

# Beinn Ghlas Wind Farm Repowering Habitat Importance Evaluation and Land-take Calculations

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**June 2025**

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## Introduction

This document is a Technical Appendix (TA) to Chapter 6 of the Proposed Development Environmental Impact Assessment Report (EIAR). It provides details on the habitat importance evaluation undertaken and the calculation of potential impacts on habitats, the land-take calculations.

Supporting documents and figures include:

- TA 6.2: Beinn Ghlas Wind Farm Repowering Habitat Survey Report;
- TA 6.3: Beinn Ghlas Wind Farm Repowering Peatland Condition Assessment (PCA) Survey Report;
- TA 6.4: Beinn Ghlas Wind Farm Repowering Site Access Habitat Survey Report;
- TA 6.9: Beinn Ghlas Wind Farm Repowering Vegetation Survey of the Turbine Locations Report;
- Figure 6.1: Ecological Study Areas;
- Figure 6.2: Designated Sites;
- Figure 6.3: Phase 1 Habitats and NVC Surveys;
- Figure 6.4: PCA;

## Habitat Importance Evaluation for Beinn Ghlas

The habitats of particular note, as identified in the Phase 1 Habitat and National Vegetation Classification (NVC) Surveys for Beinn Ghlas Wind Farm (e.g. TA 6.2 and 6.4), were evaluated following EclA best practice guidance (CIEEM, 2018) as outlined in Chapter 7: Ecology of the EIAR. The evaluation of the importance of habitats requires consideration of many factors which required to be (transparently) addressed.

### **Blanket bog**

When evaluating the ecological importance of the blanket bog in the Turbine Study Area, there are a multitude of aspects to consider including consideration of it in the wider context of e.g. (i) Annex 1 and Scottish Biodiversity List (SBL) criteria, (ii) the national and regional blanket bog resource, (iii) the predictive Carbon and Peatland Map definitions, and (iv) NatureScot's guidance (2023) as well as considering the site specific quality and condition of the blanket bog at Beinn Ghlas.

### ***Wider context***

The blanket bog within the Turbine Study Area does not form part of a designated site and it is not adjacent to, or in any way connected, with a designated site where blanket bog is a qualifying feature.

The Carbon and Peatland Map is a high-level planning tool which broadly predicts the presence of peatlands and peatland habitats. Its purpose is to be helpful in the initial site selection process undertaken by developers but the map should not be used in development management decision-making (NatureScot, 2020). The Carbon and Peatland Map (Scottish

Soil, 2016) predicts that the majority of the Turbine Study Area is likely to be Class 2 *“Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas of potentially high conservation value and restoration potential”* with a small section predicted to be Class 5 *“Soil information takes precedence over vegetation data. No peatland habitat recorded. May also include areas of bare soil. Soils are carbon-rich and deep peat.”*

In the Scoping response for Beinn Ghlas, NatureScot (2022) state *“parts of the site are underlain with Class 2 peatlands which are nationally important carbon rich soils, deep peat and priority peatland habitats. As such, there is a requirement for a complete peat probing survey to be undertaken, and an associated NVC survey, to ascertain the quality and distribution of peatland and priority habitats across the site as per NatureScot guidance (<https://www.nature.scot/doc/advising-carbon-rich-soils-deep-peat-and-priority-peatland-habitatdevelopment-management>). Albeit that peatland classifications may change in light of detailed site-specific surveys, we advise that efforts are made to avoid the siting of turbines and associated infrastructure on areas of nationally important peatland and areas of deep peat. The EIA Report should demonstrate that any significant effects have been substantially overcome by siting, design or other mitigation”*. Clearly in this statement NatureScot recognises the variability of blanket bog condition within the Turbine Study Area and notes that it may not all be of national importance and that site specific surveys are required to inform assessment of potential impacts/effects.

All bog habitat, whatever the condition is on the SBL<sup>1</sup> and is listed by European legislation, under Annex 1 of the Habitats Directive (Directive on the Conservation of Natural Habitats and Wild Fauna and Flora EC/92/43). Active, peat-forming, blanket bog is listed as an Annex 1 priority habitat. ‘Active’ blanket bog is defined as *“supporting a significant area of vegetation that is normally peat-forming* (JNCC, 2015). Bog pools are listed as an Annex 1 habitat and are included as part of the SBL habitat description for blanket bog. NatureScot consider bog pools to be priority peatland habitats (NatureScot, 2023).

NatureScot provides some further guidance on the ‘priority of peatlands’, and state *“Priority peatland ... shows evidence of being undisturbed and actively forming peat”* (NatureScot, 2023). NatureScot identifies a series of NVC blanket bog communities, which may under some circumstances, be considered to be active and undisturbed, e.g. M17, M18 and M19. In their guidance, NatureScot recognises that peatland condition should be considered, and that site-specific surveys are required to inform potential impact assessments.

Peatlands are generally considered to be irreplaceable habitats as they cannot be replaced, like-for-like, within a reasonable time period if they are destroyed (CIEEM *et al.*, 2019). Nevertheless, existing but degraded peatlands can be restored within a relatively short timeframe (<5 years) if suitable, interventionist best practice restoration management is

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<sup>1</sup> The Scottish Biodiversity List (SBL) is a list of animals, plants and habitats that Scottish Ministers consider to be of principal importance for biodiversity conservation in Scotland, under the Nature Conservation (Scotland) Act 2004. The SBL therefore supersedes the UK BAP list of species and habitats (CIEEM, 2017). The definitions of SBL habitats are largely based on UK BAP definitions and provide standardised and recognised habitat descriptions that are useful in objectively determining habitat types and their potential importance. Therefore, these are referred to where necessary. Note, the SBL is currently being revised.

implemented successfully. This means that the condition of degraded habitats can be improved relatively rapidly using well established methods e.g. those advocated by Peatland ACTION.

### ***Site specific the quality and condition of blanket bog resource***

The original NVC survey, undertaken by Avian Ecology in 2022 (TA 6.2) recorded NVC communities M17, M19 and M25 with the M15 community often forming a mosaic with M17. In the NVC survey, a total of 59.6ha (8%) was mapped as a form of blanket bog but by far the majority of the Turbine Study Area was mapped as a form of wet heath and blanket bog mosaic (484.4ha, 62%). This demonstrates the widespread nature of peatland habitats across the Turbine Study Area and also gives some indication as to both the complexity of the Turbine Study Area in terms of topology and the complexity of the condition of the peatlands so that wet heath and blanket bog could often not easily be separated out as part of the NVC survey.

Following this, a detailed Peatland Condition Assessment (PCA) was also undertaken for the blanket bog within the Turbine Study Area (TA 6.3). It was reported that all the blanket bog within the Turbine Study Area had been subject to some degree of modification e.g. through climate change and nitrogen deposition, historic burning and drainage and extensive grazing pressure. The condition of the blanket bog habitat was variable and was on a continuum from very wet bog exhibiting characteristics of Near-Natural blanket bog to highly Modified and Actively Eroding areas<sup>2</sup>. The PCA provided a detailed assessment of the likelihood that the blanket bog recorded was active or otherwise.

The blanket bog in the Turbine Study Area is known to have been historically widely burnt and drainage ditches ploughed in some places. Additionally, grazing impacts are known to have been occurring on the Turbine Study Area for generations. The impacts from these current and historic land-use practices were noted throughout the vegetation surveys resulting in most of the blanket bog being considered as Modified with some areas having a greater degree of modification than other areas.

Small and large erosion features were frequently recorded. These features were clearly Actively Eroding and likely to have formed from areas which were once (historically) filled with bog pools on deep peat but have dried out/been dewatered resulting in the exposure of bare peat surfaces and the creation of erosion features.

Given the lack of surface water-logging features, and the conditions described, overall, it is considered that the majority of Turbine Study Area blanket bog was in a Modified or Actively Eroding condition and was likely to be largely inactive. However, this does not preclude that limited peat formation may occur at some locations under some circumstances, particularly in areas of lighter modification and areas of erosion which were in recovery.

