Technical Appendix 10.2: Peat Management Plan

Carn Fearna Wind Farm

Carn Fearna Wind Farm Ltd

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1.0 Introduction

1.1 General

SLR Consulting Ltd (SLR) was commissioned by Carn Fearna Wind Farm Ltd (the 'Applicant'), to undertake a Phase 1 Peat Management Plan (PMP) for the proposed Carn Fearna Wind Farm (the Proposed Development). The Applicant is proposing to submit a Section 36 application to construct and operate an up to 9-turbine wind farm (of which five are up to 200 m blade tip height, and four are up to 180 m blade tip height), and associated infrastructure, with a combined rated output in the region of 64.8 MW. The location of the Proposed Development is shown on **Figure 10.2.1** with the red line defining the Proposed Development boundary.

The assessment has been undertaken in line with best practice guidance[1] published by the Scottish Environment Protection Agency (SEPA) and wind farm construction good practice guidance.

The work has been undertaken by a team of Geotechnical Engineers and Geologists, with over 17 years' experience in undertaking peat assessments and specialising in the assessment of soils, geology and water for renewable power and infrastructure projects in Scotland.

1.2 Proposed Development

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The Proposed Development is shown on **Figure 10.2.2a-c** and comprises the construction of the following infrastructure elements:

- Up to 9 wind turbines and associated foundations;
- crane hardstanding and temporary laydown areas;
- new and upgraded access track;
- temporary construction compounds;
- batching plant;
- underground cabling and electrical infrastructure;
- on-site substation compound;
- search areas for up to three borrow pits;
- off-site turning circle for Abnormal Indivisible Load (AIL) vehicles.

Full details of the Proposed Development are provided in **EIA Report Volume 2: Chapter 3: Description of the Development.**

1 Scottish Government, Scottish Natural Heritage, SEPA., (2017) Peatland Survey. Guidance on Developments on Peatland, on-line version only.

1.3 Objectives

This PMP outlines the overall approach of minimising disruption to peatland, and it aims to ensure that all further opportunities to minimise peat disturbance and extraction would be taken during detailed design and construction of the Proposed Development.

This PMP has been developed to demonstrate that peat has been afforded significant consideration during the design phase of the Proposed Development, and would be afforded significant consideration should consent be granted. Specifically, it shows with the benefit of site specific peat probing data, how areas of deeper peat have been avoided where technically feasible and how shallow deposits of peat and soils can be safeguarded and used to support the long-term habitat restoration and management proposals.

1.4 Role of the Peat Management Plan

The PMP is intended to be a working document to be used throughout the key stages of the design, construction, operation, decommissioning and re-instatement phases of the Proposed Development as part of an overall Construction Environmental Management Plan (CEMP). These stages are outlined below.

Stage 1: Environmental Impact Assessment (EIA)

This report forms the Outline PMP and is submitted as part of the EIA Report. From this initial report the PMP will be developed further into a Stage 2 Pre-Construction PMP.

Stage 2: Post Consent / Pre-Construction

The peat mass balance calculations may be further developed prior to the works commencing, following detailed ground investigation or further survey works required to inform detailed design, or that may be required under planning consent conditions.

Stage 3: Construction Stage

Actual peat volumes excavated during construction will be recorded against the overall predicted volumes. Within micrositing allowances, the alignment and design of tracks, turbine and infrastructure foundations and associated construction methods will be reviewed to avoid/minimise peat disturbance as much as possible considering the more detailed information available once construction commences. A regular review and update of the peat mass balance table will be undertaken by the appointed Principal Contractor (PC) and monitored by the Ecological Clerk of Works (ECoW) on-site and made available to regulators as required.

1.5 Legislation and Guidance

The PMP has been compiled in accordance with the following legislation and best practice guidance:

- National Planning Framework for Scotland 4 (NPF4) (Scottish Government, February 2023)[2];
- Scottish Government, Scottish Natural Heritage, SEPA (2014) 'Peat Survey Guidance; Developments on Peatland: Site Surveys'[3];

2 Scottish Government (2023). https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2022/11/national-planning-framework-4-revised-draft/documents/national-planning-framework-4-revised-draft/national-planning-framework-4-revised-draft/govscot%3Adocument/national-planning-framework-4-revised-draft.pdf

3 Scottish Natural Heritage (SNH), SEPA, Scottish Government & James Hutton Institute. (2014)' Peat Survey Guidance; Developments on Peatland: Site Surveys'.

- SEPA Regulatory Position Statement - Developments on Peat (Scottish Environment Protection Agency, 2010)[4];
- NatureScot (July 2024), Good Practice During Wind Farm Construction.[5];
- Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste (Scottish Renewables and SEPA, 2012) [6];
- The Waste Management Licensing (Scotland) Regulations 2011[7];
- Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (Scottish Government, January 2017) [8]; and
- Floating Roads on Peat - Report into Good Practice in Design, Construction and Use of Floating Roads on Peat with reference to Wind Farm Developments in Scotland (Forestry Commission Scotland & Scottish Natural Heritage, 2010) [9].

Requirements of National Planning Policy 4

The intent of Policy 5 (Soils) of National Planning Policy 4 (NPF4)[2] is "*to protect carbon rich soils, restore peatlands and minimise the disturbance of soils from development*". Policy 5 a) states *"that development proposals should only be supported if they are designed and constructed:*

- *in accordance with the mitigation hierarchy by first avoiding and then minimising the amount of disturbance to soils on undeveloped land; and*
- *in a manner that protects soils from damage including from compaction and erosion, and that minimises soils sealing".*

Further 5(c) confirms *"that development proposals on peatland, carbon rich soils, and priority peatland will only be supported if they are:*

- *essential infrastructure and there is a specific locational need and no other suitable site;*
- *the generation of energy from renewable sources that optimises the contribution of the area to greenhouse gas emissions reductions targets;*
- *small-scale development directly linked to a rural business, farm or croft;*
- *supporting a fragile community in a rural or island area; or*
- *restoration of peatland habitats".*

And 5(d) confirms *"that where development on peatland, carbon-rich soils or priority peatland habitat is proposed, a detailed site specific assessment will be required to identify:*

- *the baseline depth, habitat condition quality and stability of carbon rich soils;*
- *the likely effects of the development on peatland, including on soil disturbance; and*
- *the likely net effects of the development on climate emissions and loss of carbon".*

Policy 5 (d) also confirms that the site specific (above) assessment "*should inform careful project design and ensure, in accordance with relevant guidance and the mitigation*

4 Scottish Environment Protection Agency. 2010. Regulatory Position Statement – Developments on Peat

5 NatureScot (July 2024), Good Practice During Wind Farm Construction. https://www.nature.scot/doc/good-practice-during-wind-farm-construction

6 Scottish Renewables, Scottish Environment Protection Agency. 2012. Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste

7 Scottish Government 2011, The Waste Management Licensing (Scotland) Regulations 2011. https://www.legislation.gov.uk/sdsi/2011/9780111012147/contents

8 Peat Landslide Hazard and Risk Assessments (Scottish Government, April 2017)

9 Scottish Natural Heritage, Forestry Commission (August 2010). Floating Roads on Peat

hierarchy, that adverse impacts are first avoided and then minimised through best practice. A peat management plan will be required to demonstrate that this approach has been followed, alongside other appropriate plans required for restoring and/ or enhancing the site into a functioning peatland system capable of achieving carbon sequestration".

This Stage 1 Outline PMP considers the protection and safeguarding of peat and seeks to fulfil the requirements of Policy 5(d) with further detail on peatland habitat and peatland restoration provided in **EIA Report Volume 4: Technical Appendix 8.5: Outline Nature Enhancement Management Plan.**

Mitigation Hierarchy

SEPA[4] has published guidance regarding the mitigation hierarchy for developments on peat which is summarised below:

- Prevention – avoiding generating excess peat during construction (e.g. by avoiding peat areas or by using construction methods that do not require excavation such as floating tracks);
- Re-use – use of peat produced on-site in restoration, provided that its use is fully justified and suitable;
- Recycling / Recovery / Treatment – modify peat produced on-site for use as fuel, or as a compost / soil conditioner, or dewater peat to improve its mechanical properties in support to re-use; and
- Storage – applying the SEPA guidance, storage of peat up to a depth of 2 m is not classified as a waste and, however clarification should be sought from the waste regulator prior to re-use and care must be taken to ensure that it does not cause environmental pollution.

2.0 Baseline Conditions

2.1 Definition of Peat

Peat is defined as an organic soil comprising the partly decomposed plant remains that have accumulated in-situ, rather than being deposited by sedimentation. When peat forming plants die, they do not decay completely as their remains become waterlogged due to regular rainfall. The effect of waterlogging is to exclude air and hence limit the degree of decomposition. Consequently, instead of decaying to carbon dioxide and water, the partially decomposed material is incorporated into the underlying material and the peat 'grows' in-situ.

The Scottish Government Peat Landslide Hazard Best Practice Guide (2017) uses the following Joint Nature Conservation Committee (JNCC) report 455 'Towards an Assessment of the State of UK Peatlands' definition for classification of peat deposits:

- Peaty (or organo-mineral) soil: a soil with a surface organic layer less than 0.5 m deep;
- Peat: a soil with a surface organic layer greater than 0.5 m deep which has an organic matter content of more than 60 %; and
- Deep Peat: a peat soil with a surface organic layer greater than 1.0 m deep.

Peat is characterised by low density, high moisture content, high compressibility and low shear strength, all of which are related to the degree of decomposition and hence residual plant fabric and structure. To some extent, it is this structure that affects the retention or expulsion of water in the system and differentiates one peat from another.

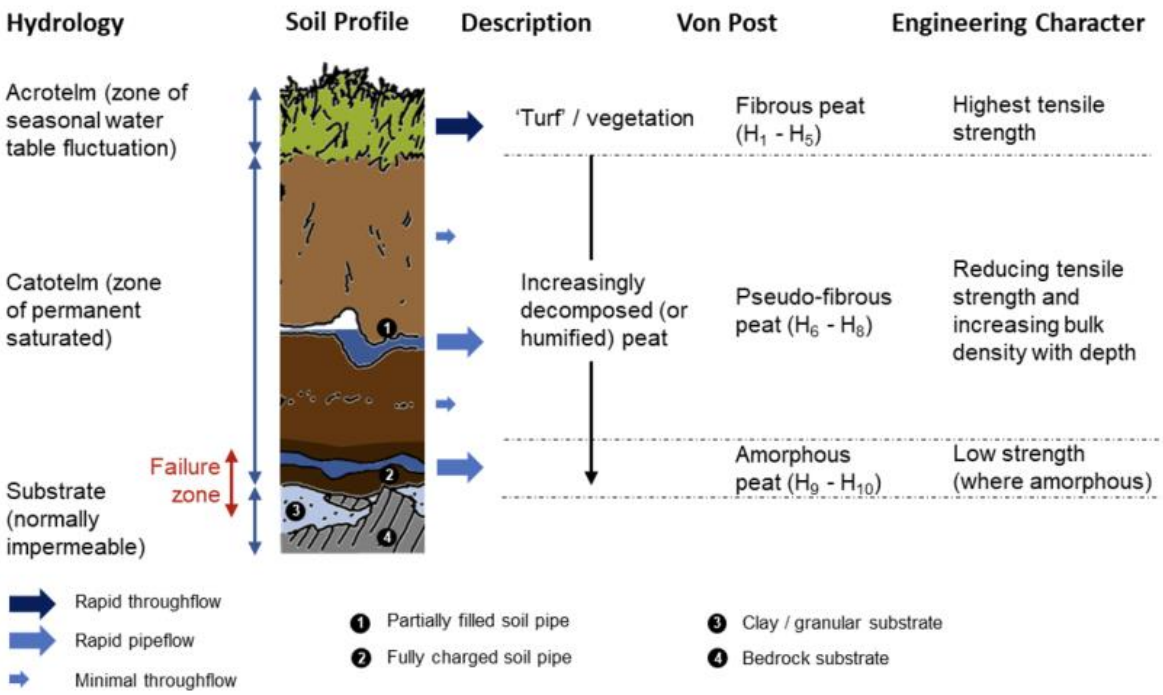
Lindsay[10] defined two main types of peat bog, raised bog and blanket bog, which are prevalent on the West coast of Europe along the Atlantic seaboard. In Britain, the dominant peatland is blanket bog which occurs on the gentle slopes of upland plateaux, ridges and benches and is predominantly supplied with water and nutrients in the form of precipitation. Blanket peat is usually considered to be hydrologically disconnected from the underlying mineral layer.

There are two principal types of peat in a near natural peatland (see **Plate 1 below**):

- The upper (acrotelm) layer in which the water table fluctuates, which is fibrous and comprises plant roots etc. The acrotelm is relatively dry and has some tensile strength and its thickness typically ranges from 0.1 m to 0.6 m deep.
- The lower (catotelm) layer, which is saturated, sitting permanently below the water table. The catotelm layer is highly decomposed, generally becoming more amorphous/liquid in nature and losing structure with increasing depth. The structure of catotelmic peat tends to disrupt completely on excavation and handling.

10 Lindsay, R.A., (1995), 'Bogs: The ecology, classification and conservation of Ombrotrophic Mires.' Scottish Natural Heritage, Perth.

Plate 1 - Typical Peat Profile[11]



The acrotelm is the fibrous surface to the peat bog[12], typically less than 0.6m thick, which exists between the growing bog surface and the lowest position of the water table in dry summers.

For geotechnical purposes the degree of decomposition (humification) can be estimated in the field by applying the 'squeezing test' proposed by von Post and Grunland[13] (1926) and as shown in Plate 1. The humification value ranges from H1 (no decomposition) to H10 (highly decomposed). The extended system set out by Hobbs[14] provides a means of correlating the types of peat with their physical, chemical and structural properties.

The relative position of the water table within the peat controls the balance between accumulation and decomposition and therefore its stability, hence artificial adjustment of the water table by drainage requires careful consideration.

2.2 Topography

The Proposed Development area is generally characterised by rounded hills with moderate elevation, steep sloped crags and lochans. Three lochans exist within the central area of the Proposed Development. The highest elevation is at Beinn a' Ghuilbein at 471 mAOD, the lowest elevation is to the west near the Allt Cnoc nan Cleireach at 120 mAOD.

11 Mills, A.J. and Rushton, D. 2023. A risk-based approach to peatland restoration and peat instability. NatureScot Research Report 1259.

12 Ingram, H.A.P., (1978), 'Soil layers in mires: function and terminology'. Journal of Soil Science, 29, 224-227.

13 Von Post, L. and Grunland, E., (1926), 'Sodra Sveriges torvillganger 1' Sverges Geol. Unders. Avh., C335, 1-127.

14 Hobbs, N.B., (1986), 'Mire morphology and the properties and behaviour of some British and foreign peats.' Quarterly Journal of Engineering Geology, London, 19, 7-80.

2.3 Geology

2.3.1 Artificial Ground

Based on the information available from the British Geological Survey (BGS) Geoindex[15], no made ground deposits are noted across the Proposed Development.

