulgaris-Molinia caerulea-Erica cinerea*	Assigned#	HH3 Wet heath	4010 Wet heath	E562602	N800219
T03ii	Bogs	BG2A	*Eriophorum vaginatum-Vaccinium oxycoccos*	Transitional†	PB1 Raised bog	7110* Raised bog (active)	E562659	N800261
T04i	Bogs	BG2B	*Erica tetralix-Andromeda polifolia*	Assigned#	PB1 Raised bog/ PB2 Upland blanket bog / PB3 Lowland blanket bog	7110* Raised bog (active)/ 7130* Blanket bog (active)	E562343	N799528
T04ii	Bogs	BG2E	*Calluna vulgaris-Eriophorum* spp.	Assigned#	PB2 Upland blanket bog/ PB1 Raised bog	7130* Blanket bog (active)/ 7110* Raised bog (active)	E562290	N799563
T04iii	Bogs	BG2E	*Calluna vulgaris-Eriophorum* spp.	Assigned#	PB2 Upland blanket bog/ PB1 Raised bog	7130* Blanket bog (active)/ 7110* Raised bog (active)	E562335	N799570
T04iv	Heaths	HE4E	*Molinia caerulea-Calluna vulgaris-Erica tetralix*	Assigned#	HH3 Wet heath/ PB2 Upland blanket bog/ PB3 Lowland blanket bog	4010 Wet heath/ 7120 Degraded raised bogs / 7130* Blanket bog (active)	E562354	N799592
T05i	Bogs	BG2E	*Calluna vulgaris-Eriophorum* spp.	Assigned#	PB2 Upland blanket bog/ PB1 Raised bog	7130* Blanket bog (active)/ 7110* Raised bog (active)	E561857	N799340
T05ii	Bogs	BG2F	*Trichophorum cespitosum/germanicum- Eriophorum angustifolium*	Assigned#	PB2 Upland blanket bog/ PB1 Raised bog	7110* Raised bog (active)/ 7130* Blanket bog (active)	E561921	N799382
T05iii	Heaths	HE4E	*Molinia caerulea-Calluna vulgaris-Erica tetralix*	Assigned#	HH3 Wet heath/ PB2 Upland blanket bog/ PB3 Lowland blanket bog	4010 Wet heath/ 7120 Degraded raised bogs/ 7130* Blanket bog (active)	E562005	N799405
T05iv	Bogs	BG2E	*Calluna vulgaris-Eriophorum* spp.	Assigned#	PB2 Upland blanket bog/ PB1 Raised bog	7130* Blanket bog (active)/ 7110* Raised bog (active)	E562036	N799421
T05v	Heaths	HE2D	*Calluna vulgaris-Molinia caerulea-Erica cinerea*	Assigned#	HH3 Wet heath	4010 Wet heath	E562072	N799416
T06i	Bogs	BG2C	*Erica tetralix-Molinia caerulea-Cladonia portentosa*	Assigned#	HH3 Wet heath/ PB3 Lowland blanket bog	4010 Wet heath/ 7130* Blanket bog (active)	E561180	N799385
T06ii	Heaths	HE4D	*Molinia caerulea-Potentilla erecta-Erica tetralix*	Assigned#	GS4 Wet grassland/ HH3 Wet heath/ PB3 Lowland blanket bog	4010 Wet heath/ 7120 Degraded raised bogs/ 7130* Blanket bog (active)	E561127	N799362
T06iii	Bogs	BG2C	*Erica tetralix-Molinia caerulea-Cladonia portentosa*	Assigned#	HH3 Wet heath/ PB3 Lowland blanket bog	4010 Wet heath/ 7130* Blanket bog (active)	E561088	N799343