Despite clear evidence of adverse historical land management activities there was some blanket bog which was considered to be in, or approaching, Near-Natural conditions. This was

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<sup>2</sup> These capitalised technical terms are used in the guidance that should be followed when describing the physical habitat condition.

likely due to a combination of a wet, warm climate in the west of Scotland and local topology resulting in basins which were more likely to retain water. The blanket bog in a Near-Natural condition should be considered likely active and is therefore of high ecological value and should, where possible, be avoided/protected.

Bog pools are mentioned in the Phase 1 Habitat description of blanket bog but are not included in the NVC descriptions (TA 6.2). Bog pools were also considered as part of the PCA survey (TA 6.3) and when they formed extensive systems they were mapped as part of the Near-Natural blanket bog. Outwith the Near-Natural blanket bog, bog pools were generally limited in number, isolated and not necessarily depicting active bog, but sometimes small wet depressions, or at the base of erosion features.

The blanket bog resource at Beinn Ghlas (including bog pools) was categorised into standardised 'conditions' in the PCA, and these are shown and assessed against various criteria in Table 1. The category of highest importance was the blanket bog considered to be at or approaching Near-Natural conditions which was considered likely to be actively forming peat, particularly under wet and warm conditions.

PCA Category	NVC <sup>3</sup>	Area (ha)	% of Turbine Study Area	Likely peat forming activity	SBL	Annex 1 (* priority)	Carbon and Peatland Class	Importance (ranked)	Importance
Near-Natural	e.g. M17a:M2	9.2	1.1	Likely active.	✓	✓*	e.g. Class 1	Highest	Part of the nationally important resource.
Lightly Modified	e.g. M17, M19	70.7	8.8	Likely inactive (but may have some limited activity where bog pools present).	✓	✓	e.g. Class 2	Medium	Part of the nationally important resource.
Modified	e.g. M15/M17, species poor M17, M15, M25, M20	459.8	57.0	Likely inactive.	✓	✓	e.g. Class 2/3	Lower	Not necessarily part of the nationally important resource, likely some areas of shallow soils and species poor examples of vegetation.
Actively Eroding	e.g. bare peat, M3 with M15/M17	6.2	0.8	Likely inactive.	✓	✓	e.g. Class 2	Medium	Not necessarily part of the nationally important resource but may on occasion form part of the nationally important resource.
Recovering Erosion	e.g. Bare peat, M3 with M15/M17 and M2	1.5	0.2	Likely inactive (but may have some limited activity where bog pools present).	✓	✓	e.g. Class 2	Medium	Part of the nationally important resource.
Not blanket bog habitat	See below	258.7	32.1	N/A	N/A	N/A	N/A	N/A	See below

*Table 1: The PCA for the Turbine Study Area, with example NVC communities, the area (ha) % of the Turbine Study Area, and likely peat forming activity as reported in TA 6.3, with an assessment of each PCA category compared to the SBL, Annex 1 habitat (\* priority), and the carbon and peatland importance criteria. The importance of each category is provided as a rank and considered in terms of the Nationally Important resource.*

<sup>3</sup> Note that different surveyors undertook the NVC and PCA survey at different times of year, and likely at different scales. Whilst there is some consistency with the NVC and PCA, they do not fully match. Differences in surveyor habitat mapping is a well-known and understood limitation to NVC surveys (e.g. Hearn *et al.*, 2011).

## Comparison with total National resource

There is an estimated 2,224,104ha (22,241km<sup>2</sup>) of blanket bog in the UK (JNCC, 2015) and 1,759,000ha (17,590km<sup>2</sup>) in Scotland (JNCC, 2015). The Turbine Study Area, according to the PCA, had an estimated 547.4ha of blanket bog habitat. Although, some areas of the blanket bog may be at or approaching Annex 1 priority habitat definitions, there is much less than 1% of the national total (0.03%).

In summary, some of the blanket bog habitat within the Turbine Study Area forms part of the Carbon and Peatland Map 'Nationally Important resource'. The quality and condition of the blanket bog within the Turbine Study Area was highly variable, with the most important blanket bog habitat being that of the Near-Natural blanket bog.

## Wet heath

The SBL definition of wet dwarf shrub heath (within the upland heath UK BAP habitat description) in favourable condition is defined as "*dominated by a mixture of cross-leaved heath, deergrass, heather and purple moor-grass over an understory of bog-moss*" (Maddock, 2011). Annex 1 Northern Atlantic wet heath includes M15 wet heath (JNCC, 2015). There is thought to be 467,714ha (4,677km<sup>2</sup>) of wet dwarf shrub heath in the UK and 370,000ha in Scotland (JNCC, 2015). There was an estimated 137.5ha of wet dwarf shrub heath within the Turbine Study Area, with an additional estimated 484.4ha mapped as a mosaic with blanket bog. This totals c. 621.9ha. This is much less than 1% (0.16%<sup>4</sup>) of the Scottish total. The wet dwarf shrub heath was reported as "*found on shallow gradient where there was moist to wet peat*" and "*vegetation was dominated by deergrass and ericoids including cross-leaved heath and common heather, while purple moor-grass, bog asphodel, acute-leaved bog-moss, woolly fringe moss and reindeer lichen*" (TA 6.2). The nearby designated sites (e.g. Glen Nant SSSI and Loch Etive Woods SAC) may have wet heath as a habitat, but not as a qualifying feature. Following due consideration of these factors, and also those listed in best practice guidance (CIEEM, 2018), the wet dwarf shrub heath was evaluated as being of local importance.

## Dry heath

The SBL definition of dry dwarf shrub heath (within the upland heath UK BAP habitat definition) in favourable condition is defined as being "*dominated by dwarf shrubs such as heather, bilberry, crowberry, and bell heather*" (Maddock, 2011). Annex 1 European dry heath includes dwarf shrub dominated vegetation with heather, bilberry and bell heather (JNCC, 2015). The dry dwarf shrub heath may have been approaching these definitions. There is thought to be 893,540ha (8,935km<sup>2</sup>) of dry dwarf shrub heath in the UK (JNCC, 2015), 479,000ha of which is in Scotland. There was an estimated 58.49ha of dry dwarf shrub heath within the Turbine Study Area, most of which was mapped as a mosaic with U4. With a further estimated 1.2 ha of dry heath was mapped within the Site Access Study Area. This totals 59.6ha which is much less than 1 % (0.01%) of the national total. Therefore, the dry dwarf shrub heath was not considered to be of sufficient quantity or quality to be considered nationally or internationally

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<sup>4</sup> Note that much of this is made up of the blanket bog/wet heath mosaic which has already been evaluated as part of the Turbine Study Area's blanket bog resource.

important. It was reported to be “*found in scattered localities across the site, on steep, often rocky or scree slopes where there is very shallow, well drained peat*” (TA 6.2). Following due consideration of these factors, and also those listed in best practice guidance (CIEEM, 2018), dry dwarf shrub heath in the Turbine Study Area and Site Access Study Area was evaluated as being of local importance.

## Flush

The SBL definition of flush (within the upland heath UK BAP priority habitat upland flush) is “*peat or mineral-based terrestrial wetlands in upland situations, which receive water and nutrients from surface and/or groundwater sources as well as rainfall. It is a varied habitat category but is typically dominated by sedges and their allies, rushes, grasses and occasionally wetland herbs and/or a carpet of bryophytes*” (Maddock, 2011). Note the upland flush definition excludes the soft rush dominated vegetation (MG10 and M23b) and purple moor-grass dominated M25a and M25b) (Maddock, 2011). Much of the upland flush habitat (NVC community M6, M11 and M37) within the Turbine Study Area is equivalent to this definition. Upland flush is widespread but local throughout the uplands of Scotland (Maddock, 2011). The extent has not been recorded across Scotland as it has not been comprehensively surveyed in many areas and tends to occur in small, sometimes numerous stands (Maddock, 2011). A series of M6 and M11 flushes and occasional M37 springs were recorded in the Turbine Study Area (but no area recorded as they were generally very small point locations). This habitat type is widespread across Scotland and Argyll. The quantity of this habitat within the Turbine Study Area was relatively small and usually isolated, although there was limited connectivity to fens in some areas. There are no designated sites nearby that are designated for upland flushes. Following due consideration of not only these factors, but also others listed in the guidance (CIEEM, 2018; 2019), upland flush habitat in the Turbine Study Area was considered to be of local importance.