2.3.2 Superficial Geology

Based on the available BGS online data there is an absence of mapped superficial deposits across large parts of the Proposed Development, mainly across steep slopes and hilltops. Glacial Till is mapped across the Proposed Development, generally at lower elevations. Minor Alluvium deposits are also mapped in the north-west near the watercourses at the access entrance and River Terrace Deposits at the off-site turning circle. Peat deposits are extensively mapped across central areas of the Proposed Development but not recorded at the off-site turning circle.

Figure 10.1.3a-cfrom **EIA Report Volume 4 Technical Appendix 10.1 Peat Landslide Hazard Risk Assessment** shows the superficial geology BGS mapping and the Proposed Development.

2.3.3 Bedrock Geology

Based on the available BGS online data the Proposed Development is underlain by a number of different bedrock formations as detailed below:

- Glenfinnan Group – Psammite and Semipelite; the most common bedrock formation covering large parts of the Proposed Development.
- Garve Psammite Formation – Psammite; mapped along main access track and track towards T1 near Beinn a' Ghuilbein.
- Vaich Pelite Formation – Semipelite; mapped at main access track to north of Allt Abhagaith.
- Crom Psammite Formation – Psammite; mapped in the north-west at access entrance.
- Unnamed Metamorphic Rocks – Gneiss; mapped only on main access track at Glac Bhan.
- Carn Chuinneag And Inchbae Augen Gneiss – Granite Gneissose at the AIL only.

No igneous intrusions are mapped directly within the main Proposed Development area.

One major fault is inferred south-west to north-east in the north-west of the Proposed Development.

Figure 10.1.4a-c from **EIA Report Volume 4: Technical Appendix 10.1 Peat Landslide Hazard Risk Assessment** shows the bedrock geology BGS mapping and the Proposed Development.

2.4 Peatland Classification

The Carbon and Peatland Map 2016[16] provided in **EIA Report Volume 2: Chapter 10 Geology, Hydrology, Hydrogeology and Peat**, **Figure 10.4a-c Peatland Classification** indicates that large parts of the Proposed Development are located within Class 1 peatland which are considered nationally important carbon-rich soils, deep peat and priority peatland

15 BGS Online Viewer, available at [https://mapapps2.bgs.ac.uk/geoindex/home.html?_ga=2.133433804.376188765.1646739904-1030004651.1646739904]

16 NatureScot, Carbon and Peatland Map 2016, Available online at: map.environment.gov.scot/soil_maps/

habitats and areas likely to be of high conservation value. These areas are mostly located in the western and southern parts of the Proposed Development where elevations are generally lower. Minor areas of Class 2 peat are noted within northern and southern areas of the Proposed Development. Class 2 (habitats which may contain carbon rich soils and deep peat but are not considered to be of high conservation value). Areas of Class 5 are present across the Proposed Development including the off-site turning circle area. Class 5 indicates no peatland habitat recorded but these areas may also include areas of bare soil and soils are carbon-rich and comprise deep peat.

The Carbon and Peatland Map provides an indication of the likely presence of peatland and should not be used in development management decision making with on-site specific detailed peat surveying and assessment required to determine the presence of peat which is detailed in later sections.

2.5 Ground Stability Hazards

BGS Online data records indicate that there is no risk regarding the mass movement or instability of materials.

2.6 Hydrogeology

BGS Online data records indicate that the entirety of the Proposed Development is underlain by metamorphic rocks of the Loch Ness Supergroup. These rock types are classified as a low productivity aquifers whereby small amounts of groundwater are expected near surface weathered zones and secondary fractures. The superficial deposits of Glacial Till are not considered a significant aquifer. However, alluvial deposits mapped can store groundwater and permit groundwater movement through the sand and gravel horizons. This intergranular flow results in localised areas of moderate to high productivity aquifers.

2.7 Hydrology

The Proposed Development is located within the surface water catchments of the Loch na Croic and Loch Garve (ID: 100134) which drain the central and southern areas of the Proposed Development. The northern areas of the Proposed Development are drained by the sub-catchment of the Black Water – Loch Garve to Garbat (ID: 20180).

2.8 Peatland Geomorphology

The Proposed Development is generally characterised by an upland plateau surrounded by a number of summits to the north such as Little Wyvis at 764 m AOD and Carn Gorm at 556 m AOD. The Proposed Development also contains frequent bedrock outcrops, wide ridges and small incised gulleys, with flatter expanses existing in the slope breaks and topographic lows between the bedrock outcrops and hillslopes. Lochans and areas of peat have formed within these flatter expanses and localised hollows between bedrock outcrops. **Photographs 1, 2 and 3** display the typical conditions at the Proposed Development.

Geomorphological mapping is detailed on **Figure 10.1.5a-f**. Typical conditions observed throughout the Proposed Development are detailed below in the following photographs.

Photograph 1: Overview of the Proposed Development looking south to Loch a'Bhealaich from National Grid Reference (NGR): NH 42598 63008.

Photograph 2: Overview of the Proposed Development looking north from T8 towards Meal Odhar Beag. NGR: NH 42736 62176.

Photograph 3: Overview of the Proposed Development looking north from NGR: NH 42612 62156.

2.8.1 Peat Deposits

Peat deposits are common throughout the Proposed Development, with more extensive areas recorded across the flatter lying areas of the upland plateau. There is an area of extensive peat in the north of the Proposed Development to the west of the turbine array T1, T2 and T3 and around T6 with deep peat >2.5m recorded. Peat deposits were also recorded in the southern area of the Proposed Development to the west of T8 and to the south-west of T9 as peat >3m recorded. There are localised hollows of peat across the Proposed Development. These pockets of deeper peat are to the south-west of T7 and north of the proposed substation, with peat >3m mapped. Pockets of peat located to the north of T1 and at the temporary construction compound record depths of >2m. **Photograph 4** shows the typical peatland conditions to the south of Carn Loch an Turic.

Further details on peatland habitats and peatland condition are described within EIA Report **Volume 4 Technical Appendix 8.1 Habitats and Vegetation.**

Photograph 4: Overview of the peatland looking south-west from NGR: NH 41940 62419.

2.8.2 Peat Erosional Features

There are areas of peat hagging across the Proposed Development, mainly within the north on more exposed slopes. Gully erosion and some hagging located to the west and north of T6 (**see Photograph 5**) where extensive erosion has led to areas of bare peat. Peat depths recorded were between 1-2m, with hagging measuring similar mapped. Furtherly, smaller scale hagging was seen to the west of T1 and to the north of the temporary construction compound, mainly constrained to areas near watercourses.

Based on site observations, the gully erosion and hagging observed is likely to be exacerbated by wind erosion due to the topographically exposed nature of this area and higher elevations. In addition, there is evidence of hydrologically influenced gully erosion due to localised networks of drainage across the peatland.

No areas of instability were noted in relation to any erosional features across the Proposed Development.

Photograph 5: Gully erosion and peat pan looking west towards T6. NGR: NH 42167 62940.

3.0 Fieldwork

3.1 Peat Surveys

Peat surveys were carried out in accordance with best practice guidance for developments on peatland[17,18]. Phase 1 peat probing resulted in probing on a 100 m grid to allow for initial assessment of the Proposed Development and Phase 2 probing saw detailed higher resolution probing undertaken across the Proposed Development focussing on access tracks, turbine locations and other site infrastructure as well as potential micrositing allowances of up to 100m.

Where surveys were undertaken by SLR, the thickness of the peat was assessed using a graduated peat probe, approximately 6 mm diameter and capable of probing depths of up to 10 m. This was pushed vertically into the peat to refusal and the depth recorded, together with a unique location number and the co-ordinates from a handheld Global Positioning System instrument (GPS). The accuracy of the GPS was quoted as ±2 m, which was considered sufficiently accurate for this survey. All data was uploaded into a GIS database for incorporation into various drawings and analysis assessments.

Where the peat probing met refusal on a hard substrate, the 'feel' of the refusal can provide an insight into the nature of the substrate. The following criteria were used to assess material:

- Solid and abrupt refusal – rock;
- Solid but less abrupt refusal with grinding or crunching sound – sand or gravel or weathered rock;
- Rapid and firm refusal – clay; or
- Gradual refusal – dense peat or soft clay.

The relative stiffness of the peat was also assessed from the resistance to penetration of the probe and from the effort required to extract the probes (retrieval of the probe was often impossible for one person). In all instances refusal was met on obstructions allowing identification of subsurface geology.

3.2 Peat Depth

Peat is generally defined as a soil with a surface organic layer in excess of 0.5 m[17]. Where the probing recorded less than 0.5 m thick, it is considered to be a peaty soil (or organo-mineral soil). Soils with a peaty organic horizon over mineral soil are often referred to as 'peaty soils'. These organo-mineral soils are extensive across the UK uplands, but do not meet recognised definitions of peat as they are either shallower than true peat or have a lower carbon density.

A total of 6,183 peat probes were undertaken across all survey phases, with the results summarised in Table A and detailed within the peat depth interpolation figures provided in **Figure 10.2.3a-c** and **Figure 10.2.4a-f**. The interpolation was undertaken using the Spline with Barriers tool in ArcGIS Pro methodology. All probing data is provided in **Annex A**.

The peat was found to vary across the Proposed Development in terms of thickness and coverage. Deeper peat was generally encountered in flatter, lower gradient areas of the Proposed Development. The maximum depth of recorded peat was 4.8 m below ground level (bgl), recorded adjacent to Loch na Guailne in the south of the Proposed Development. The average thickness of peat recorded across the Proposed Development was 0.6 m. Probing

17 Scottish Renewables & SEPA (2012) 'Developments on Peatland Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste'.

18 Scottish Natural Heritage (SNH), SEPA, Scottish Government & James Hutton Institute. (2014)' Peat Survey Guidance; Developments on Peatland: Site Surveys'.

indicated that 60% of peat probe locations encountered <0.5 m of peat. 31% of probe locations identified peat between 0.5 to 1.5 m, and the remaining 9% of probe locations encountered peat depths >1.5 m.

Table A: Peat Probing Results

Peat Thickness (m)	No. of Probes	Percentage (of total probes undertaken on-site)
0 (no peat)	270	4.4
0.01 – 0.49 (peaty soil)	3467	56.1
0.50 – 0.99	1415	22.9
1.00 – 1.49	491	7.9
1.50 – 1.99	313	5.1
2.00 – 2.49	120	1.9
2.50 – 2.99	75	1.2
3.00 – 3.49	26	0.4
3.50 – 3.99	4	0.1
> 4.0	2	0.0

3.3 Physical Peat Condition

Peat is described using BS5930[19] and the Von Post classification[20]. Four peat cores and samples were collected by SLR during Phase 2, using a peat auger and used to inform interpretations of the underlying physical peat condition and underlying substrate. Peat samples were undertaken to depths of between 1 and 2.6 mbgl. From **Table B** the peat augers taken recorded fibrous to pseudo-fibrous condition. The peat augers recorded peat was not dry and cuttings at roadside also supported this conclusion of condition.

19 BS 5930:2015+A1:2020, Code of practice for ground investigations

20 Von Post, L. and Grunland, E., (1926), 'Sodra Sveriges torvillganger 1' Sverges Geol. Unders. Avh., C335, 1-127.

Table B: Peat Coring Results

Location	Von Post Degree of Decomposition	Description
PC01: Access track (north of Meall Ruighe an Fhirich)	H3, B3 H4, B3	GL – 0.50 Brown fibrous PEAT 0.50 – 2.00 Dark brown pseudo-fibrous PEAT
PC02: Access track (north-west of Loch an Tuirc)	H4, B2	GL – 1.00 Dark brown pseudo-fibrous PEAT
PC03: T1 hardstanding	H3, B3 H4, B3 H5, B3	GL – 1.00 Brown fibrous PEAT 1.00 – 2.00 Brown pseudo-fibrous PEAT 2.00 – 2.60 Dark brown pseudo-fibrous PEAT
PC04: Access track north of T1	H3, B2	GL – 1.00 Brown fibrous PEAT

Peat core logs and photographs are presented within **Annex B**.

4.0 Potential Impacts on Peat During Construction

The initial construction phase for the Proposed Development will include soil and peat stripping and excavation activities associated with construction of the Proposed Development.

There are four main types of impact on peat which can occur during construction. These are:

- Loss of structural integrity and peat strength, due to stripping off or damaging the surface vegetation turf, excavation, handling and transporting peat (particularly wet, subsurface peat);
- Erosion and gullying, caused by exposure and desiccation of bare peat surfaces primarily caused by water erosion, due to surface runoff after rainfall;
- Contamination, caused by leaks, spillages or inappropriate laydown of materials; and
- Peat slide, caused by laying wet peat on top of wet peat, laying other heavy materials (including excavated mineral soil or other construction materials) on top of wet peat or by inappropriate stockpiling, such as attempting to create stockpiles of peat that are too high, without bunding, engineering or geotechnical support.

A range of methods and control measures are described below which are designed to prevent these impacts from occurring.

5.0 Peat Management and Mitigation

The Proposed Development design took account of a number of environmental and technical constraints. The design sought to avoid areas of thick peat where technically feasible, whilst taking into account other environmental and technical factors such as ecology, ornithology, archaeology, hydrology, topography and existing infrastructure. The Proposed Development design evolution has largely avoided areas where peat is >1 m.

There are areas of both permanent and temporary infrastructure within Proposed Development which are on areas of deep peat >1m and it is acknowledged that the main mitigation will be further micro-siting of turbines and infrastructure which will be undertaken to minimise excavation of peat during the construction phase.

Where peat and peaty soils are to be excavated, re-used or reinstated, the following good practice applies to protect carbon rich soils and mitigate impacts to peat.

5.1 Excavation

Excavated peat should be excavated as turves, including the acrotelm (surface vegetation) and a layer of adjoining catotelm (more humified peat) typically up to 0.5 m thick in total, or as blocks of catotelm; the acrotelm should not be separated from its underlying peat;

- the turves should be as large as possible to minimise desiccation during storage, though the practicalities of handling should be considered;
- the mixing of excavated peat with substrate materials to be avoided at all times; and
- consider timing of excavation activities to avoid very wet weather and avoid multiple handling to minimise the likelihood of excavated peat losing structural integrity.

If possible, extract intact full depth acrotelm layers from the top surface of the peat deposit. This technique will maintain connectivity between the surface vegetation and the partially decomposed upper layers of the catotelm.

5.2 Re-use

It is anticipated that the volume of material excavated for the construction of the Proposed Development can be entirely reused for a variety of restoration purposes, including around constructed structures, restoration of temporary hardstanding areas, borrow pits and road verges. There is also potential for excavated peat to be used for habitat and peat restoration on or locally to the Proposed Development. This potential re-use option has not been quantified but will provide an additional method to retain and beneficially re-use material. Further details are provided in Section 6.0.