T06iv	Bogs	BG2C	*Erica tetralix-Molinia caerulea-Cladonia portentosa*	Assigned#	HH3 Wet heath/ PB3 Lowland blanket bog	4010 Wet heath/ 7130* Blanket bog (active)	E561013	N799327
T06v	Heaths	HE2D	*Calluna vulgaris-Molinia caerulea-Erica cinerea*	Assigned#	HH3 Wet heath	4010 Wet heath	E560925	N799283
T06vi	Heaths	HE4E	*Molinia caerulea-Calluna vulgaris - Erica tetralix*	Assigned#	HH3 Wet heath/ PB2 Upland blanket bog/ PB3 Lowland blanket bog	4010 Wet heath/ 7120 Degraded raised bogs/ 7130* Blanket bog (active)	E561077	N798980
T07i	Bogs	BG2C	*Erica tetralix-Molinia caerulea-Cladonia portentosa*	Assigned#	HH3 Wet heath/ PB3 Lowland blanket bog	4010 Wet heath/ 7130* Blanket bog (active)	E562119	N798878
T07ii	Bogs	BG2C	*Erica tetralix-Molinia caerulea-Cladonia portentosa*	Assigned#	HH3 Wet heath/ PB3 Lowland blanket bog	4010 Wet heath / 7130* Blanket bog (active)	E562213	N798887
T07iii	Heaths	HE4D	*Molinia caerule -Potentilla erecta-Erica tetralix*	Assigned#	GS4 Wet grassland/ HH3 Wet heath/ PB3 Lowland blanket bog	4010 Wet heath/ 7120 Degraded raised bogs/ 7130* Blanket bog (active)	E562184	N798896
T07iv	Bogs	BG2E	*Calluna vulgari -Eriophorum* spp.	Assigned#	PB2 Upland blanket bog/ PB1 Raised bog	7130* Blanket bog (active)/ 7110* Raised bog (active)	E562177	N798938
T07v	Grasslands	GL4D	*Agrostis canina/vinealis-Rhytidiadelphus squarrosus*	Assigned#	GS3 Dry-humid acid grassland/ GS4 Wet grassland	6410 Molinia meadows	E562152	N799020
T08i	Bogs	BG2C	*Erica tetralix-Molinia caerulea-Cladonia portentosa*	Assigned#	HH3 Wet heath/ PB3 Lowland blanket bog	4010 Wet heath/ 7130* Blanket bog (active)	E561972	N798322
T08ii	Heaths	HE4E	*Molinia caerulea-Calluna vulgaris-Erica tetralix*	Transitional†	HH3 Wet heath/ PB2 Upland blanket bog/ PB3 Lowland blanket bog	4010 Wet heath/ 7120 Degraded raised bogs/ 7130* Blanket bog (active)	E561999	N798320
T08iii	Bogs	BG2E	*Calluna vulgaris-Eriophorum* spp.	Assigned#	PB2 Upland blanket bog/ PB1 Raised bog	7130* Blanket bog (active)/ 7110* Raised bog (active)	E562029	N798340
T08iv	Bogs	BG1D	*Eriophorum angustifolium-Campylopus introflexus*	Assigned#	PB4 Cutover bog/ PB5 Eroding blanket bog	7120* Degraded raised bogs/ 7130* Blanket bog (active)	E562219	N798398
T09i	Bogs	BG2B	*Erica tetralix-Andromeda polifolia*	Assigned#	PB1 Raised bog/ PB2 Upland blanket bog/ PB3 Lowland blanket bog	7110* Raised bog (active)/ 7130* Blanket bog (active)	E562378	N798330
T09ii	Bogs	BG1D	*Eriophorum angustifolium-Campylopus introflexus*	Assigned#	PB4 Cutover bog/ PB5 Eroding blanket bog	7120* Degraded raised bogs/ 7130* Blanket bog (active)	E562442	N798331
T09iii	Bogs	BG2C	*Erica tetralix-Molinia caerulea-Cladonia portentosa*	Assigned#	HH3 Wet heath/ PB3 Lowland blanket bog	4010 Wet heath/ 7130* Blanket bog (active)	E562470	N798352
T09iv	Bogs	BG2C	*Erica tetralix-Molinia caerulea-Cladonia portentosa*	Assigned#	HH3 Wet heath/ PB3 Lowland blanket bog	4010 Wet heath/ 7130* Blanket bog (active)	E562503	N798380
T09v	Heaths	HE2B	*Calluna vulgaris-Hypnum jutlandicum*	Assigned#	HH1 Dry siliceous heaths	4030 Dry heath	E562627	N798469
T09vi	Heaths	HE2D	*Calluna vulgaris-Molinia caerulea-Erica cinerea*	Assigned#	HH3 Wet heath	4010 Wet heath	E562661	N798473
T10i	Bogs	BG2B	*Erica tetralix-Andromeda polifolia*	Assigned#	PB1 Raised bog/ PB2 Upland blanket bog / PB3 Lowland blanket bog	7110* Raised bog (active)/ 7130* Blanket bog (active)	E561979	N797554
T10ii	Bogs	BG2E	*Calluna vulgaris-Eriophorum* spp.	Assigned#	PB2 Upland blanket bog/ PB1 Raised bog	7130* Blanket bog (active)/ 7110* Raised bog (active)	E561907	N797508
T10iii	Bogs	BG1D	*Eriophorum angustifolium-Campylopus introflexus*	Assigned#	PB4 Cutover bog/ PB5 Eroding blanket bog	7120 Degraded raised bogs/ 7130* Blanket bog (active)	E561921	N797488
T10iv	Heaths	HE4E	*Molinia caerulea-Calluna vulgaris-Erica tetralix*	Transitional†	HH3 Wet heath/ PB2 Upland blanket bog/ PB3 Lowland blanket bog	4010 Wet heath/ 7120 Degraded raised bogs/ 7130* Blanket bog (active)	E561871	N797453
T10v	Bogs	BG2E	*Calluna vulgaris-Eriophorum spp.*	Assigned#	PB2 Upland blanket bog/ PB1 Raised bog	7130* Blanket bog (active)/ 7110* Raised bog (active)	E561840	N797445
T10vi	Bogs	BG2C	*Erica tetralix-Molinia caerule -Cladonia portentosa*	Assigned#	HH3 Wet heath/ PB3 Lowland blanket bog	4010 Wet heath/ 7130* Blanket bog (active)	E561793	N797382
T10vii	Heaths	HE4D	*Molinia caerulea-Potentilla erecta-Erica tetralix*	Assigned#	GS4 Wet grassland/ HH3 Wet heath/ PB3 Lowland blanket bog	4010 Wet heath/ 7120 Degraded raised bogs/ 7130* Blanket bog (active)	E561771	N797357