## Semi-natural broadleaved woodland

Upland oak woodland, upland birch woodland and wet woodland are on the SBL and the semi-natural broadleaved woodland within the Turbine Study Area and Site Access Study Area was equivalent habitat to these definitions (within the UK BAP definitions for upland oak woodland, upland birch woodland and wet woodlands). The birch woodland was also similar to the Annex 1 descriptions of e.g. western acidic oak woodland. There is an estimated 91,000ha of birch woodland in Scotland (FCS, 2017). According to Maddock (2011) There are no precise figures for the total extent of upland oak woodland, but it is believed to be between about 70,000ha and 100,000ha in the UK. It is found throughout the north and west of the UK with major concentrations in Argyll as well as and Lochaber, Cumbria, Gwynedd, Devon and Cornwall.

There was very little woodland recorded in the Turbine Study Area, limited to small areas of W9 totalling 2.1ha. There was an estimated 37.5ha of semi-natural broadleaved woodland in the Site Access Study Area.

The semi-natural broadleaved woodland in the two Study Areas whilst not in the nearby designated sites (Glen Nant SSSI and Airds Park and Coille Nathais SSSI), was a similar habitat types within the local area and could be connected, particularly for mobile species such

as birds, but may also include the wide array of lichens and bryophytes recorded in the nearby designated sites. Following due consideration of not only these factors, but also others listed in the best practice guidance (CIEEM, 2018), the semi-natural broadleaved woodland habitat in the Study Area outside that of the designated site, was considered to be of regional importance.

### **All other habitat types**

All the other semi-natural habitat types mapped as part of the Phase 1 Habitat and NVC surveys for the Turbine Study Area and Site Access Study Area including e.g. acid grassland, bracken and scrub (but excluding e.g. coniferous plantation and introduced shrubs), are considered to be of local importance.

### **References**

- JNCC. 2015. *UK Terrestrial and Freshwater Habitat Descriptions 2015: Upland Habitats*. Available at: <https://data.jncc.gov.uk/data/b0b5e833-7300-4234-8ae5-bdbf326e854c/habitat-types-uplands.pdf>.
- Maddock, A (ed). 2008. *UK Biodiversity Action Plan; Priority Habitat Descriptions*. BRIG, updated 2011.
- Hearn, S. M.; Healey, J. R.; McDonald, M. A.; Turner, A. J.; Wong, J. L. G.; Stewart, G. B. 2011. *The repeatability of vegetation classification and mapping*. Journal of Environmental Management 92, pp. 1174-1184.

## Land-take Calculations for Beinn Ghlas EcIA

Direct impacts of land-take on semi-natural habitats have been considered by overlaying the Proposed Development layout supplied by the Applicant on to the Phase 1 Habitat and NVC maps (Figure 6.3a-c) and the PCA map (Figure 6.4).

Parameters that are 'permanent' for the lifetime of the Proposed Development are described in Table 2 as the 'operational loss'. Parameters that are temporary and relate to the construction phase of the Proposed Development are described in Table 2 as 'construction loss'.

The land-take calculations have been split into two discrete areas as shown in Figure 6.1:

- The Site Access Study Area from NM 968 324 in the north Fearnoch Forest until the NM 983 272.
- The Turbine Study Area which includes all other infrastructure i.e. the seven turbine locations, with associated crane pad hard standings, construction compound and the tracks.

These areas correspond with the two habitat surveys that were undertaken and are reported in TA 6.2 and TA 6.4 and are shown in Figure 6.1.

The predicted operational loss includes all elements of the Proposed Development that will remain beyond that of the construction, including a 3m buffer around all tracks to take account of items such as drainage and cable laying. The predicted construction loss allows for assumed construction impacts around all elements of the Proposed Development which will be reinstated upon completion of construction (for details see the Outline Peat Management Plan TA 8.3).

As per best practice guidance using the mitigation hierarchy, the design layout was discussed with the design team, to first avoid bog habitat, particularly Near-Natural blanket bog and then to minimise impacts. The construction loss was then discussed and considered at length by the design team to make sure that it reflected biological reality as regards likely construction effects and includes construction elements such as 'cut and fill', a working area and other construction impacts such as machinery movement. For the purposes of transparency, the details for the predicted construction land-take habitat loss parameters are provided in Table 2, with an explanation of the buffers used for each element, as provided by the design team. The construction loss parameters include operational loss parameters (i.e. they are not additive).

Location	Habitat Loss	Parameter	Shapefile	Rational	Area
Site Access track at NM 968 324 in the north Fearnoch Forest until the NM 983 272.	Permanent – operational loss	Permanent track from NM 968 324 in the north Fearnoch Forest until the NM 983 272 (original Site Boundary)	Sections from: <ul style="list-style-type: none"> <li>EXISTING_TRACK_P662905_BNG_A_20240125</li> <li>N133_7T_Road_Footprint_Non_Float_P662905_BNG_A_20250314</li> <li>N133_7T_Perm_Batters_P662905_BNG_A_20250314</li> </ul>	Section of track from the Site Access track at NM 968 324 in the north Fearnoch Forest until the NM 983 272 made up of 'existing track' which will be upgraded and new non floating track. This includes large sweeps where the track takes tight turns etc. plus an additional 3m wide 'batters' either side of the track to account for drainage and cable laying. The 'batters' would be planned for full restoration wherever possible but have been put in the permanent loss as a precaution.	86,488 m <sup>2</sup>
	<b>Total Site Access permanent loss</b>	<b>All permanent loss from the Access Track</b>			<b>86,488 m<sup>2</sup></b>
	Temporary – construction loss – access track	Temporary track works area around track	Permanent operational loss plus 7.5m buffer  SPA - Oversail SPA - Overrun Earthworks – cut Earthworks fill  Sections from: N133 7T - Cut Footprint N133 7T - Fill Footprint	A 7.5m buffer was placed around each side of all the permanent infrastructure. The buffer was discussed with the design team and takes into account any impact from e.g. works vehicles etc. The 7.5m buffer was generally considered a suitably wide buffer to account for any chance of additional impacts, although this is likely an over estimation in many places. Cut and fill and overrun shapefile were also provided and used. These were merged with the 7.5m buffer. Therefore, the minimum distance of estimated construction loss was a 7.5m buffer. If the cut and fill were predicted to go beyond this, it was also included. Note that almost all the cut and fill and oversail was well within the 7.5m buffer.	213,427m <sup>2</sup>
	Temporary – construction loss – compound	Temporary construction compound	KIL2040_250603_Nursery_CC_Access Nursery_Gardens_CC_P662905_BNG_A_20250317	The temporary construction compound within the nursery garden was given a 7.5m construction buffer. The two potential tracks to this compound were both assumed to be the same width as the main access track, plus 3m batters. The tracks was also given a 7.5m buffer construction buffer.	19,712 m <sup>2</sup>