5.3 Storage

The following good practice applies to the storage of peaty soils/peat:

- stripped materials should be carefully separated to keep peat and other type of soils apart;
- to minimise handling and haulage distances, excavated material should be stored local to the site of excavation or end point of restoration;
- peat turves should be stored in wet conditions or irrigated in order to prevent desiccation (once dried, peat will not rewet);
- stockpiling of peat should be in large volumes to minimise exposure to wind and sun (and desiccation), but with due consideration for slope stability, but should not exceed 1 m in height to maintain stability of stockpile;

- stockpiles should be isolated from watercourses or drains with appropriate bunding to minimise pollution risks;
- to be stored a minimum of 10 m from any watercourse.
- stores of non-turf (catotelm) peat should be bladed off to reduce the surface area and desiccation of the stored peat; and
- peat storage areas should be monitored during periods of very wet weather, or during snowmelt, to identify early signs of peat instability.

Any peaty soils/peat to be removed during construction would require a temporary storage area near to the construction works/area of re-use. Where peat cannot be transferred immediately to an appropriate restoration area, short term storage will be required. In this case, the following good practice applies:

- peat should be stored around the excavation perimeter at sufficient distance from the cut face to prevent overburden induced failure;
- local gullies, diffuse drainage lines (or very wet ground) and locally steep slopes should be avoided for peat storage;
- drying of stored peat should be avoided by irrigation or by seeding (although this is unlikely to be significant for peat materials stored for less than 2 months);
- peat generated from permanent excavations should be transported directly to its allocated restoration location, to minimise the volume being stockpiled with the possibility of drying out;
- stores of catotelm peat should be bladed off to reduce their surface area and minimise desiccation;
- where transport cannot be undertaken immediately, stored peat should be irrigated to limit drying and stored on a geotextile mat to promote stability; and
- monitoring of large areas of peat storage during wet weather or snowmelt should be undertaken to identify any early signs of peat instability.

5.4 Transport

The following good practice applies to transport:

- movement of turves should be kept to a minimum once excavated, and therefore it is preferable to transport peat planned for translocation and reinstatement to its destination at the time of excavation; and
- if heavy goods vehicles (HGVs)/dump trucks that are used for transporting non-peat material are also to be used for peat materials, measures should be taken to minimise cross-contamination of peat soils with other materials.

5.5 Handling

Following refinement of the peat model, a detailed storage and handling plan should be prepared forming part of the detailed CEMP, including details of:

- best estimate excavation volume at each infrastructure location (including peat volumes split into area/volume of ‘acrotelm’ or ‘turf’, and volume of catotelm) which would be achieved by undertaking additional probing in line with current guidance;
- volume to be stored locally and volume to be transferred directly on excavation to restoration areas elsewhere (e.g. peat storage areas) in order to minimise handling;

- location and size of storage area relative to turbine foundations and infrastructure locations and natural peat morphology / drainage features; and
- irrigation requirements and methods to minimise desiccation of excavated peat during short term storage.

These parameters are best determined post-consent, informed by detailed ground investigation with the micro-siting areas for each element of infrastructure.

5.6 Restoration

There may be scope for re-use of peat within peatland restoration as detailed within **EIA Report Technical Appendix 8.5 Outline Nature Enhancement Plan.** The methodologies detailed in any future restoration scheme should be followed as well as the following best practice:

- carefully evaluate potential restoration sites, such as peat storage areas for their suitability, and agree that these sites are appropriate with the ECoW, landowners and relevant consultees;
- undertake restoration and revegetation or reseeding work as soon as practically possible;
- where required, consider exclusion of livestock from areas of the Proposed Development undergoing restoration, to minimise impacts on revegetation; and
- as far as reasonably practicable, restoration will be carried out concurrently with construction rather than at its conclusion.

5.7 Access Tracks

There is guidance[5,9] available to support access track design in peatlands. Guidance is generally focused on floating tracks and excavated tracks and is summarised below.

Based on the avoidance of significant areas of thick peat with tracks all typically present on peat <1 m and only limited sections of track on localised areas of peat >1 m then the use of excavated tracks is proposed. Floating tracks may be considered on suitable length sections of access track where peat depths are >0.5 m, where detailed ground investigation confirms suitability.

Excavated tracks require complete excavation of soil/peat to a competent substrate. Excavated tracks will generally be undertaken where peat depths are less than 0.5 m. This peat/soil would require storage ahead of re-use elsewhere within Proposed Development. Good practice guidance relates mainly to drainage in association with excavated tracks:

- trackside ditches should capture surface water (within the acrotelm) before it reaches the road;
- interceptor drains should be shallow and flat bottomed (and preferably entirely within the acrotelm to limit drawdown of the water table);
- any stripped peat turves should be placed back in the invert and sides of the ditch to assist regeneration and prevent erosion to the peat and wash out that could occur; and
- culverts and cross drains should be installed under excavated tracks to maintain subsurface drainage pathways (such as natural soil pipes or flushes). Discharge from constructed drainage should allow for as much diffuse dispersion of clean (silt free) water as possible while minimising disturbance to existing peatland as far as possible. Silt mitigation measures will be incorporated into all constructed drainage as per the requirements of the CEMP.

Although excavation is normally undertaken in peat of minor thickness (< 1.0 m), there is a possibility of minor slippage from the cut face of the peat mass. Accordingly:

- free faces should be inspected for evidence of instability (cracking, bulging, excessive discharge of water or sudden cessation in discharge); and
- where significant depths of peat are to be stored adjacent to an excavation, stability analysis should be conducted to determine Factor of Safety (FoS) and an acceptable FoS adopted for loaded areas.

Regular routine monitoring should be scheduled post-construction to ensure that hydrological pathways and track integrity have been suitably maintained.

5.8 Monitoring and Inspection

There would be frequent, routine and regular inspections of peat in all stockpiles and temporary storage areas as part of the PMP audit process. Inspections would assess in situ peat physical conditions, integrity of containment and temporary drainage conditions, and they would seek to confirm that stockpile design and management was adequate to prevent erosion and peat slide. These inspections would take place weekly during stockpile creation and storage.

Should any problems be observed during regular visual inspections of peat stockpiles, this would invoke implementation of an appropriate corrective action which would be recorded and monitored for effectiveness. Types of corrective actions would include, but would not necessarily be limited to; modification of temporary drainage, additional or modified bunding, incorporating of sediment fencing if required, light re-grading to correct any areas of surface erosion, etc.

Regular, frequent inspections of peat conditions during construction and restoration phases of work would be carried out by the Engineer and ECoW as follows:

- peat surface, peat profile and peat consistency conditions would be carried out as part of ground investigations prior to the start of construction. This information would provide detailed information on the baseline conditions for each part of the infrastructure footprint;
- restored peat conditions would be inspected immediately after restoration to ensure that the methods detailed in the PMP had been correctly implemented and to inform any corrective actions should they be required;
- further monitoring to be undertaken where required to ensure restoration works have been correctly implemented; and
- the physical condition of peat would be retained as carefully as possible both at the peat storage and the peat restoration stages. This is particularly important for vegetation establishment.

6.0 Peat Balance Assessment

Table C provides an estimate of peat and peaty soil volumes to be excavated and re-used during the construction of the Proposed Development.

No allowance has been made for potential re-use of peat and peat soils within this stage of the assessment and further re-use of excavated peat may be possible as detailed within the areas detailed in **EIA Report Volume 4: Technical Appendix 8.5: Outline Nature Enhancement Management Plan**.

The peat and peaty soil excavation and re-use volumes are detailed for each infrastructure element in **Annex A**.

6.1 Excavated Volumes

Peat excavation volumes associated with the construction of the Proposed Development have been calculated using the results from the peat depth surveys and interpolation using the GIS package ArcGIS. Peat excavation volumes are detailed in Table C and **Annex A** and based on the following assumptions:

- Interpolation of peat depth was undertaken using the Spline interpolation method.
- An estimated acrotelm depth of 0.5 m across all infrastructure based on peat depth survey results.
- The acrotelm volumes have been calculated based on the average peat depth across each item of infrastructure and linear infrastructure based on peat depth survey results.
- An assumption that the peat probe depths are representative of the actual depth of peat (validated by the peat coring).
- The excavated volumes will comprise primarily acrotelmic peat and soils.

6.2 Reuse Volumes

The volume of peat to be reused around the Proposed Development is detailed in Table C and **Annex A** and based on the following assumptions:

- Reuse would be undertaken in appropriate locations around the infrastructure perimeter such as track verges, the edges of permanent structures within a 3 m wide strip either side of the track at a thickness of about 0.5 m (turves and acrotelmic peat).
- Reuse would be undertaken in appropriate locations around the perimeter of turbine and hardstandings within a 2 m wide strip and with an average peat depth of 1 m.
- Reuse would be undertaken in such a manner as to ensure integration with the adjacent habitat areas where possible which comprise blanket bog.
- For temporary infrastructure including temporary hardstandings and compounds – full re-instatement of excavated peat would be undertaken at each location back to original depth.
- Borrow pits to reuse peat with an average peat depth of 0.5 m to ensure integration with the adjacent habitat areas where possible.

6.3 Net Peat Balance

Table C provides an estimate of peat volumes to be excavated and reused during the construction of the infrastructure.

Table C: Peat Balance Assessment

Infrastructure	Volume of Peat Excavated (m^3)	Volume of Peat Reused and Reinstated (m^3)
Access Track - Cut	34,893	34,893
Access Track - Upgraded	2,003	10,017
Turbine & Crane Pad Permanent	16,650	4,320
Crane Pad Temporary	16,875	16,875
Main Temporary Compound	1,040	1,040
Entrance Temporary Compound	480	480
Satellite Construction Compound	3,840	3,840
Substation Compound	15,600	15,600
Borrow Pits	38,108	45,650
Total	**129,489**	**132,715**

The total volume of peat predicted to be excavated of **129,489** m^3, does not exceed the intended total peat reuse volume of **132,715** m^3, therefore no excess peat is required to be disposed off-site as a consequence of the Proposed Development.

7.0 Waste Classification

This section of the Stage 1 PMP includes the method for dealing with peat which could potentially be classified as waste (only if the above volumes estimate significant quantities of catotelm peat, which cannot be re-used).

Table D outlines where those materials that are likely to be generated on-site, fall within the Waste Management Licensing (Scotland) Regulations 2011.

Based on the results presented in this document, it has been concluded that all of the materials to be excavated on-site would fall within the non-waste classification and would be re-used on-site. Based on a detailed probing exercise and visual inspection of the peat, it is predominantly fibrous peat which would be suitable to be re-used on-site. Typically, the peat was found to be fibrous and fairly dry within the top metre before becoming slightly more pseudo-fibrous with depth.

Table D: Excavated Materials – Assessment of Suitability

Excavated Material	Indicative Volume % of total excavated soils	Is there a suitable use for material	Is the Material required for use on Site	Material Classified as Waste	Re-use Potential	Re-use on Site
Turf and Acrotelmic Peat	85	Yes	Yes	Not classified as waste	Yes	Will be re-used in reinstatement of access track verges, cut and fill verges, road verges, side slopes and check drains. Peripheral embankments of turbine bases, crane hardstandings and reinstatement of borrow pits.
Catotelmic peat	15	Yes	Yes	Not classified as waste	Yes	Will be re-used in reinstatement of floated access track verges, cut and fill verges, road verges, side slopes and check drains. Peripheral embankments of turbine bases, crane hardstandings and reinstatement of borrow pits.
Amorphous Catotelm Peat (amorphous material unable to stand unsupported when stockpiled >1m)	0	Potentially	Potentially*	Potentially if not required as justifiable restoration of habitat management works	Limited	If peat does not require treatment prior to re-use it can be used on-site providing adequate justification and method statements are provided and approved by SEPA. If it is unsuitable for use without treatment then it may be regarded as a waste. However every attempt to avoid this type of peat has been incorporated into the design.

*Such uses for this type of material are limited, however there may be justification for use in the base of peat restoration areas to maintain waterlogged conditions and prevent desiccation of restored area and in some habitat management works such as gully or ditch blocking where saturated peat is required to mimic mire type habitats and encourage establishment of sphagnum.

8.0 Conclusion

This Stage 1 Outline PMP presents a pre-construction assessment of the expected peat extraction and reuse volumes associated with the works phase of the construction of the Proposed Development.

Through a process of continued design refinement (focused on minimising peat excavation volumes) and adoption of best practice working method, the Proposed Development is expected to achieve an overall peat balance, i.e. the volume (and character) of excavated peat compliments requirements for re-use and reinstatement. Thus, all excavated material will be required for reuse as part of the works and no surplus peat is anticipated.

The Proposed Development supports moderately decomposed peat with a very distinct plant structure that is considered suitable for re-use during reinstatement work, e.g. dressing of infrastructure edges, restoration and borrow pit restoration. Good practice standards, which will be outlined in the updated CEMP, relating to excavation, handling and storage of peat, shall ensure against any compromise to the structural integrity of the peat and its associated suitability for reuse.

Avoidance of localised pockets of deep peat that would otherwise require excavation will continue to be a key design refinement objective. Furthermore, it is expected that such micro-siting onto land supporting shallower peat deposits shall be possible during the construction of the Proposed Development.