The plot has membership ≥0.5 for one of the vegetation communities and therefore relates to the core definition of that vegetation community

† The plot has membership <0.5 for all vegetation communities and for the noise class. It falls within the scope of the current classification scheme but does not relate to the core definition of any of the vegetation communities

Table 23: Irish Vegetation Classification for all quadrats generated using ERICA tool (Perrin *et al.* 2019)

APPENDIX III: ANNEX I MONITORING STOP DATA

Table 24: Monitoring criteria for Annex I habitat type 7130* Blanket bog (active) T01i-T05iv (Perrin *et al.* 2014)

Quadrat No.	T01i	T01ii	T01iii	T01iv	T01v	T01vi	T01vii	T02i	T02ii	T02iii	T02iv	T02v	T03i	T3ii	T04i	T04ii	T04iii	T04iv	T05i	T05ii	T05iii	T05iv
Positive indicator spp. ≥7 #	Yes	Yes	Yes	Yes	Yes	**No**	**No**	**No**	**No**	**No**	Yes	**No**	**No**	**No**	Yes	Yes	Yes	**No**	Yes	Yes	Yes	Yes
Bryophyte cover ≥10%	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**	Yes	Yes
Following species <75% †	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**	Yes	**No**	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Negative indicator spp. <1%	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Non-native spp. in quadrat <1%	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**	Yes	**No**	Yes	**No**	Yes	Yes	Yes	Yes	Yes	Yes
Non-native spp. in vicinity <1%	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	Yes	Yes	**No**	**No**
Scrub coverage <10%	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	Yes	Yes	Yes	**No**	Yes	**No**	**No**	Yes	Yes	**No**	**No**
Crushed *Sphagnum* spp. <10%	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Browsing <33%	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No burning into bryophyte layer in vicinity	**No**	Yes	**No**	Yes	Yes	Yes	Yes	**No**	**No**	Yes	**No**	Yes	**No**	**No**	**No**	**No**	**No**	Yes	Yes	Yes	Yes	Yes
No burning in sensitive areas in vicinity	**No**	**No**	**No**	Yes	Yes	Yes	Yes	**No**	Yes	**No**	**No**	Yes	**No**	**No**	**No**	**No**	**No**	Yes	Yes	Yes	Yes	Yes
Bare ground in quadrat <10%	Yes	Yes	Yes	**No**	Yes	Yes	Yes	Yes	**No**	Yes	Yes	Yes	Yes	Yes	Yes	**No**	Yes	Yes	**No**	**No**	**No**	**No**
Bare ground in vicinity <10%	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**	Yes	**No**	Yes	Yes	Yes	**No**	**No**	**No**	**No**	Yes	**No**	**No**	**No**
<10% of area showing signs of drainage	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	Yes	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	Yes
<5% cover of erosion gullies in greater bog mosaic	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of failed criteria	5	4	5	4	3	4	4	7	8	6	6	3	5	6	6	7	6	5	2	4	5	4
Monitoring stop pass/fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail	**Pass**	Fail	Fail	Fail

see Perrin *et al.* 2014, pp. 92

† *Calluna vulgaris, Eleocharis multicaulis, Eriophorum vaginatum, Molinia caerulea, Schoenus nigricans, Trichophorum germanicum* individually <75%