Location	Habitat Loss	Parameter	Shapefile	Rational	Area
	<b>Total Site Access construction loss</b>	<b>All permanent and temporary loss for the Site Access from NM 968 324 in the north Fearnoch Forest until the NM 983 272 (original Site Boundary).</b>		<b>Combination of temporary loss and permanent loss.</b>	<b>215,379m<sup>2</sup></b>
Wind Farm Area	Permanent – Operational loss	Permanent crane pad hard standing	N133_7T_CRANEPAD_PERM_P662905_BNG_A_20250314	Seven permanent hard standing areas. Each c. 3,100m <sup>2</sup> .	21,736m <sup>2</sup>
	Permanent – Operational loss	Met mast	New Met Mast Hardstanding	A single met mast location.	196m <sup>2</sup>
	Permanent – Operational loss	Substation	N133_7T_Substation_P662905_BNG_A_20250314	A single substation location.	596m <sup>2</sup>
	Permanent – Operational loss	Permanent track	Sections from: <ul style="list-style-type: none"> <li>EXISTING_TRACK_P662905_BNG_A_20240125</li> <li>N133_7T_Road_Footprint_Non_Float_P662905_BNG_A_20250314</li> <li>N133_7T_Perm_Batters_P662905_BNG_A_20250314</li> <li>N133_7T_Road_Footprint_Float_P662905_BNG_A_20250314</li> <li>N133_7T_Junctions_P662905_BNG_A_20250319</li> </ul>	Section of track from NM 983 272 to all turbine and up of 'existing track' which will be upgraded and new non floating track, floating track plus an additional 3m wide 'batters' either side of the track to account for drainage and cable laying and a series of junctions. The 'batters' would be planned for full restoration wherever possible.	68,605m <sup>2</sup>
	<b>Total Wind Farm Area operation loss</b>	<b>All permanent loss from the Wind Farm Area including around tracks and crane pad locations.</b>		<b>Combination of all permanent infrastructure</b>	<b>91,705m<sup>2</sup></b>
	Temporary - construction loss	Temporary crane pad hard standings	N133_7T_CRANEPAD_TEMP_P662905_BNG_A_20250314	Seven temporary hard standing areas around each crane pad. Each c. 3,600m <sup>2</sup> .	25,288m <sup>2</sup>
	Temporary - construction loss	Temporary construction compound	N133_7T_ConstructionCompound_P662905_BNG_A_20250314, plus a 10.5m buffer.	A single area of 5,309m <sup>2</sup> plus a 10.55m buffer to take account of any additional construction impacts.	9,225m <sup>2</sup>
	Temporary - construction loss	Temporary track to construction compound	N133_7T_Road_Footprint_Temporary_P662905_BNG_A_20250314	A single section of track with an area of 502m <sup>2</sup> .	502m <sup>2</sup>
	Temporary - construction loss	Temporary track works area	Permanent operational loss plus 7.5m buffer Plus	A 7.5m buffer each side of all the permanent infrastructure. The buffer was discussed with the design team and takes into account	194,120m <sup>2</sup>

Location	Habitat Loss	Parameter	Shapefile	Rational	Area
				any additional impact from e.g. works vehicles. The 7.5m buffer was generally considered a suitably wide buffer to account for any chance of additional impacts, although it is a likely an over estimation in many places.	
	Temporary - construction loss	Temporary impact around crane pad	N133_7T_CRANEPAD_P662905_BNG_A_20250314	A 10.5m buffer was placed around both the permanent and temporary crane pad areas. The buffers were discussed with the design team and takes into account any additional impact from construction. This would all be planned for full restoration.	99,280m <sup>2</sup>
	Temporary - construction loss	Temporary impact from cut and fill	Sections from: <ul style="list-style-type: none"> <li>N133 7T - Cut Footprint</li> <li>N133 7T - Fill Footprint</li> </ul>	Cut and fill shapefile were also provided and used. These were merged with the 7.5m buffer for the track etc or the 10.5m buffer for the hard standings and construction compound. Therefore, the minimum distance of estimated construction impact was a 7.5m buffer or 10.5m. If the cut and fill were predicted to go beyond this, it was also included. Note that almost all the cut and fill was well within the 7.5m buffer.	42,891m <sup>2</sup>
	<b>Total wind farm area Construction loss</b>	<b>All permanent and temporary loss the wind farm area</b>		<b>Combination of temporary loss and permanent loss.</b>	<b>241,332m<sup>2</sup></b>

Table 2: Summary of Predicted Operation and Construction Habitat Loss Parameters.

Note, there were occasional differences in the metrics of separated elements and combined elements in Table 2 due to occasional overlap between components. Any overlaps have been merged in QGIS so they are not double counted. The totals shown are the merged totals and give the total land area that is predicted to be lost/impacted through operation and construction.

The operational and construction layouts were 'clipped' from the Phase 1 Habitat, NVC and (where relevant) PCA polygons in QGIS. It should also be noted that the habitat boundaries are indicative only because e.g. there is often a gradation between different habitat types and rarely a distinct boundary.

There are clearly several limitations/assumptions associated with the land-take calculations (e.g. assumptions in 'cut and fill' buffers and indicative habitat boundaries). Assumptions made are considered to be representative and caution has been applied in making these assumptions. The land-take calculations should be considered as an estimation of predicted loss, rather than an absolute measure.

### **Land-take of the Site Access**

The land-take of the existing track from the Site Access at NM 968 324 in the north Fearnoch Forest until NM 983 272 has been presented separately from the other elements of the Proposed Development. This is because the existing track is largely located on, or beside modified habitat that is already impacted by existing infrastructure and not on the open hillside where the turbines are located.

Note that there were small areas around the nursery garden construction compound that had not had the full habitat surveys completed. The habitats in these areas were provided as a desk-based exercise using aerial imagery and the data that was collected.

The estimated habitat loss as a consequence of land-take caused during construction and operation of the Site Access is presented in Table 3.

Phase 1 Habitat	NVC	Operation Loss (subset of construction loss)		Construction Loss	
		m <sup>2</sup>	ha	m <sup>2</sup>	ha
A1.1.1 Semi-natural broadleaved woodland	W11	7024.1	0.702	20462.4	2.046
	W11:W1	664.4	0.066	1309.1	0.131
	W11:W7:W4	2527.8	0.253	8587.4	0.858
	W4	293.8	0.029	1008.9	0.101
	W4:W7	524.4	0.052	2135.9	0.213
	W7:W11	5620.8	0.561	1513.6	0.151
	W7:W11	0.0	0.000	21277.5	2.128
	A1.1.1 Total	16638.0	1.661	56277.4	5.626
A1.2.2 Coniferous plantation	Coniferous plantation	11278.7	1.128	41511.9	4.151
	Coniferous plantation -wind throw	56.6	0.006	282.6	0.028
	A1.2.2 Total	11335.3	1.134	41794.5	4.179
A4.2 Felled plantation	Felled plantation	1273.2	0.128	4219.0	0.422
	Felled: regen	1687.6	0.169	5442.0	0.544
	A4.2 Total	2960.7	0.297	9661.1	0.966
B1.1 Unimproved acid grassland	U5:MG10a	4417.6	0.441	9554.1	0.955
	U5:MG10a:MG9	87.6	0.009	454.9	0.045
	U5:MG10a:U20	4228.4	0.423	8626.8	0.863
	B1.1 Total	8733.6	0.873	18635.7	1.863
B1.2 Semi-improved acid grassland	U4	926.4	0.093	7513.3	0.750
	U4:MG10a	1753.5	0.175	4076.3	0.408
	U4:MG10a:U20:Track	922.6	0.092	7336.8	0.734
	B1.2 Total	3602.5	0.360	18926.4	1.892
B2.2 Neutral grassland	MG9	1064.6	0.107	4139.5	0.414
B5 Marshy grassland	MG10a	1078.9	0.109	2628.5	0.263
	MG10a:U5:U20	352.4	0.036	1988.6	0.198
	MG10a:U5:U4:U20	1330.9	0.133	3355.7	0.336
	B5 Total	2762.3	0.278	7972.8	0.797
C1.1 Bracken	U20	388.1	0.038	1637.1	0.164
	U20:MG10a:U5	399.0	0.040	2242.9	0.224
	U20:U5	242.6	0.024	1181.3	0.118
	U20:W11	417.1	0.042	1444.3	0.144
	C1.1 Total	1446.7	0.144	6505.6	0.650
D1.1 Dry heath	H10a	625.4	0.063	1606.9	0.161
J1.4 Introduced scrub	Introduced scrub	195.6	0.020	706.7	0.071
J3.6	Car park:W23:U5:U20:OV27:W11	31.6	0.003	452.4	0.044
Buildings, tracks etc	Car park:W23:U5:U20:OV27:W11	0.0	0.000	352.0	0.035
	Track	36837.5	3.683	46389.8	4.639
	J3.6 Total	36869.2	3.686	47194.1	4.718
Private	Private	236.8	0.023	1779.2	0.178
<b>Total</b>		<b>86488.2</b>	<b>8.648</b>	<b>215217.0</b>	<b>21.517</b>

Table 3: Predicted direct habitat loss from the Site Access at operation and construction.