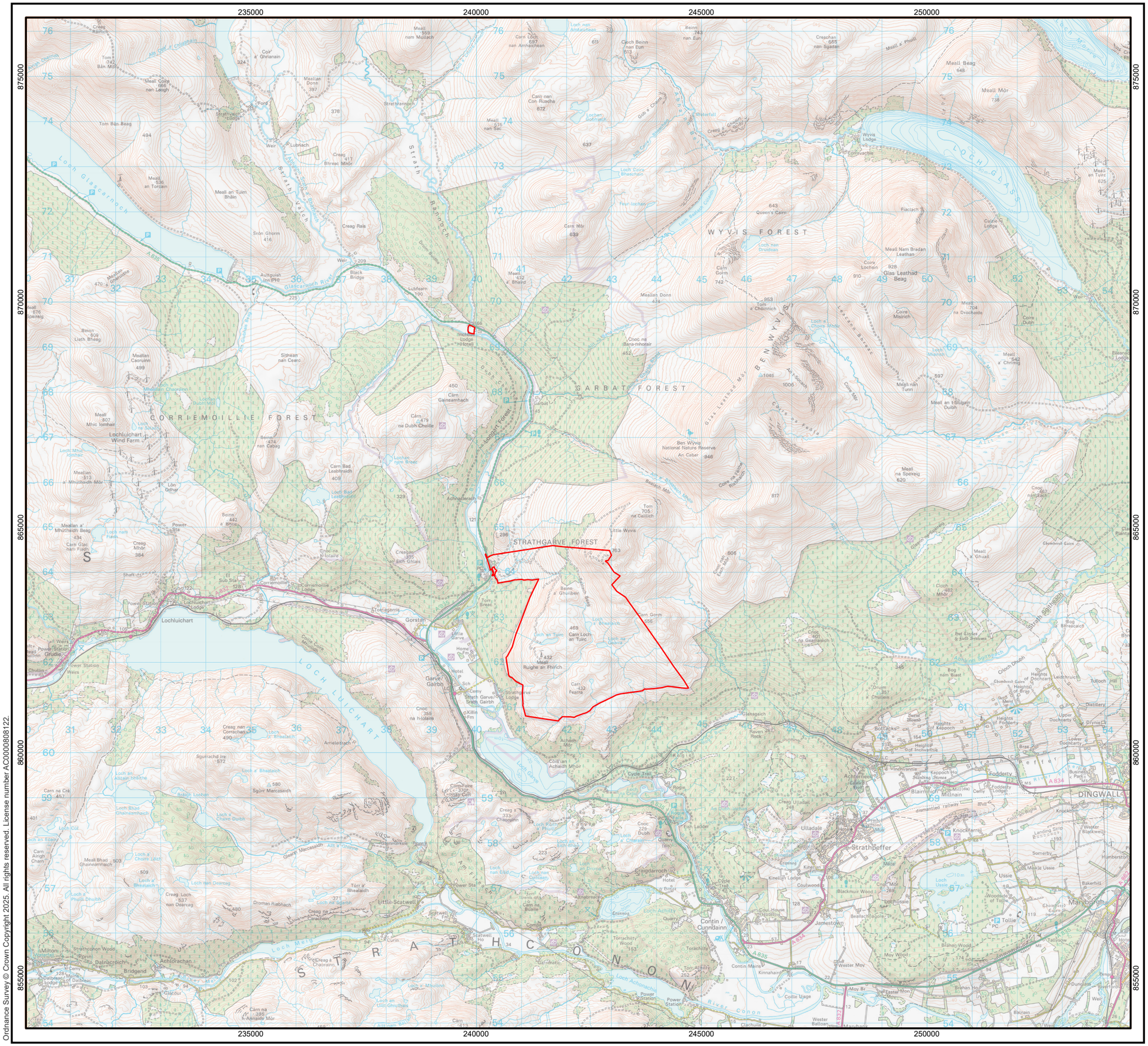
Figures

Technical Appendix 10.2: Peat Management Plan

Carn Fearna Wind Farm

Carn Fearna Wind Farm Ltd

SLR Project No.: 402.064563.00001



Statkraft

N

Site Boundary

1:80,000 on A3

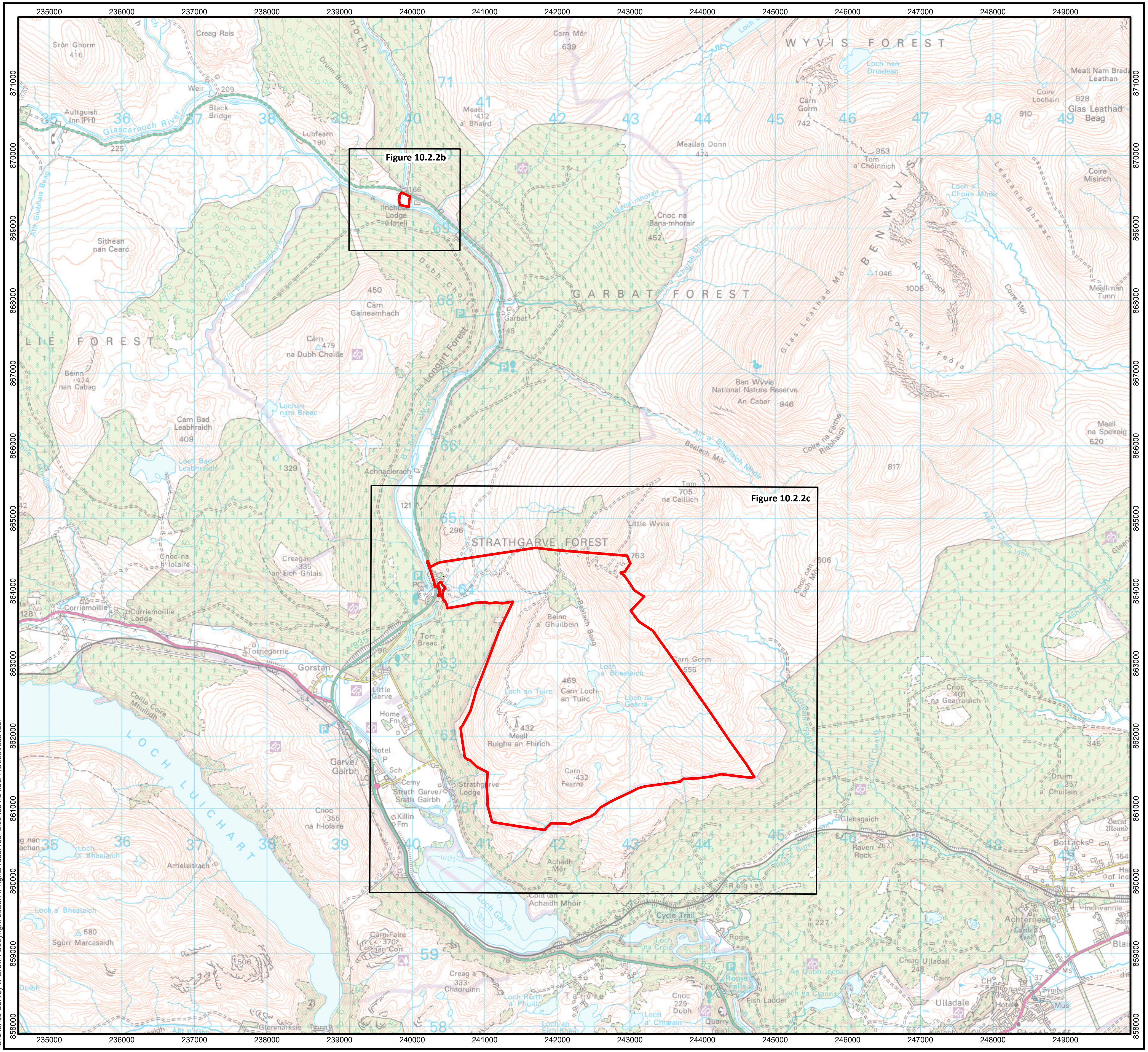
0 2.5 5 Kilometres

Produced By: DB	Version: 2
Checked By: JRS	Date: 28/03/2025

Figure 10.2.1

Site Location

Carn Fearna Wind Farm
Peat Management Plan
Environmental Impact Assessment Report



Statkraft

N

Site Boundary

1:50,000 on A3

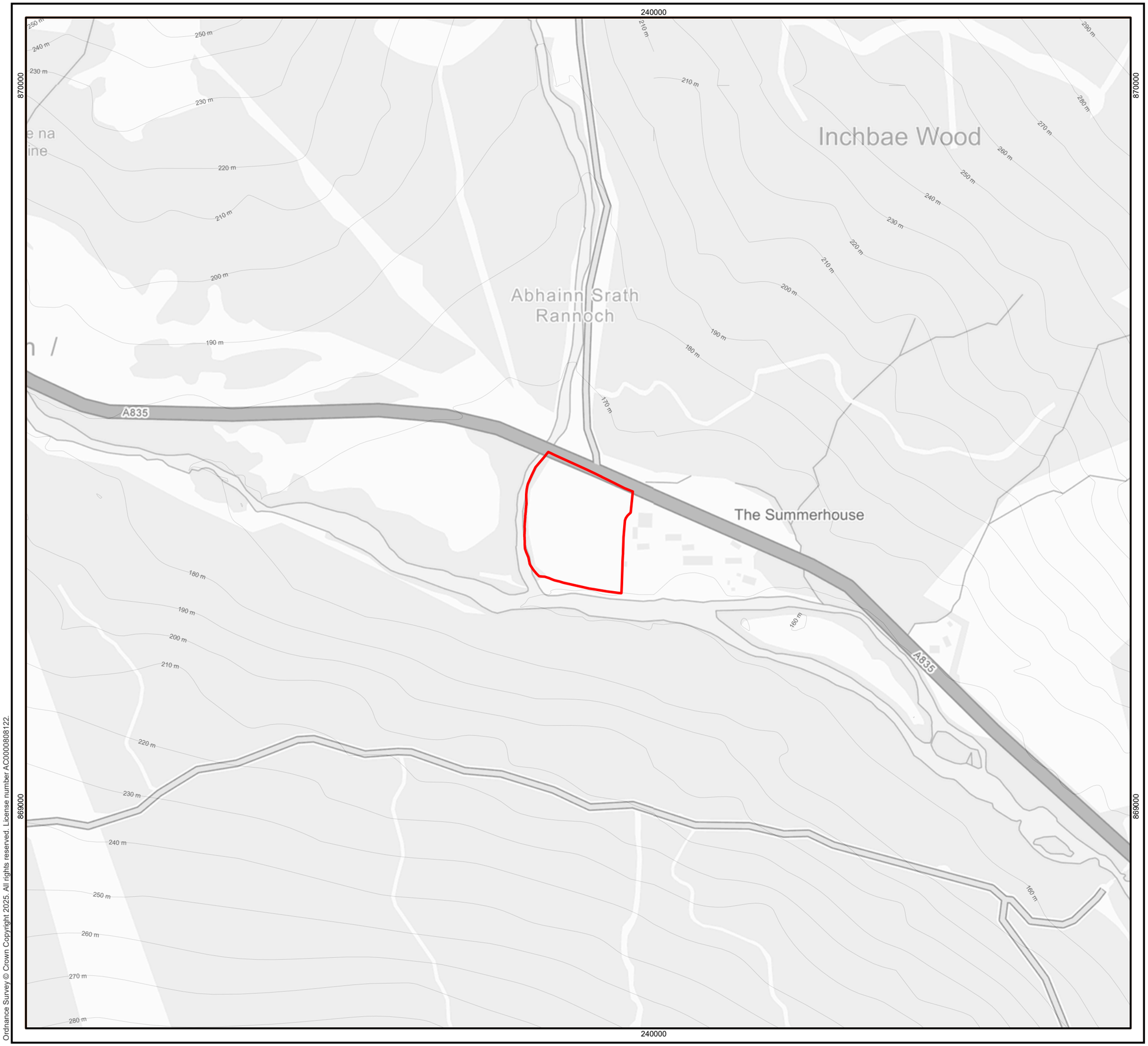
0 0.5 1 Kilometres

Produced By: DB	Version: 2
Checked By: JRS	Date: 28/03/2025

Figure 10.2.2a

Site Layout - Overview

Carn Fearna Wind Farm
Peat Management Plan
Environmental Impact Assessment Report



Statkraft

N

Site Boundary

1:5,000 on A3

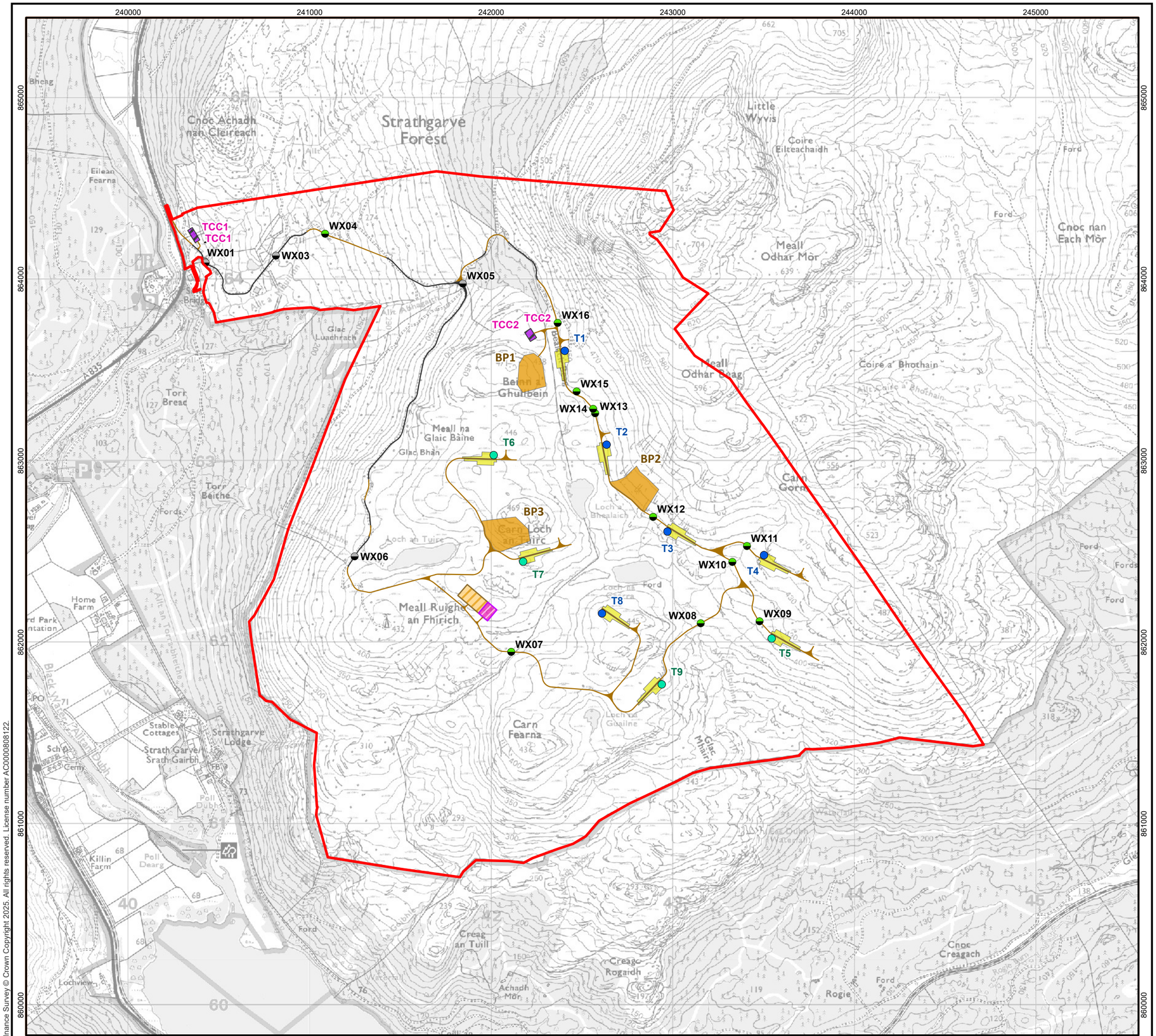
0 100 200 Metres

Produced By: DB	Version: 2
Checked By: JRS	Date: 28/03/2025

Figure 10.2.2b

Site Layout - Off-site turning circle

Carn Fearna Wind Farm
Peat Management Plan
Environmental Impact Assessment Report



Statkraft

N

- Site Boundary
- Proposed Turbine Location (180 m Blade Tip Height)
- Proposed Turbine Location (200 m Blade Tip Height)
- Proposed New Access Track
- Proposed Upgraded Access Track
- Proposed Permanent Hardstanding
- Proposed Permanent Substation
- Proposed Temporary Substation Compound
- Proposed Temporary Construction Compound
- Proposed Borrow Pit Search Area
- Existing Watercourse Crossing
- Proposed Watercourse Crossing