[#] see Perrin et al. 2014, pp. 92

Table 25: Monitoring criteria for Annex I habitat type 7130* Blanket bog (active) T06i-T10v (Perrin *et al.* 2014)

Quadrat No.	T06i	T06ii	T06iii	T06iv	T06v	T06vi	T07i	T07ii	T07iii	T07iv	T07v	T08i	T08ii	T08iii	T08iv	T09i	T09ii	T09iii	T09iv	T09v	T09vi	T10i	T10ii	T10iii	T10v
Positive indicator spp. ≥7 [#]	Yes	**No**	Yes	Yes	**No**	**No**	Yes	Yes	**No**	**No**	**No**	Yes	Yes	Yes	**No**	Yes	Yes	Yes	Yes	**No**	Yes	Yes	Yes	**No**	Yes
Bryophyte cover ≥10%	Yes	**No**	Yes	Yes	Yes	Yes	Yes	Yes	**No**	Yes	Yes	Yes	Yes	Yes	**No**	Yes	**No**	Yes	Yes	**No**	Yes	Yes	Yes	**No**	Yes
Following species individually <75% [†]	Yes	**No**	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Negative indicator spp. <1% [§]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Non-native spp. in quadrat <1%	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Non-native spp. in vicinity <1%	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**
Scrub coverage <10%	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**	**No**	Yes	**No**	**No**	**No**
Crushed *Sphagnum* spp. <10%	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Browsing <33%	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No burning into bryophyte layer	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No burning in sensitive areas	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bare ground in quadrat <10%	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**	Yes	**No**	**No**	Yes	Yes	Yes	Yes	Yes	**No**	Yes
Bare ground in vicinity <10%	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**	**No**	**No**	**No**	**No**	**No**	**No**	Yes	**No**	**No**	Yes
<10% of area showing signs of drainage	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	Yes	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	Yes	**No**
<5% cover of erosion gullies in greater bog mosaic	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of failed criteria	2	5	2	2	3	3	2	2	5	3	3	1	1	1	5	2	6	3	2	5	3	1	3	5	3
Monitoring stop pass/fail	**Pass**	Fail	**Pass**	**Pass**	Fail	**Fail**	**Pass**	**Pass**	Fail	Fail	Fail	**Pass**	**Pass**	**Pass**	**Fail**	**Pass**	Fail	Fail	**Pass**	Fail	Fail	**Pass**	Fail	Fail	Fail

[†] *Calluna vulgaris, Eleocharis multicaulis, Eriophorum vaginatum, Molinia caerulea, Schoenus nigricans, Trichophorum germanicum* individually

[§] *Agrostis capillaris, Holcus lanatus, Phragmites australis, Pteridium aquilinum, Ranunculus repens*

Table 26: Monitoring criteria for Annex I habitat type 4010 Northern Atlantic wet heaths with *Erica tetralix* T05v, T10iv, T10vi, T10vii (Perrin *et al.* 2014)

Quadrat No.	T05v	T10i	T10vii	T10iv
Erica tetralix within 20m	Yes	Yes	Yes	No
Positive indicator spp. ≥50% #	Yes	Yes	No	No
Specified non-vascular spp. ≥10% ‡	No	Yes	No	No
Ericoid cover ≥15%	Yes	Yes	No	Yes
Dwarf shrub cover <75%	Yes	Yes	Yes	Yes
Negative indicator spp. <1% §	Yes	Yes	Yes	Yes
Non-native spp. in quadrat <1%	Yes	Yes	Yes	Yes
Non-native spp. in vicinity <1%	No	No	No	Yes
Scrub coverage <20%	No	No	No	No
Cover of *Pteridium aquilinum* <10%	Yes	No	No	Yes
Cover of *Juncus effusus* <10%	No	Yes	Yes	No
Crushed *Sphagnum* spp. <10%	Yes	Yes	Yes	No
Browsing <33%	Yes	Yes	Yes	Yes
No burning into bryophyte layer	Yes	Yes	Yes	Yes
No burning in sensitive areas	Yes	Yes	Yes	Yes
Bare ground in quadrat<10%	Yes	Yes	Yes	Yes
Bare ground in vicinity<10%	No	Yes	Yes	No
<10% of area showing signs of drainage	No	No	No	Yes
Number of failed criteria	6	4	7	6
Monitoring stop pass/fail	**Fail**	**Fail**	**Fail**	**Fail**

see Perrin et al. 2014, pp. 90

‡ *Cladonia species, Sphagnum spp., Racomitrium lanuginosum and pleurocarpous mosses*

§ *Agrostis capillaris, Holcus lanatus, Phragmites australis, Ranunculus repens*



GALETECH
ENERGY SERVICES