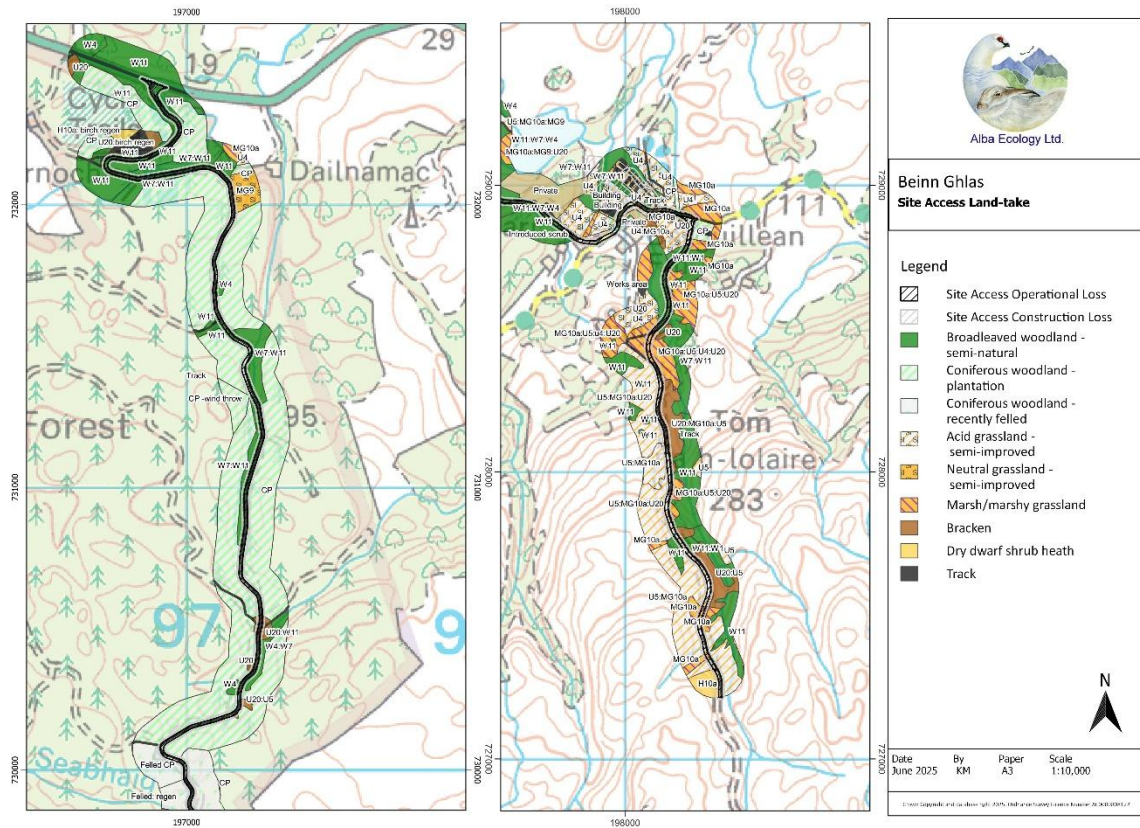


Figure 3: Predicted land-take for the Site Access.

Figure 3 demonstrates that much of the new Site Access will be located on the existing track which will be upgraded. There will be some additional impact on the surrounding, adjacent habitats including from woodland and plantation.

It is noted that the impacts on woodland is likely an overestimate and there is only expected to be felling of 1.61 ha of trees based on the forestry assessment (Chapter 13: Other Issues of the EIA Report).

## Land-take from the Turbine Study Area

The estimated habitat loss as a consequence of land-take caused during construction and operation of the Proposed Development (excluding the Site Access) is presented in Table 4.

Broad habitat type	Phase 1 Habitat	NVC	Operation Loss (subset of construction loss)		Construction Loss	
			m²	ha	m²	ha
Not bog/wet heath	Scrub A2.1	W9	409.1	0.041	937.0	0.094
	Acid grassland B1.1	U4	133.9	0.013	200.6	0.020
		U4/U5d	34.3	0.003	728.9	0.073
		U5d/U6a	1071.7	0.107	2,711.1	0.271
		U6a	403.0	0.041	7039.6	0.703
		B1.1 Total	1,642.9	0.164	10,680.2	1.067
	Marshy grassland	M23a	206.7	0.02	1329.5	0.133
	Dry heath D2	H10a	54.8	0.005	236.0	0.024
	Dry heath/acid grassland D5	H10a/U4	849.8	0.084	3,602.4	0.361
	Tracks etc J3.6	Hardstanding	22,400.0	2.239	31,411.0	3.140
Wet heath	Wet heath D2 with wet heath/dry heath and acid grassland	M15	7,342.6	0.734	20,046.8	2.005
		M15/H10a/U4/U5d	1,123.9	0.112	4,225.6	0.423
		M15/U4	602.5	0.06	1,994.9	0.199
		D2 Total	9,069.0	0.906	26,267.4	2.627
Wet heath/blanket bog mosaics	Wet heath blanket bog D2/E1.6.1	M15/M17a	15,290.6	1.529	48,914.0	4.892
		M15/M17a(40%)	15,218.4	1.522	39,186.1	3.919
		M15/M17a/U4(10%)/U5d(10%)	23,410.1	2.341	65,763.4	6.576
		M15/U5d/M17a	158.1	0.016	1,948.9	0.195
		D2/E1.6.1 Total	54,077.2	5.408	15,5812.4	15.582
Blanket bog	Blanket bog	M17a	2,603.2	0.26	9,260.7	0.926
		M19b	392.3	0.039	1,795.2	0.180
		E1.6.1 Total	2,995.5	0.299	11,056.0	1.106
Total			91,704.9	9.166	241,332.0	24.134

Table 4: Predicted Direct Habitat Loss from the Proposed Development Operation and Construction.

The majority of the habitat predicted lost as a result of the Development Footprint within the wind farm area would be from the blanket bog - wet heath mosaic habitat with a total of c. 15.6ha predicted to be lost at construction (Table 4). Much smaller amounts are predicted to be lost from other habitat types for example blanket bog (c. 1.1ha at construction) and wet dwarf shrub heath (c. 2.6ha at construction). Operational habitat loss is a subset of construction habitat loss and is not additional and amounts to c. 5.4ha loss of blanket bog - wet heath mosaic.

### **Consideration of Wet heath/blanket bog mosaic**

The Proposed Development was carefully designed to avoid as much blanket bog, and deep peat as possible (e.g. TA 6.9). Therefore, when assessing the impact of the Provided Development on blanket bog, the way in which the wet heath/blanket bog mosaics is treated requires careful consideration.