1:20,000 on A3

0 0.5 1 Kilometres

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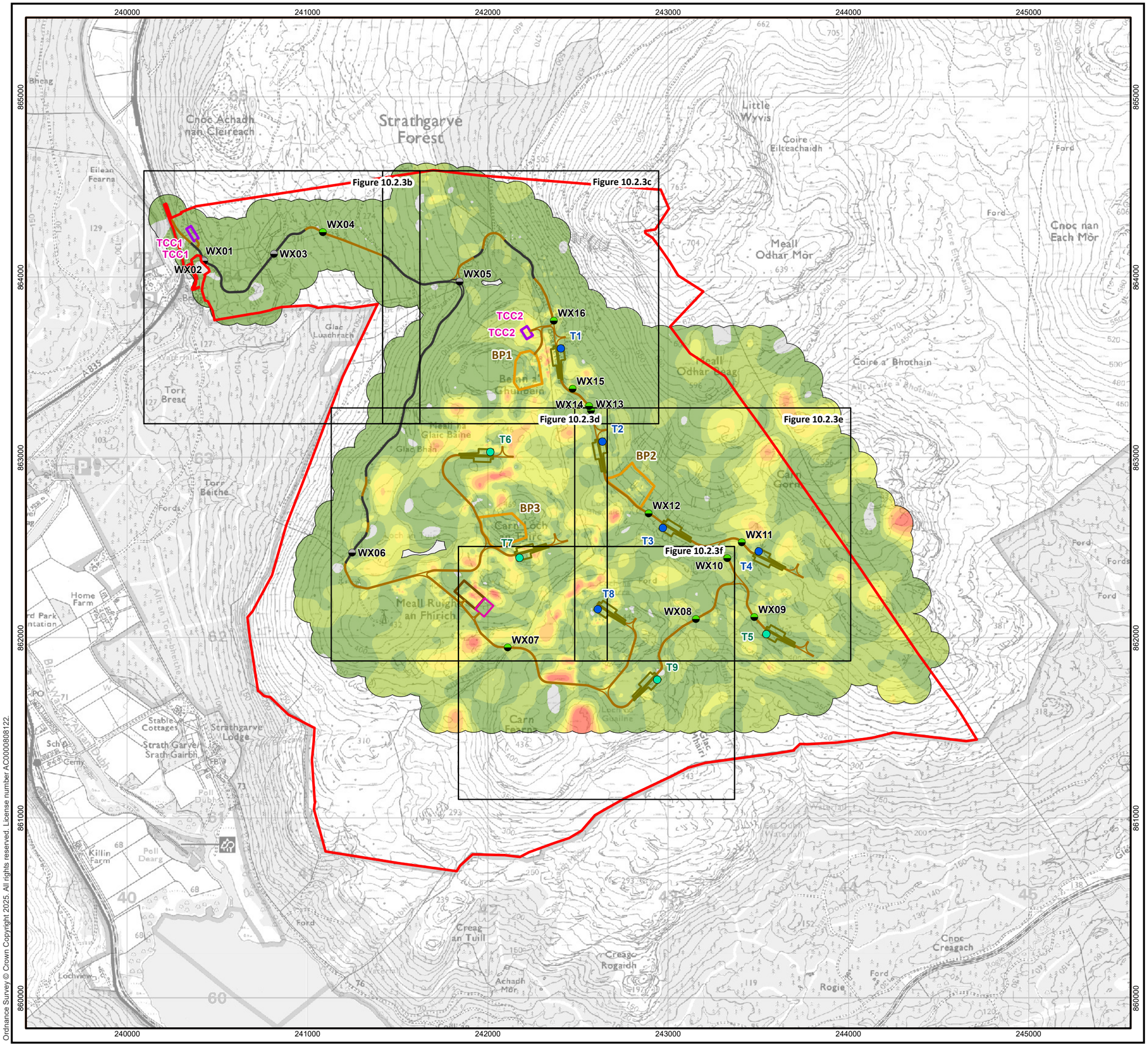
Figure 10.2.2c

Site Layout - Wind farm site

Carn Fearna Wind Farm
Peat Management Plan
Environmental Impact Assessment Report



Statkraft

N

- Site Boundary
- Proposed Turbine Location (180 m Blade Tip Height)
- Proposed Turbine Location (200 m Blade Tip Height)
- Proposed New Access Track
- Proposed Upgraded Access Track
- Proposed Permanent Hardstanding
- Proposed Permanent Substation
- Proposed Temporary Substation Compound
- Proposed Temporary Construction Compound
- Proposed Borrow Pit Search Area
- Existing Watercourse Crossing
- Proposed Watercourse Crossing

Peat Depth (m)

- 0
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5
- 2.5 - 3
- > 3

1:20,000 on A3

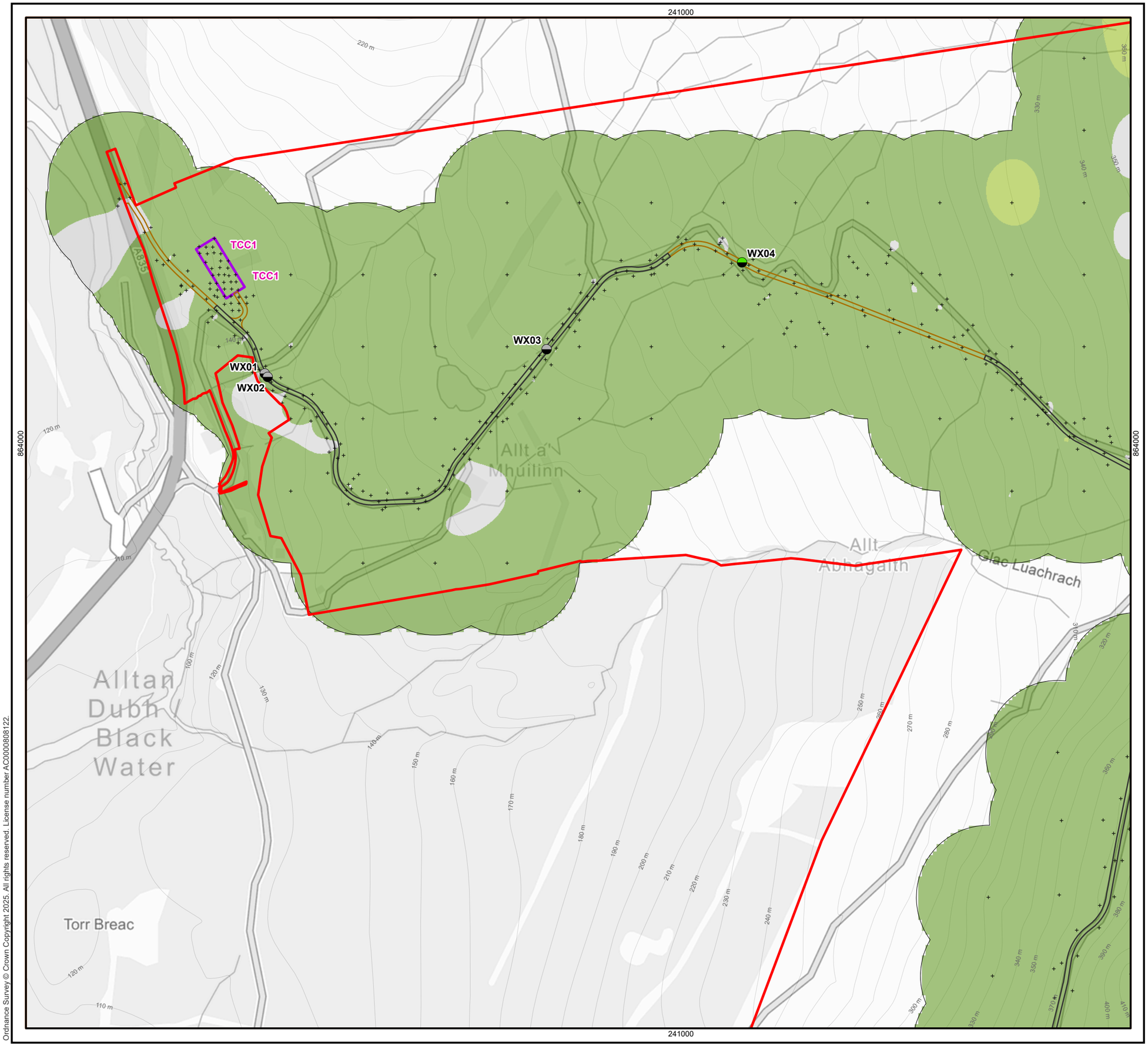
0 0.5 1 Kilometres

Produced By: DB	Version: 2
Checked By: JRS	Date: 28/03/2025

Figure 10.2.3a

Peat Depth - Wind farm site

Carn Fearna Wind Farm
Peat Management Plan
Environmental Impact Assessment Report



Statkraft

N

- Site Boundary
- Proposed New Access Track
- Proposed Upgraded Access Track
- Proposed Temporary Construction Compound
- Existing Watercourse Crossing
- Proposed Watercourse Crossing
- Peat Probe Location

Peat Depth (m)

- 0
- 0 - 0.5
- 0.5 - 1

1:5,000 on A3

0 100 200 Metres

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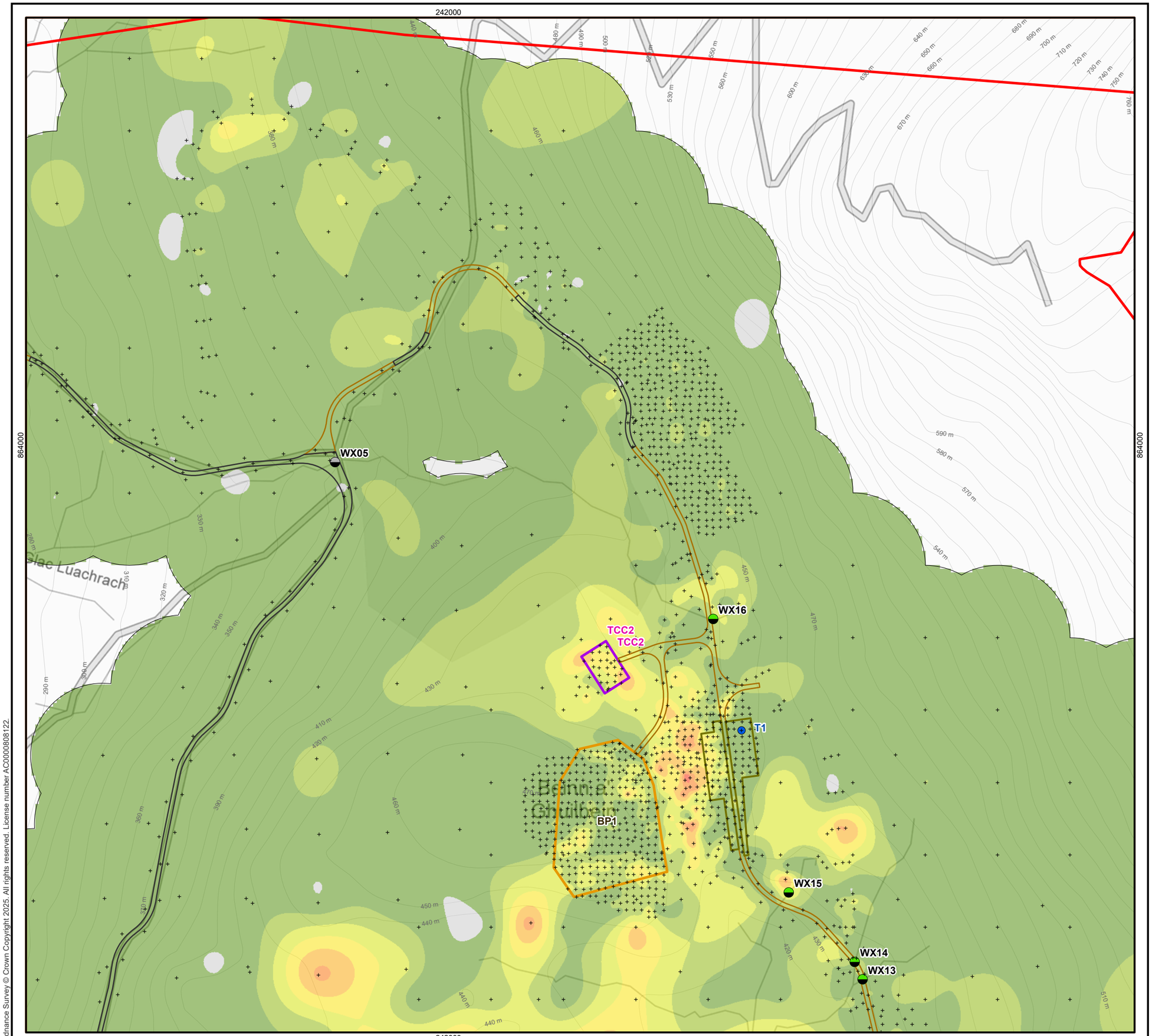
Checked By: JRS	Date: 28/03/2025

Figure 10.2.3b

Peat Depth - Wind farm site

Carn Fearna Wind Farm
Peat Management Plan
Environmental Impact Assessment Report



Statkraft

N

- Site Boundary
- Proposed Turbine Location (200 m Blade Tip Height)
- Proposed New Access Track
- Proposed Upgraded Access Track
- Proposed Permanent Hardstanding
- Proposed Temporary Construction Compound
- Proposed Borrow Pit Search Area
- Existing Watercourse Crossing
- Proposed Watercourse Crossing
- Peat Probe Location

Peat Depth (m)

- 0
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5
- 2.5 - 3
- > 3

1:5,000 on A3

0 100 200 Metres

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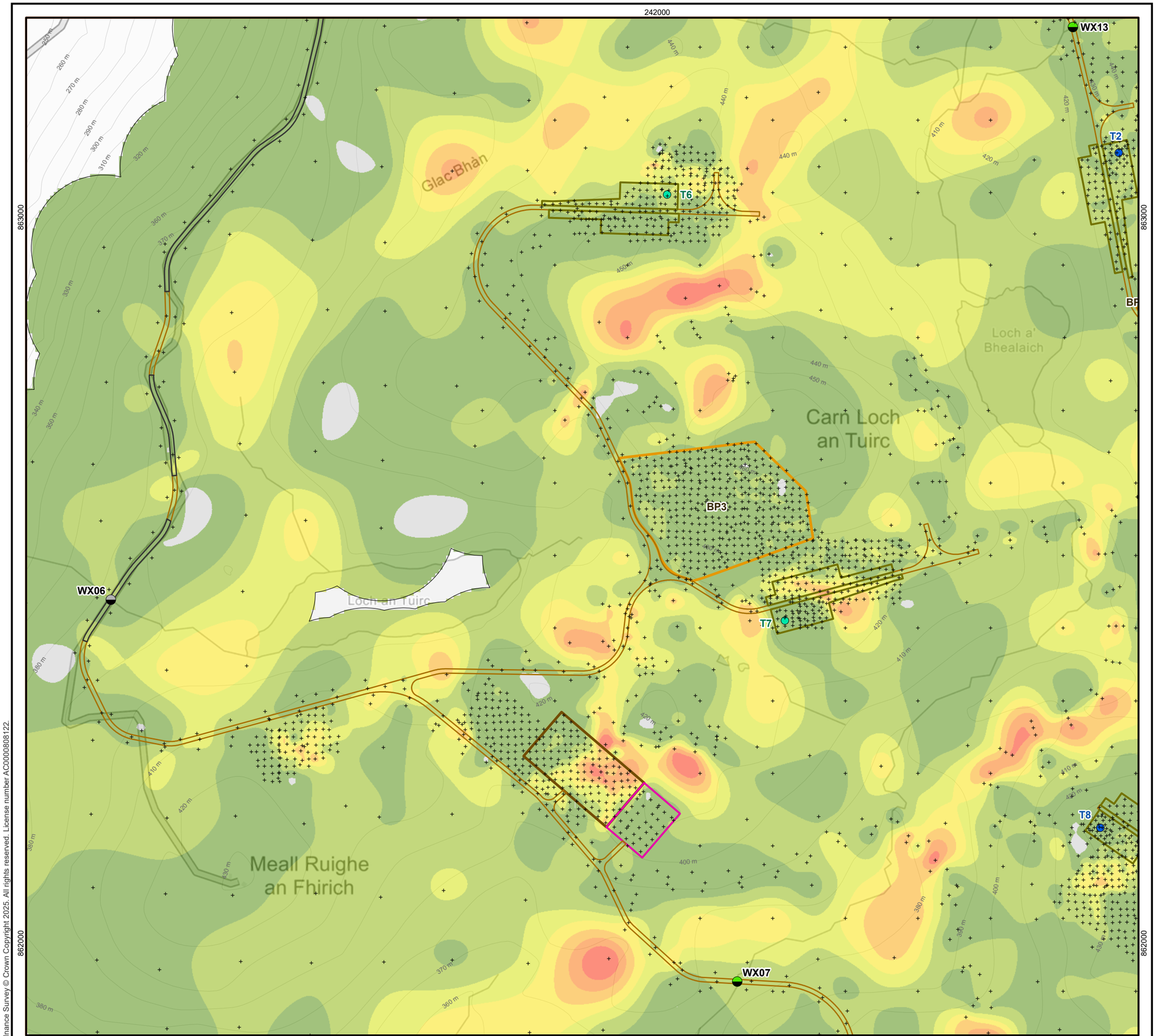
Figure 10.2.3c

Peat Depth - Wind farm site

Carn Fearna Wind Farm
Peat Management Plan
Environmental Impact Assessment Report



Statkraft

N

- Site Boundary
- Proposed Turbine Location (180 m Blade Tip Height)
- Proposed Turbine Location (200 m Blade Tip Height)
- Proposed New Access Track
- Proposed Upgraded Access Track
- Proposed Permanent Hardstanding
- Proposed Permanent Substation
- Proposed Temporary Substation Compound
- Proposed Borrow Pit Search Area
- Existing Watercourse Crossing
- Proposed Watercourse Crossing
- Peat Probe Location

Peat Depth (m)

- 0
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5
- 2.5 - 3
- > 3

1:5,000 on A3

0 100 200 Metres

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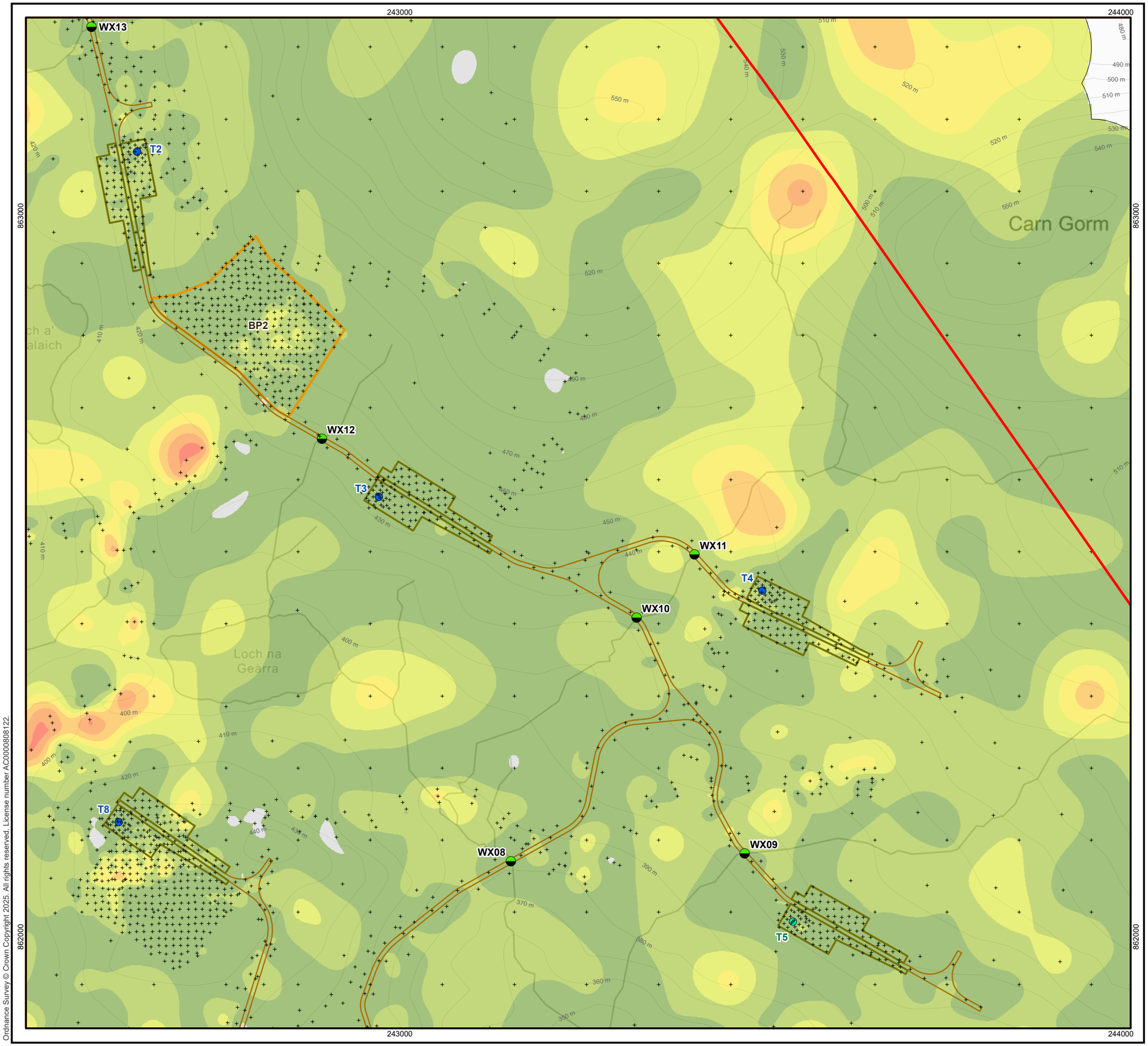
Checked By: JRS	Date: 28/03/2025

Figure 10.2.3d

Peat Depth - Wind farm site

Carn Fearna Wind Farm
Peat Management Plan
Environmental Impact Assessment Report



Statkraft

N

- Site Boundary
- Proposed Turbine Location (180 m Blade Tip Height)
- Proposed Turbine Location (200 m Blade Tip Height)
- Proposed New Access Track
- Proposed Permanent Hardstanding
- Proposed Borrow Pit Search Area
- Proposed Watercourse Crossing
- Peat Probe Location

Peat Depth (m)

- 0
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5
- 2.5 - 3
- > 3

1:5,000 on A3

0 100 200 Metres

Produced By: DB	Version: 2
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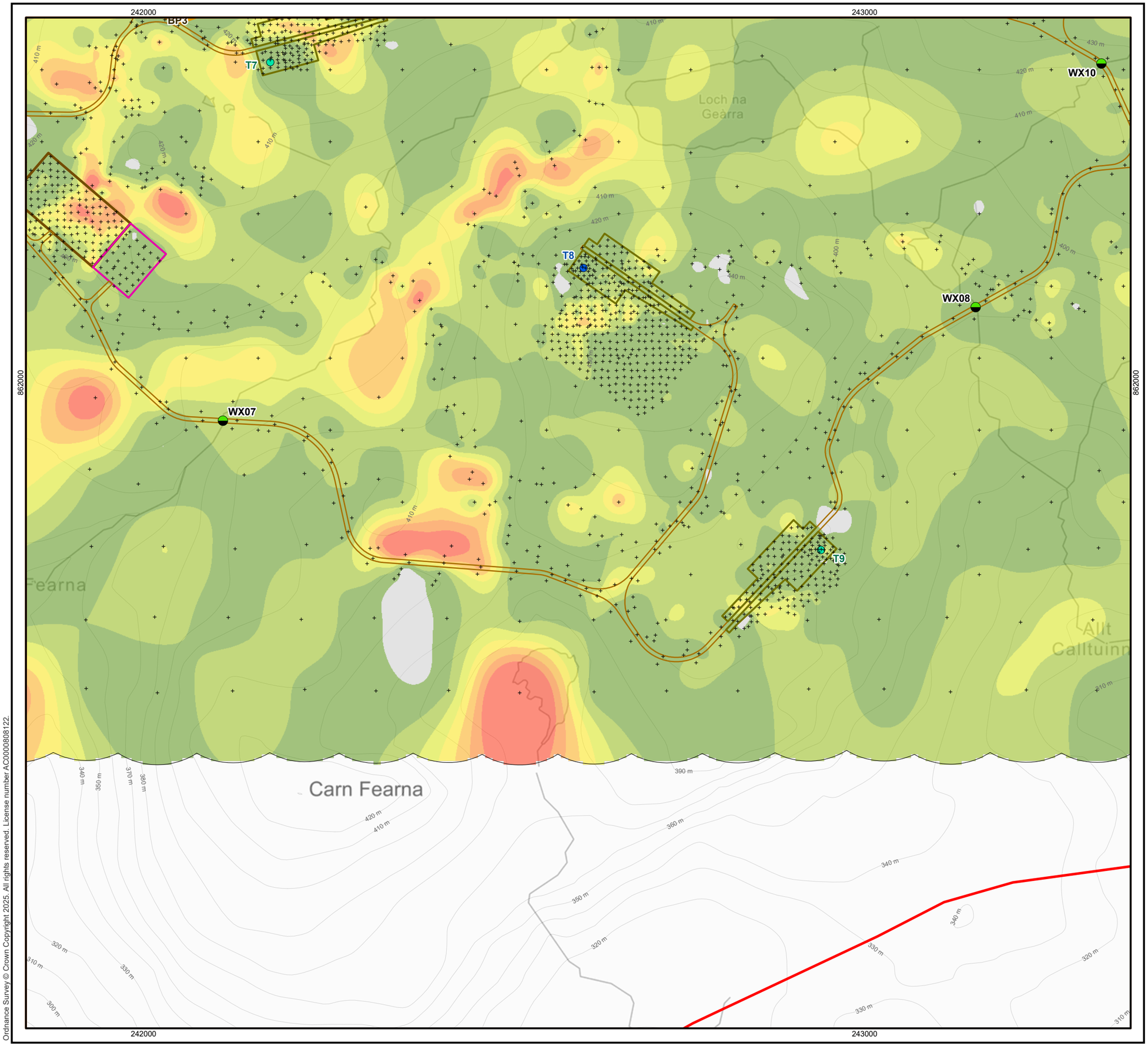
Figure 10.2.3e

Peat Depth - Wind farm site

Carn Fearna Wind Farm
Peat Management Plan
Environmental Impact Assessment Report



Statkraft

N

- Site Boundary
- Proposed Turbine Location (180 m Blade Tip Height)
- Proposed Turbine Location (200 m Blade Tip Height)
- Proposed New Access Track
- Proposed Permanent Hardstanding
- Proposed Permanent Substation
- Proposed Temporary Substation Compound
- Proposed Borrow Pit Search Area
- Proposed Watercourse Crossing
- Peat Probe Location

Peat Depth (m)

- 0
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5
- 2.5 - 3
- > 3

1:5,000 on A3

0 100 200 Metres

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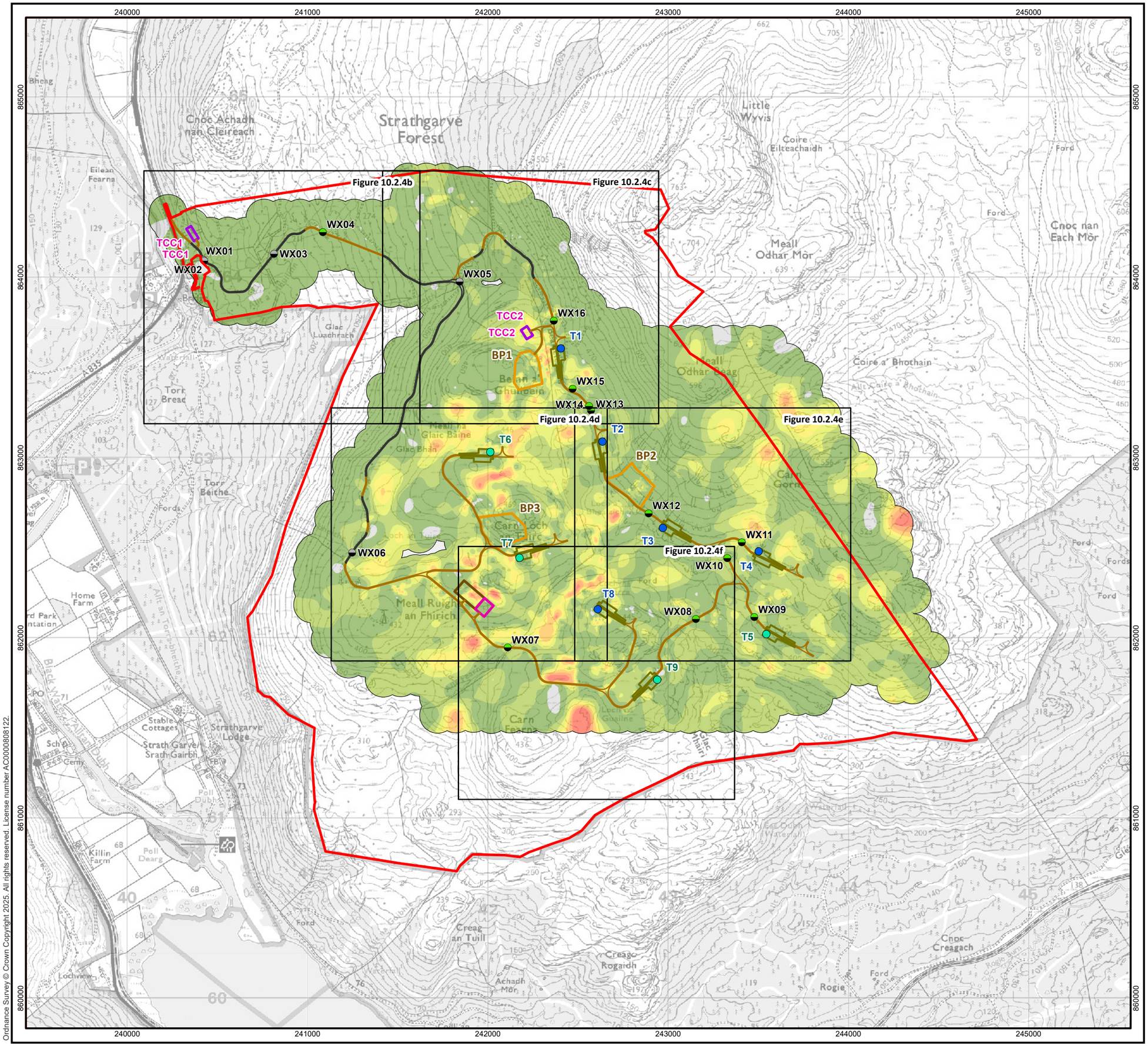
Checked By: JRS	Date: 28/03/2025