Figure 3 gives an example of the careful design in relation to peatlands at location of T1. It shows the predicted operational loss and the predicted construction loss overlaying the NVC data as M15/M17a. One of the defining characteristics of wet heath (M15) is that it has peat depths <0.5m, whereas blanket bog (M17a) has peat depth >0.5m. However, habitat surveyors cannot see the underlying soil depth when surveying and habitats transition between types disregarding the somewhat arbitrary and artificial construct of the 0.5m peat depth boundary between these habitat types. Therefore, in some circumstances habitat surveyors necessarily provide mosaics, in this case M15/M17a. The detailed underlying peat depth data (provided by Fluid) clearly demonstrates the varied nature of the peat depth in the area, with the light pink showing peaty soils (<0.5m), the darker pink showing peat depths of 0.5m-1m and the purple showing areas with >1m peat depth. Clearly the area had changeable peat depth which influenced the formation of habitat mosaics. Note, all the area underlying T1 was classified as Modified in the PCA (Figure 4) noting impacts of grazing, sitka spruce trees and small erosion features.

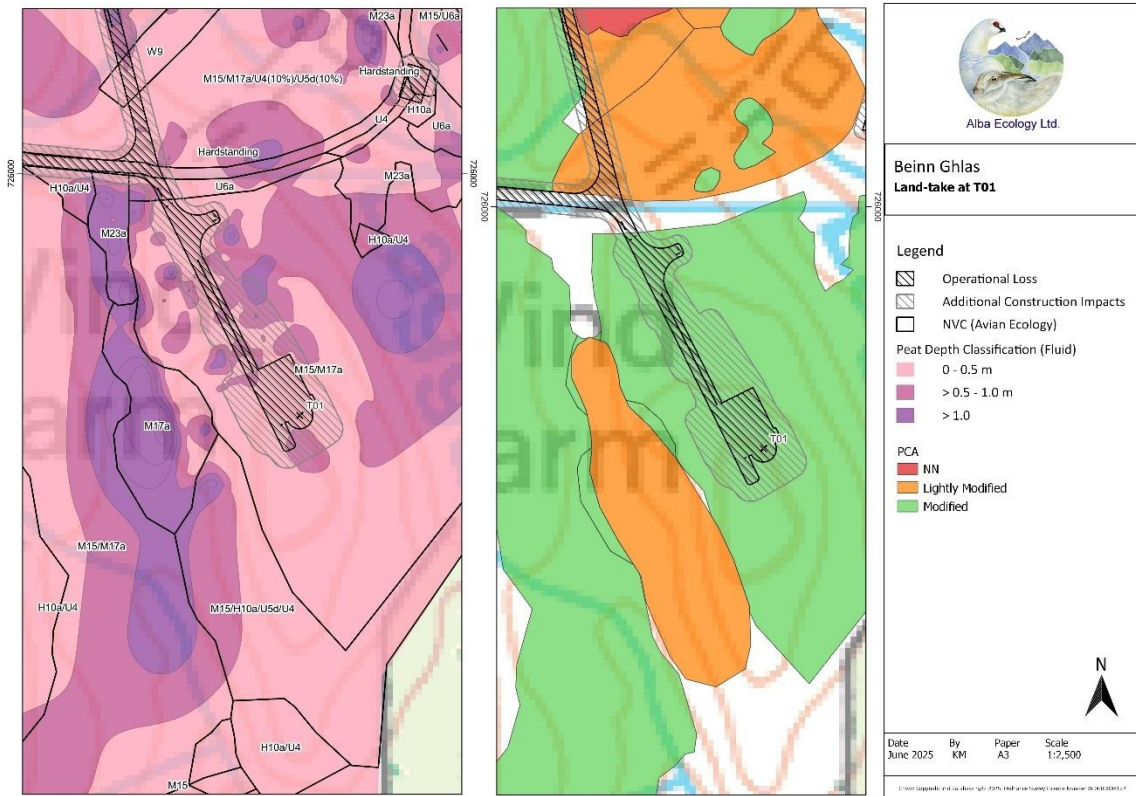


Figure 4: Predicted land-take for proposed T1.

The permanent infrastructure at T1 has demonstrably been designed to minimise impacts on the deep peat and therefore the (technically) blanket bog (M17a) element of the habitat mosaic (although, arguable, the nature of the very small pockets of the deep peat would mean it was not in fact ‘blanket’ bog). The careful design including targeted site visits to inform design reported in TA 6.9 Vegetation Survey of Turbine Locations for Beinn Ghlas with e.g. areas of clearly deep peat with bog pools noted and subsequently avoided.

Figure 5 gives a similar example where the siting of the infrastructure has attempted to avoid deep peat as far as possible at T4 and the varying peat depth of the mosaic, in this instance identified as M15/M17a (40%).

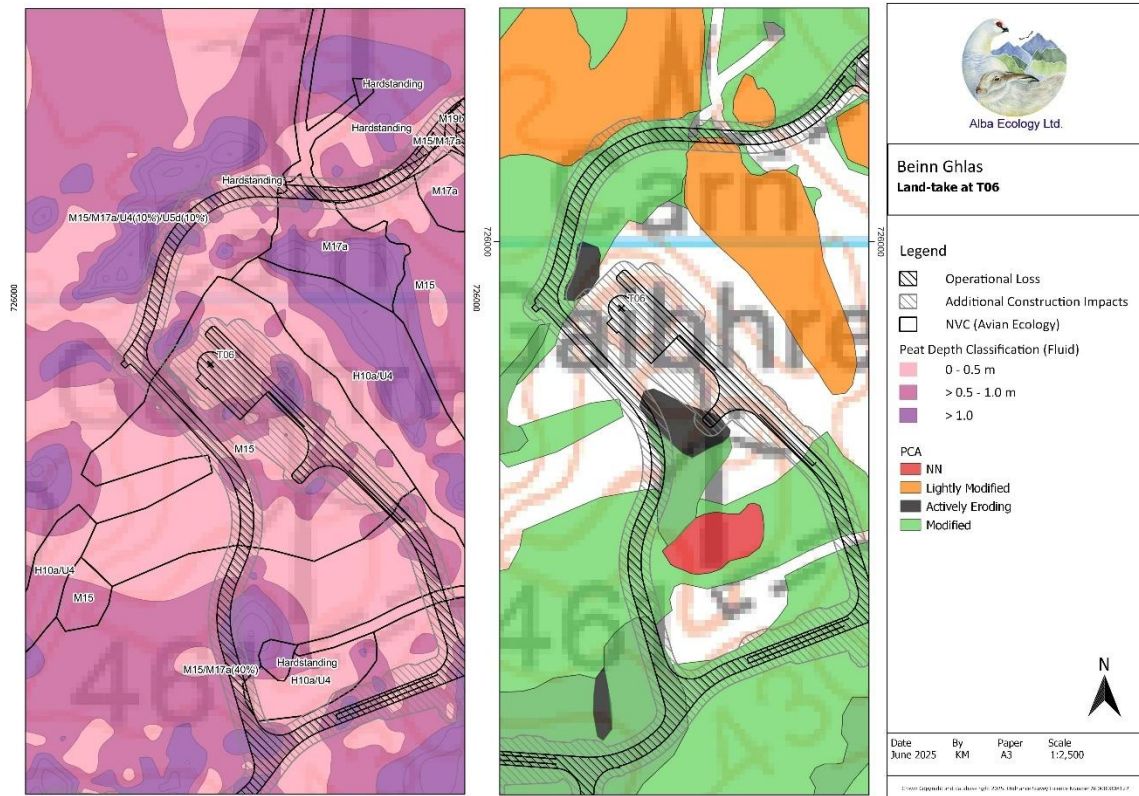


Figure 5: Predicted land-take for proposed T4.

Embedded mitigation includes micro-siting (up to 50m) which would be used to relocate infrastructure to further avoid any sensitive habitats, such as any construction impacts on bog pools. This would necessarily be carried out on the ground under supervision by the ECoW and with agreement of Argyll and Bute Council. Embedded mitigation also includes, where possible, preserving the topsoil/acrotelm from the habitat that is lost and laying it over the top of the areas to be reinstated (e.g. over the 'cut and fill'). This will provide a native, local provenance seed source as well as viable root matter for the areas being reinstated. Therefore, the reinstated vegetation is likely to be similar, if not the same, habitat type as previously present.