Figure 10.2.3f

Peat Depth - Wind farm site

Carn Fearna Wind Farm
Peat Management Plan
Environmental Impact Assessment Report



Statkraft

N

- Site Boundary
- Proposed Turbine Location (180 m Blade Tip Height)
- Proposed Turbine Location (200 m Blade Tip Height)
- Proposed New Access Track
- Proposed Upgraded Access Track
- Proposed Permanent Hardstanding
- Proposed Permanent Substation
- Proposed Temporary Substation Compound
- Proposed Temporary Construction Compound
- Proposed Borrow Pit Search Area
- Existing Watercourse Crossing
- Proposed Watercourse Crossing

Peat Depth (m)

- 0
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5
- 2.5 - 3
- > 3

1:20,000 on A3

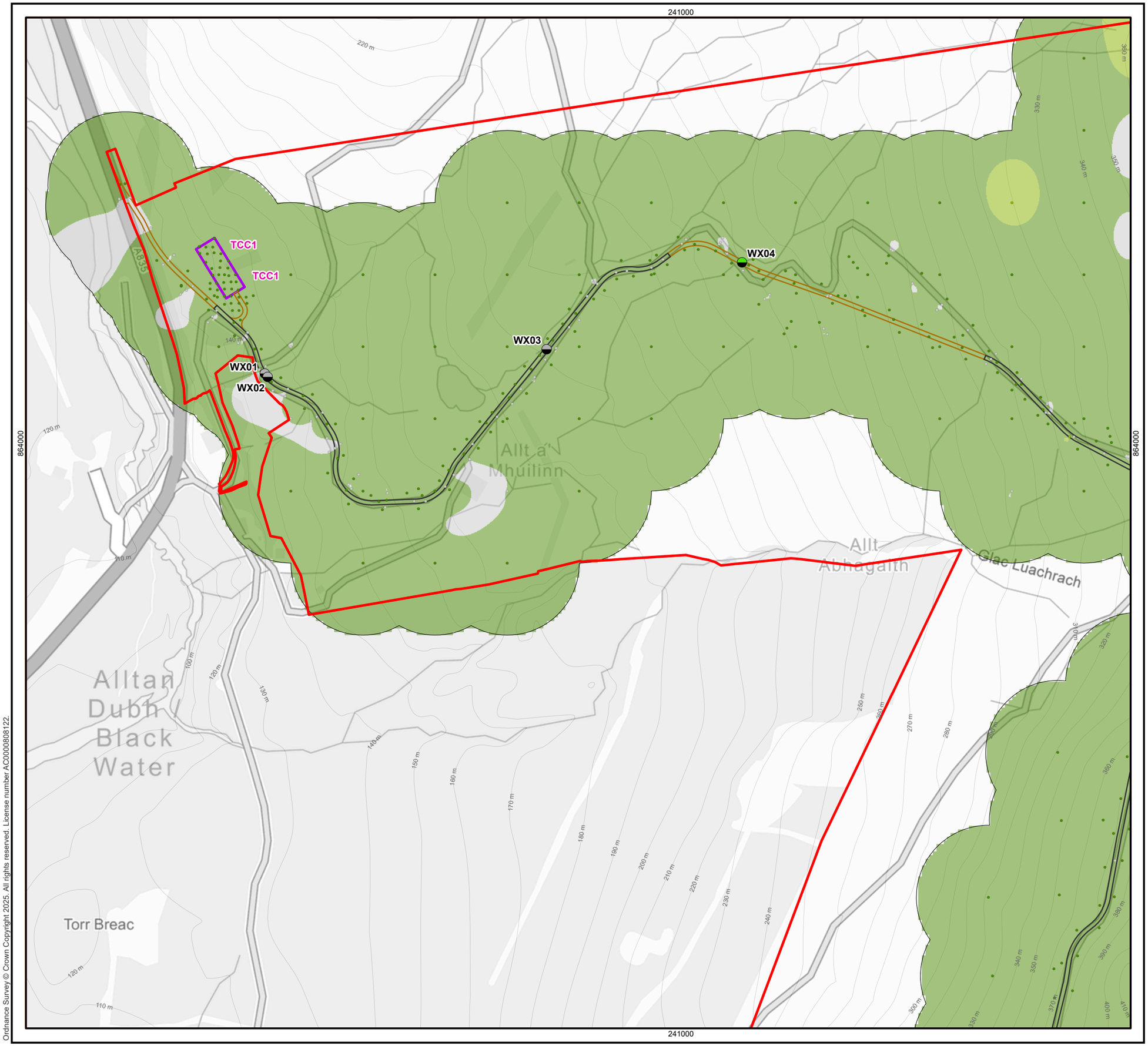
0 0.5 1 Kilometres

Produced By: DB	Version: 2
Checked By: JRS	Date: 28/03/2025

Figure 10.2.4a

Peat Depth Detailed - Wind farm site

Carn Fearna Wind Farm
Peat Management Plan
Environmental Impact Assessment Report



Statkraft

N

- Site Boundary
- Proposed New Access Track
- Proposed Upgraded Access Track
- Proposed Temporary Construction Compound
- Existing Watercourse Crossing
- Proposed Watercourse Crossing

Peat Probe Depth (m)

- 0
- 0 - 0.5
- 0.5 - 1

Peat Depth (m)

- 0
- 0 - 0.5
- 0.5 - 1

1:5,000 on A3

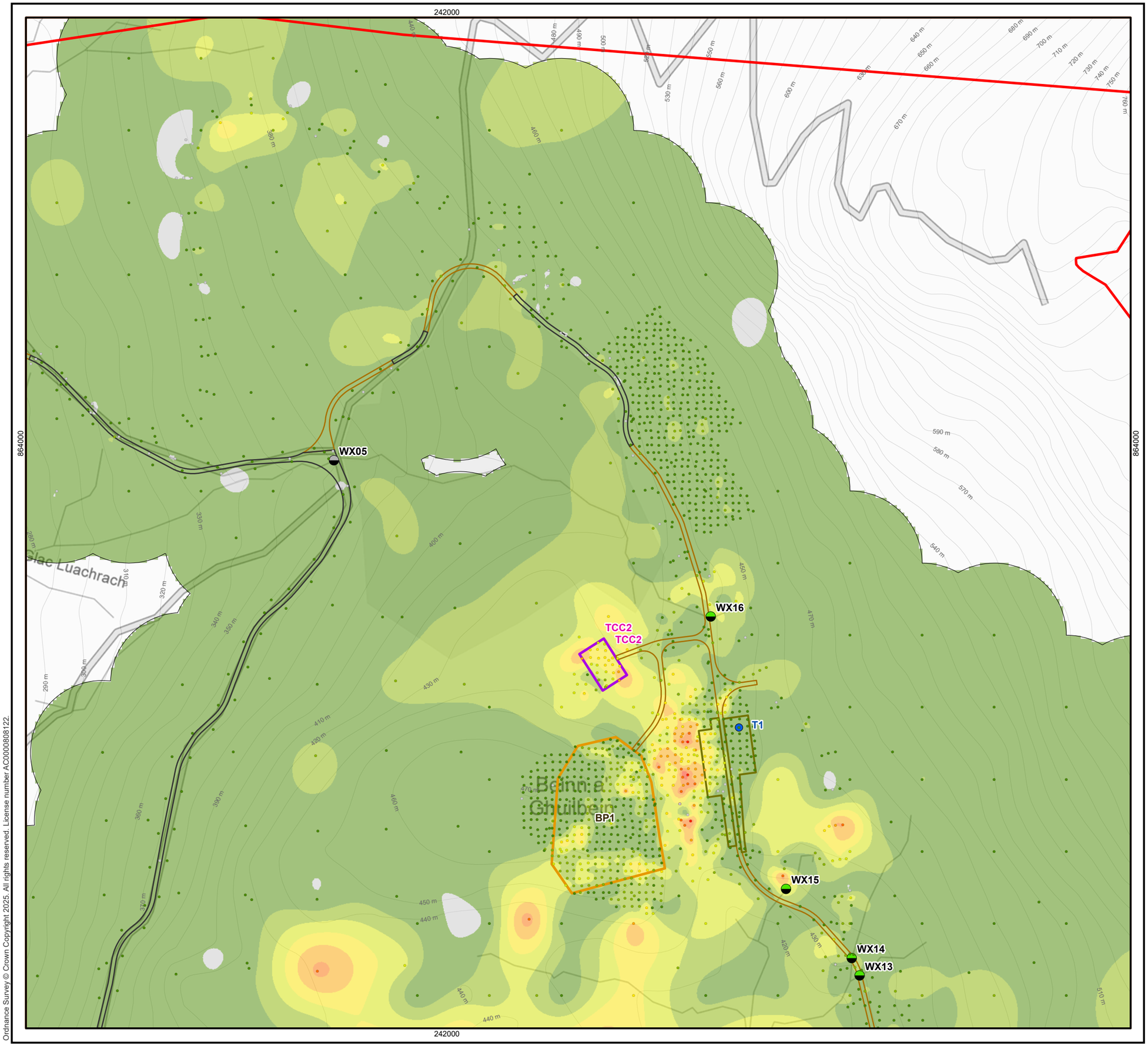
0 100 200 Metres

Produced By: DB	Version: 2
Checked By: JRS	Date: 28/03/2025

Figure 10.2.4b

Peat Depth Detailed - Wind farm site

Carn Fearna Wind Farm
Peat Management Plan
Environmental Impact Assessment Report



Statkraft

N

- Site Boundary
- Proposed Turbine Location (200 m Blade Tip Height)
- Proposed New Access Track
- Proposed Upgraded Access Track
- Proposed Permanent Hardstanding
- Proposed Temporary Construction Compound
- Proposed Borrow Pit Search Area
- Existing Watercourse Crossing
- Proposed Watercourse Crossing

Peat Probe Depth (m)

- 0
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5
- 2.5 - 3
- > 3

Peat Depth (m)

- 0
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5
- 2.5 - 3
- > 3

1:5,000 on A3

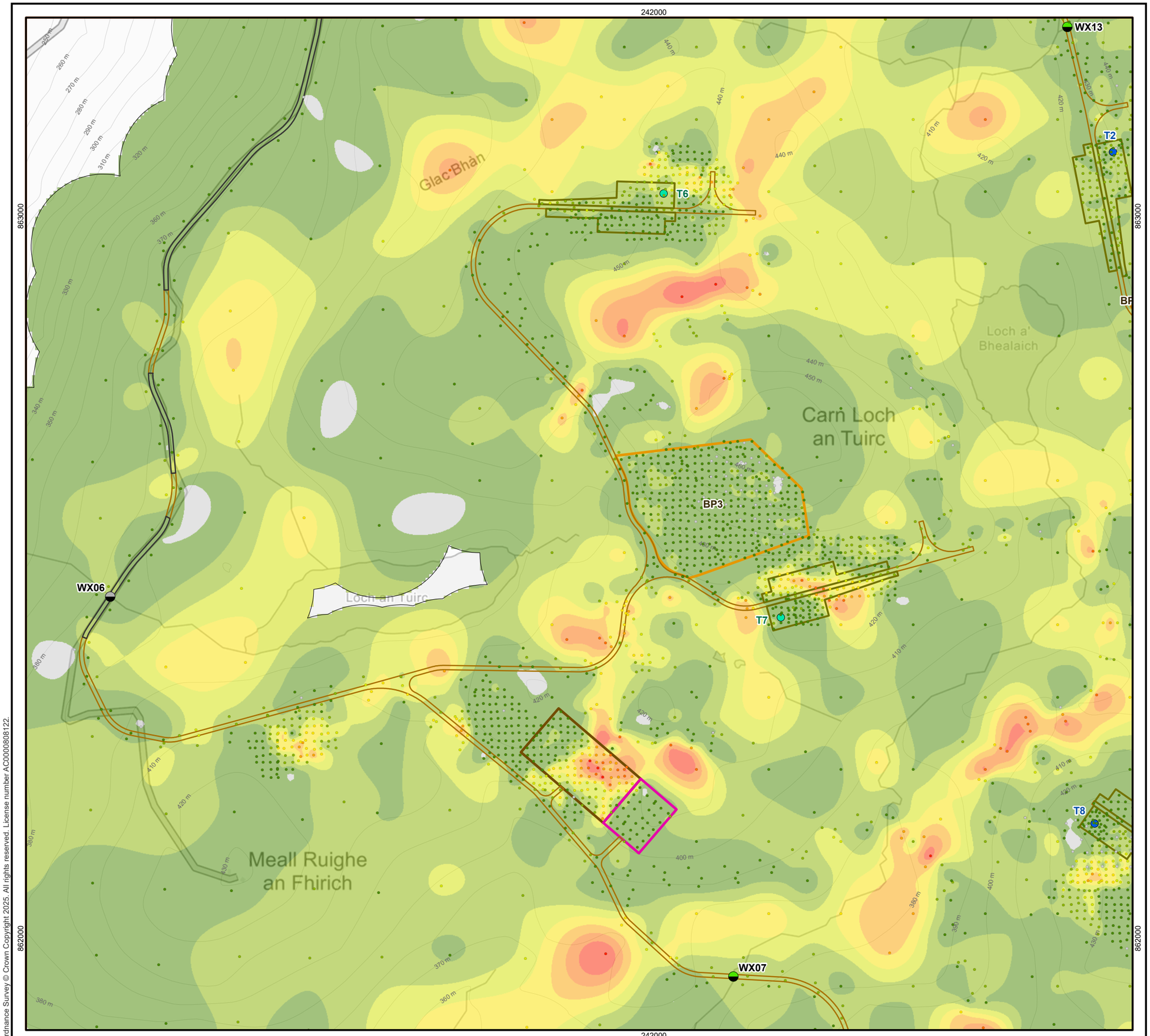
0 100 200 Metres

Produced By: DB	Version: 2
Checked By: JRS	Date: 28/03/2025

Figure 10.2.4c

Peat Depth Detailed - Wind farm site

Carn Fearna Wind Farm
Peat Management Plan
Environmental Impact Assessment Report