When assessing the overall impact on blanket bog, it would therefore not reflect the effort that went into the avoidance and minimisation of the design, if all the wet heath/blanket bog mosaic was assessed as blanket bog. Therefore, for the purposes of assessment, and to avoid spurious accuracy, a proportion of the wet heath/blanket bog mosaic will be treated as blanket bog as per Table 5.

Phase 1 Habitat (NVC)	Operation Loss (ha)	Construction Loss (ha)	comment	Operation Loss (ha)(subset of construction loss)			Construction Loss (ha)		
				Wet heath	Blanket bog	Acid grassland	Wet heath	Blanket bog	Acid grassland
M15/M17a	1.53	4.89	No proportions given in NVC survey. Assume equal split: M15 wet heath = 50%, blanket bog M17a = 50%.	0.765	0.765	0.00	2.445	2.445	0.00
M15/M17a(40%)	1.52	3.92	Using NVC survey data M15 wet heath = 60%, M17a blanket bog = 40%.	0.912	0.608	0.00	2.352	1.568	0.00
M15/M17a/U4(10%)/U5d(10%)	2.34	6.58	No proportions given in NVC survey in relation to wet heath and blanket bog with 20% given to acid grassland U4 and U5d.  Assume equal split M15 wet heath = 40%, blanket bog M17a = 40%.	0.936	0.936	0.468	2.632	2.632	1.316
M15/U5d/M17a	0.016	0.20	No proportions given in NVC survey. Assume equal split: M15 wet heath = 33%, blanket bog M17a = 34% (to be cautious) and acid grassland U5d = 33%.	0.005	0.006	0.005	0.066	0.068	0.066
<b>Wet heath/blanket bog mosaic</b>	<b>5.41</b>	<b>15.58</b>		2.618	2.315	0.473	7.495	6.713	1.382

Table 5: The proportion of the wet heath/blanket bog mosaic that will be treated as blanket bog, wet heath and acid grassland for assessment purposes.

Therefore, for assessment purposes the amount of each habitat type for assessment will be as shown in Table 6.

Phase 1 Habitat	Operational Loss (ha)(subset of construction loss)	Construction Loss (ha)
Blanket bog <sup>5</sup>	2.614	7.819
Wet heath <sup>6</sup>	3.524	10.122
Dry heath	0.005	0.024
Dry heath/acid grassland	0.084	0.361
Scrub	0.041	0.094
Acid grassland <sup>7</sup>	0.637	2.449
Marshy grassland	0.02	0.133
Tracks and Hardstanding	2.24	3.14
Total	9.166	24.142

Table 6: The amount (ha) of Phase 1 Habitats habitat predicted to be lost/impacted as a consequence of land-take at operation and construction of the Proposed Development.

For assessment purposes, the same procedure and assumptions needs to be taken for the total site resource. Table 7 provides the wet heath/blanket bog mosaics split between wet heath, blanket bog and acid grassland. When assessing habitats the wet heath/blanket bog mosaics will be included in the assessment as either wet heath, blanket bog or acid grassland following Table 7.

<sup>5</sup> Includes blanket bog (Table 4), and plus a proportion of the wet heath/blanket bog mosaics as per Table 5.

<sup>6</sup> Includes wet heath, and wet heath mosaics (Table 4) plus a proportion of the wet heath/blanket bog mosaics as per Table 5.

<sup>7</sup> Includes acid grassland (Table 4), plus a proportion of the wet heath/blanket bog with proportions of acid grassland mosaics as per Table 5.

Phase 1 Habitat	NVC	Rational	Total provided by NVC survey	Resource split by habitat type (Ha)		
Wet heath/blanket bog mosaics			484.4	Wet heath	Blanket bog	Acid grassland
Wet heath/blanket bog	M15/M17a	No proportions given in NVC survey. Assume equal split: M15 wet heath = 50%, blanket bog M17a = 50%.	64.5	32.3	32.3	0
Wet heath/blanket bog/acid grassland	M15/M17a(15%)/U4(10%)	Using NVC survey data M15 wet heath = 75%, M17a blanket bog = 15%, acid grassland U4 = 10%.	7.1	5.3	1.1	0.7
Wet heath/blanket bog	M15/M17a(20%)	Using NVC survey data M15 wet heath = 80%, M17a blanket bog = 20%	5.5	4.4	1.1	0
Wet heath/blanket bog/acid grassland	M15/M17a(20%)/U4(10%)/U5d(5%)	Using NVC survey data M15 wet heath = 65%, M17a blanket bog = 20%, acid grassland U4 = 15%.	13.9	9.1	2.8	2.1
Wet heath/blanket bog	M15/M17a(40%)	Using NVC survey data M15 wet heath = 60%, M17a blanket bog = 40%.	67.0	40.2	26.8	0
Wet heath/blanket bog/acid grassland	M15/M17a(50%)/U5d(15%)/U6a(5%)	Using NVC survey data M15 wet heath = 30%, M17a blanket bog = 50%, acid grassland U4 = 20%.	105.4	31.6	52.7	21.1
Wet heath/blanket bog/acid grassland	M15/M17a/U4(10%)/U5d(10%)	No proportions given in NVC survey in relation to wet heath and blanket bog with 20% given to acid grassland U4 and U5d. Assume equal split M15 wet heath = 40%, blanket bog M17a = 40%.	120.0	48.0	48.0	24.0
Wet heath/blanket bog/acid grassland	M15/M17a/U5d	No proportions given in NVC survey. Assume equal split: M15 wet heath = 33%, blanket bog M17a = 34% (to be cautious) and acid grassland U5d = 33%.	14.7	4.9	5.0	4.9
Wet heath/blanket bog/acid grassland	M15/U5d/M17a	No proportions given in NVC survey. Assume equal split: M15 wet heath = 33%, blanket bog M17a = 34% (to be cautious) and acid grassland U5d = 33%.	7.4	2.4	2.5	2.4

Phase 1 Habitat	NVC	Rational	Total provided by NVC survey	Resource split by habitat type (Ha)		
Wet heath/blanket bog mosaics			484.4	Wet heath	Blanket bog	Acid grassland
Wet heath/blanket bog/acid grassland	M17a/M15/U5d/U4	No proportions given in NVC survey. Assume equal split: M15 wet heath = 33%, blanket bog M17a = 34% (to be cautious) and acid grassland U5d and U4 = 33%.	61.8	20.4	21.0	20.4
Wet heath/blanket bog/acid grassland	M19b(60%)/M15/U5d/U6a	No proportions given in NVC survey in relation to wet heath and acid grassland with 60% given to blanket bog. Assume equal split M15 wet heath = 20%, acid grassland (U5/U6) = 20%.	12.0	2.4	7.2	2.4
Wet modified bog wet heath/blanket bog	M25/M17a/M15(10%)	Assume M25 is part of the blanket bog resources (M25 is often recorded on deep peat as 'wet modified bog'). Blanket bog M17a and M25 = 90%, wet heath M15 10%.	5.10	4.6	0.5	
<b>Wet heath/blanket bog mosaics</b>			<b>484.4</b>	<b>205.5</b>	<b>200.9</b>	<b>78.0</b>

Table 7: The resource wet heath/blanket bog mosaics from the NVC survey split between wet heath, blanket bog and acid grassland.

## Consideration of peatland condition

The predicted loss of blanket bog (including all wet heath/blanket bog mosaics) considered in relation to the condition of the blanket bog as a consequence of land-take caused during construction and operation of the Proposed Development (excluding the Site Access) is presented in Table 8. Note again that the operational loss is a subset of construction loss and is not additional.

	<b>Operation Loss (m<sup>2</sup>)(subset of construction loss)</b>	<b>Operation Loss (ha)(subset of construction loss)</b>	<b>Construction Loss (m<sup>2</sup>)</b>	<b>Construction Loss (ha)</b>
Near-Natural	6.7	0.001	401.7	0.041
Lightly Modified	7,840.3	0.78	27,176.5	2.716
Modified	50,077.1	5.0	140,727.4	14.1
Actively Eroding	272.5	0.03	1,319.6	0.132
<b>Total</b>	<b>581,96.6</b>	<b>5.819</b>	<b>169,625.2</b>	<b>16.963</b>

*Table 8: The predicted land-take of each peatland condition category as per TA 6.3. Note that the calculations included all the wet heath/blanket bog mosaics.*

Note that the metrics in Table 8 includes the wet heath/blanket bog mosaic, which was largely in a Modified condition.

All the blanket bog in the Turbine Study Area has been impacted through some degree of current and historic management practices (TA 6.3). However, the blanket bog in Near-Natural condition was deemed to be the best quality, and of highest importance as it was deemed that it could potential be actively forming peat. On this basis, it was advised that the Near-Natural blanket bog should be completely avoided.

TA 6.9 reported:

*“The proposed turbine locations, along with the proposed hardstanding, turning circles and track (together termed the Development Footprint), were walked in February 2023 using a design layout that was current at that time. Subsequently, based on detailed comment regarding the habitats, peatlands and areas of deep peat some of the Development Footprint was altered to deliberately avoid more sensitive peatland habitat and areas of deep peat, in line with best practice guidance. The final design layout was then re-visited in October 2023. The vegetation type at each proposed turbine location was assessed using quadrat and transect data.*

*Impacts from grazing were noted throughout the vegetation, including hoof prints, bite marks, dung and deer tracks.*

*Given the lack of surface water-logging features, and the conditions described, overall, it is considered that the blanket bog habitat within the Development Footprint was likely to be largely inactive. This does not preclude that limited peat formation may occur at some locations under some circumstances.*

*The blanket bog habitat within the Development Footprint did not meet the SSSI selection criteria and is not considered to be of “high quality and in a near-natural condition”.*

However, according to the land-take calculations a total of 6.7m<sup>2</sup> (<0.01ha) and 401.7m<sup>2</sup> (0.04ha) of Near-Natural blanket bog are predicted to be lost as a consequent of land-take at operation and construction respectively. These predicted impacts on Near-Natural blanket bog were from two specific locations shown in Figures 5 and 6.

### **Impacts on Near-Natural blanket bog along track to proposed T2, T3 and T4**

Figure 6 shows a section of Near-Natural blanket bog beside the track to proposed T2. This includes a tiny amount of predicted loss at operation (6.7m<sup>2</sup>) which was within the 3m batter added to the track design (either side of the track to take account of drains and cabling). The construction loss is larger which includes a cut and fill plus a 7.5m buffer.



*Figure 6: Predicted Land-take of Near-Natural blanket bog, track to proposed T2.*

The Near-Natural blanket bog at this location was in very close proximity to the existing wind farm infrastructure and is potentially supported by impeded drainage associated with the current access track (Photos 1 and 2). Clearly there is already a track beside the Near-Natural blanket bog and the Near-Natural blanket bog and wind farm are currently co-existing. Embedded mitigation is included in the design as the section of track for this location is designed as floating track.



Photos 1 and 2: Photos of the Near-Natural blanket bog near the track to proposed T2, T3 and T4 (Taken from TA 6.3).

Figure 6 shows that the predicted impact is on the edge of the mapped Near-Natural blanket bog and the section predicted to be impacted by operational loss is on a section of shallow soils. It is within the 3m batter added to the track as potential additional operational loss. The wind farm design has this section marked as floating track.

It is highly likely that at this location the land-take calculations are overestimated for direct impacts. Floated tracks will not have associated track drain around them, and they are specifically designed not to impeded drainage of the bog. In the land-take calculations all the floating tracks were given a 3m batter (for drains and cables despite there being no drains associated with floating track), plus cut and fill and a 7.5m construction buffer of additional impacts giving a 26.5m wide construction impact. There will be no/mimical 'cut and fill' in these areas as the floating track will be essentially lain over the surface of the bog, and so machine works will be accordingly minimised. When consulting with the design team it was confirmed that *"For floating road there will be much less of a construction disturbance. Effectively, it should be a case of a load ground bearing dozer blading out a level surface c.10m wide to lay the geogrid and lay stone layers to provide a 5.5m effective track width. Cable trench laid within the floating track construction depth of c.0.80m to avoid it acting as a "drain" to the adjacent peat. The contractor should be able to do this with minimal disturbance either side maybe 1m either side so that the full width of geogrid is level to roll out."* (C. Hamer, 2024, pers comm.)

This demonstrates, that for floating tracks the operational land-take of 11.5m is likely to more representative of the actual land-take compared to the construction land-take used for land-take purposes and that consequently, in these instances, there is an overestimation of land-take.

Embedded mitigation includes micro-siting (50m) which would be used to relocate infrastructure to avoid the Near-Natural blanket bog and any bog pools. This would necessarily be carried out on the ground under supervision by the ECoW and with agreement of Argyll and Bute council. Clearly, the Near-Natural blanket bog can and should be avoided. At this specific location shown in Figure 5, it will be important to ensure there is any 'cut and fill' or impact from vehicles is concentrated to the east of the track, and not on the Near-Natural blanket bog. It will also be important not to cause drainage from the blanket bog, i.e. if the current track has supported the wetting up of the area due to impeded drainage, then the barrier to drainage should be retained.

Embedded mitigation includes, where possible, preserving the acrotelm from the habitat that is lost and laying it over the top of the areas to be reinstated (e.g. over the 'cut and fill'). This will provide a local seed source as well as viable root matter for the areas being reinstated. At this specific location it should be completed as soon as possible after the removal of the acrotelm.

Taking these aspects into consideration, and including the specific mitigation for this location, it is considered that all the Near-Natural and so likely active blanket bog can and will be avoided by the Proposed Development at this location.

### ***Impacts on Near-Natural blanket bog along track to proposed T7, and T11***

Figure 7 shows a section of Near-Natural blanket bog beside the track and temporary construction compound. All of the impact on Near-Natural blanket bog is predicted at construction which includes a 7.5m buffer around the track and a 10.5m buffer around the construction compound.



***Figure 7: Predicted Land-take of Near-Natural blanket bog track to and the construction compound.***

The track at this location has been designated to be floating.

As previously stated, it is highly likely that the land-take calculations are overestimated for direct impacts of land-take in relation to floating track. Floating tracks will not have associated track drains around them, and they are specifically designed not to impeded drainage of the

bog. In the land-take calculations all the floating tracks were given a 3m batter (for drains and cables despite there being no drains associated with floating track), plus predicted cut and fill and a 7.5m construction buffer to take account any additional impacts. There will be no/mimical 'cut and fill' in these areas as the floating track will be essentially lain over the surface of the bog, and so machine works will be accordingly minimised. Resulting in the impacts for floating tracks being better represented by the operational land-take of 11.5m rather than the construction land-take of 26.5m. Therefore, in this instance there is likely an overestimation of land-take.

Embedded mitigation includes micro-siting (50m) which would be used to relocate infrastructure to avoid the Near-Natural blanket bog and any bog pools. This would necessarily be carried out on the ground under supervision by the ECoW and with agreement of Argyll and Bute Council. Clearly, the Near-Natural blanket bog can and should be avoided in reality. At this specific location shown in Figure 6, it will be important to ensure that any 'cut and fill' or impact from vehicles etc is concentrated to the west of the track and to the east of the construction compound and does not impinge on the adjacent Near-Natural blanket bog.

Taking these aspects into consideration, and including this specific mitigation, it is considered that all the Near-Natural blanket bog at this location can and will be avoided by the Proposed Development.