Statkraft

N

- Site Boundary
- Proposed Turbine Location (180 m Blade Tip Height)
- Proposed Turbine Location (200 m Blade Tip Height)
- Proposed New Access Track
- Proposed Upgraded Access Track
- Proposed Permanent Hardstanding
- Proposed Permanent Substation
- Proposed Temporary Substation Compound
- Proposed Borrow Pit Search Area
- Existing Watercourse Crossing
- Proposed Watercourse Crossing

Peat Probe Depth (m)

- 0
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5
- 2.5 - 3
- > 3

Peat Depth (m)

- 0
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5
- 2.5 - 3
- > 3

1:5,000 on A3

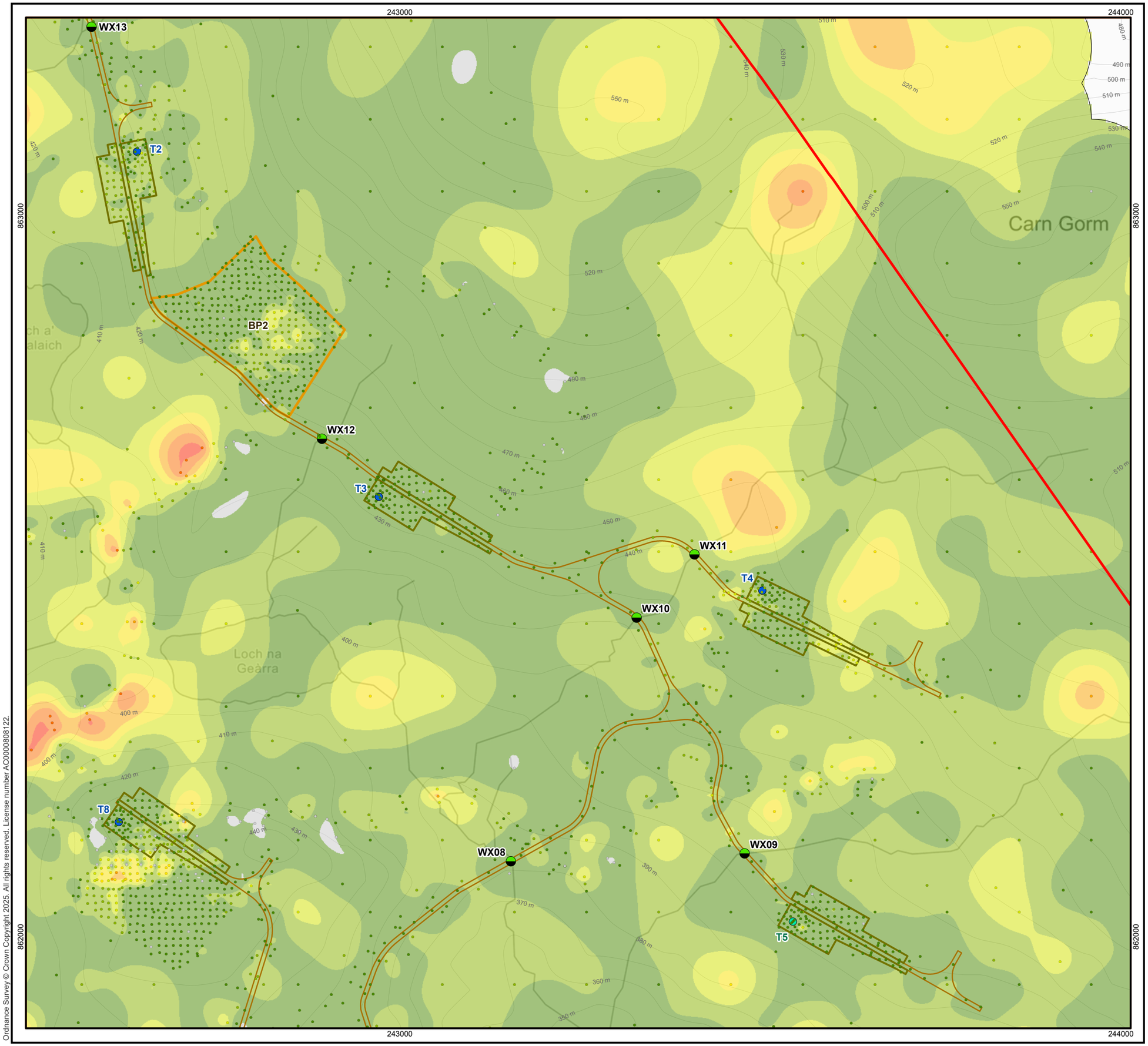
0 100 200 Metres

Produced By: DB	Version: 2
Checked By: JRS	Date: 28/03/2025

Figure 10.2.4d

Peat Depth Detailed - Wind farm site

Carn Fearna Wind Farm
Peat Management Plan
Environmental Impact Assessment Report



Statkraft

N

- Site Boundary
- Proposed Turbine Location (180 m Blade Tip Height)
- Proposed Turbine Location (200 m Blade Tip Height)
- Proposed New Access Track
- Proposed Permanent Hardstanding
- Proposed Borrow Pit Search Area
- Proposed Watercourse Crossing

Peat Probe Depth (m)

- 0
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5
- 2.5 - 3

Peat Depth (m)

- 0
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5
- 2.5 - 3
- > 3

1:5,000 on A3

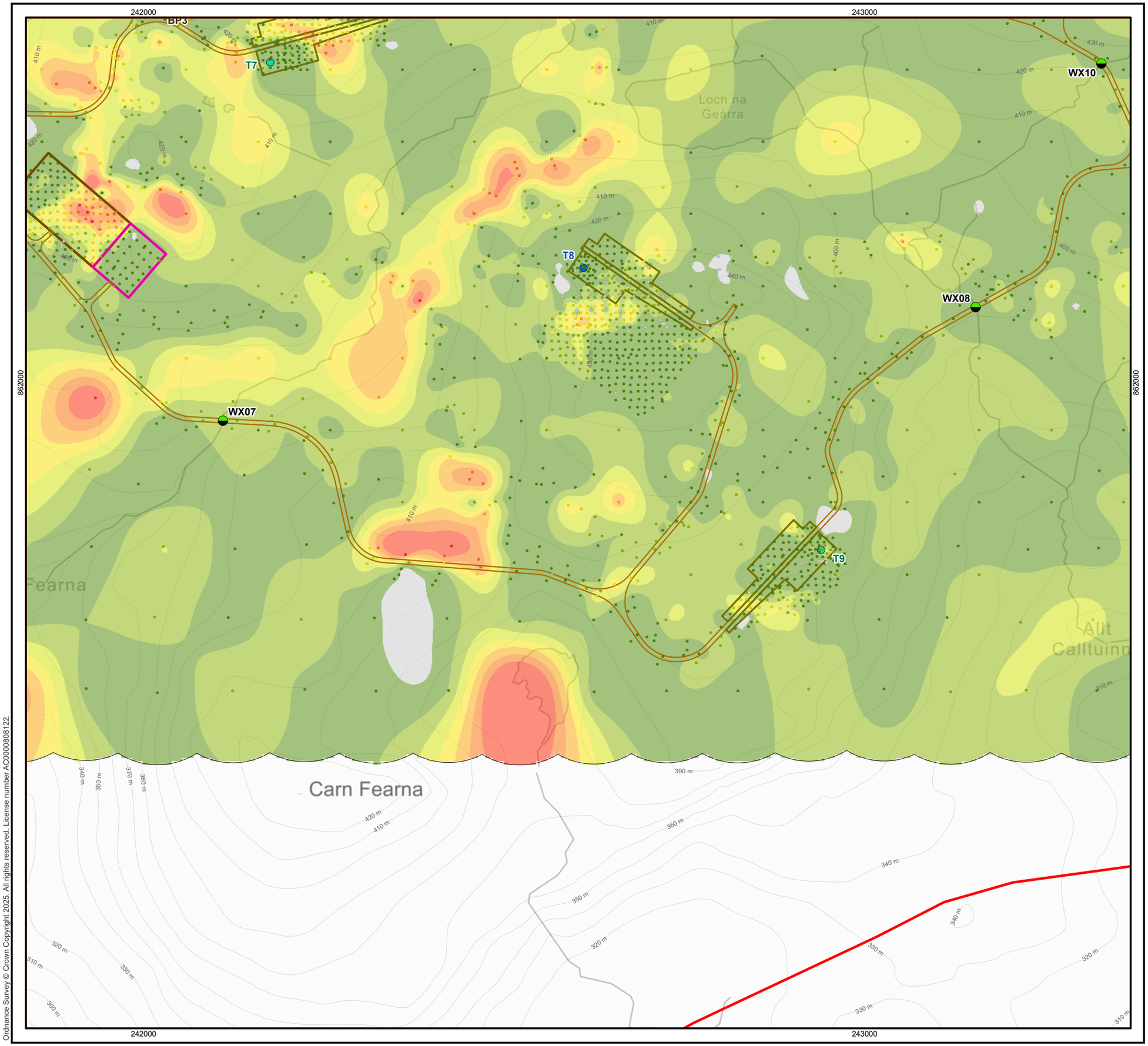
0 100 200 Metres

Produced By: DB	Version: 2
Checked By: JRS	Date: 28/03/2025

Figure 10.2.4e

Peat Depth Detailed - Wind farm site

Carn Fearna Wind Farm
Peat Management Plan
Environmental Impact Assessment Report



Statkraft

N

- Site Boundary
- Proposed Turbine Location (180 m Blade Tip Height)
- Proposed Turbine Location (200 m Blade Tip Height)
- Proposed New Access Track
- Proposed Permanent Hardstanding
- Proposed Permanent Substation
- Proposed Temporary Substation Compound
- Proposed Borrow Pit Search Area
- Proposed Watercourse Crossing

Peat Probe Depth (m)

- 0
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5
- 2.5 - 3
- > 3

Peat Depth (m)

- 0
- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5
- 2.5 - 3
- > 3

1:5,000 on A3

0 100 200 Metres

Produced By: DB	Version: 2
Checked By: JRS	Date: 28/03/2025

Figure 10.2.4f

Peat Depth Detailed - Wind farm site

Carn Fearna Wind Farm
Peat Management Plan
Environmental Impact Assessment Report

Annex A Excavated Materials Calculations

Technical Appendix 10.2: Peat Management Plan

Carn Fearna Wind Farm

Carn Fearna Wind Farm Ltd

SLR Project No.: 402.064563.00001

Infrastructure on Peat	Length (m)	Width (m)	Area (m^2)	Average Depth of Peat (m)	Number	Total Excavated Volume Acrotelm Peat (m^3)	Total Excavated Volume Catotelm Peat (m^3)	Total Excavated Volume Peat (m^3)	Length (m)	Width (m)	Area (m^2)	Average Thickness of Peat (m)	Number	Total Re-use Volume Acrotelm Peat (m^3)	Total Re-use Volume Catotelm Peat (m^3)	Total Re-use Volume of Peat (m^3)	Notes
Access Track - Cut	11631	6	69786	0.50	1	34893		34893	11631	3	34893	0.50	2	28961	4187	34893	3m placed either side of access track.
Access Track - Upgraded	3339	3	10017	0.20	1	2003		2003	3339	3	10017	0.50	2	8314	1202	10017	3m placed either side of access track.
Turbine & Crane Pad Permanent T01	-	-	3700	0.60	1	1850	370	2220	240	2	480	1.00	1	398	58	480	Includes turbine base
Turbine & Crane Pad Permanent T02	-	-	3700	0.60	1	1850	370	2220	240	2	480	1.00	1	398	58	480	Includes turbine base
Turbine & Crane Pad Permanent T03	-	-	3700	0.20	1	740		740	240	2	480	1.00	1	398	58	480	Includes turbine base
Turbine & Crane Pad Permanent T04	-	-	3700	0.50	1	1850		1850	240	2	480	1.00	1	398	58	480	Includes turbine base
Turbine & Crane Pad Permanent T05	-	-	3700	0.20	1	740		740	240	2	480	1.00	1	398	58	480	Includes turbine base
Turbine & Crane Pad Permanent T06	-	-	3700	0.50	1	1850		1850	240	2	480	1.00	1	398	58	480	Includes turbine base
Turbine & Crane Pad Permanent T07	-	-	3700	1.00	1	1850	1850	3700	240	2	480	1.00	1	398	58	480	Includes turbine base
Turbine & Crane Pad Permanent T08	-	-	3700	0.50	1	1850		1850	240	2	480	1.00	1	398	58	480	Includes turbine base
Turbine & Crane Pad Permanent T09	-	-	3700	0.40	1	1480		1480	240	2	480	1.00	1	398	58	480	Includes turbine base
Crane Pad Temporary T01	-	-	3750	0.60	1	1875	375	2250	-	-	3750	0.60	1	1868	270	2250	Fully reinstated
Crane Pad Temporary T02	-	-	3750	0.60	1	1875	375	2250	-	-	3750	0.60	1	1868	270	2250	Fully reinstated
Crane Pad Temporary T03	-	-	3750	0.20	1	750		750	-	-	3750	0.20	1	623	90	750	Fully reinstated
Crane Pad Temporary T04	-	-	3750	0.50	1	1875		1875	-	-	3750	0.50	1	1556	225	1875	Fully reinstated
Crane Pad Temporary T05	-	-	3750	0.20	1	750		750	-	-	3750	0.20	1	623	90	750	Fully reinstated
Crane Pad Temporary T06	-	-	3750	0.50	1	1875		1875	-	-	3750	0.50	1	1556	225	1875	Fully reinstated
Crane Pad Temporary T07	-	-	3750	1.00	1	1875	1875	3750	-	-	3750	1.00	1	3113	450	3750	Fully reinstated
Crane Pad Temporary T08	-	-	3750	0.50	1	1875		1875	-	-	3750	0.50	1	1556	225	1875	Fully reinstated
Crane Pad Temporary T09	-	-	3750	0.40	1	1500		1500	-	-	3750	0.40	1	1245	180	1500	Fully reinstated
Main Temporary Compound	80	65	5200	0.20	1	1040		1040	-	-	5200	0.20	1	863	125	1040	Fully reinstated
Entrance Temporary Compound	80	30	2400	0.20	1	480		480	-	-	2400	0.20	1	398	58	480	Fully reinstated
Satellite Construction Compound	60	40	2400	1.60	1	1200	2640	3840	-	-	2400	1.60	1	3187	461	3840	Fully reinstated
Substation Compound	150	80	12000	1.30	1	6000	9600	15600	-	-	12000	1.30	1	12948	1872	15600	Fully reinstated
Borrow Pit BP1	-	-	25520	0.60	1	12760	2552	15312	-	-	25520	0.50	1	10591	1531	12760	
Borrow Pit BP2	-	-	30620	0.40	1	12248		12248	-	-	30620	0.50	1	12707	1837	15310	
Borrow Pit BP3	-	-	35160	0.30	1	10548		10548	-	-	35160	0.50	1	14591	2110	17580	
Totals						**109482**	**20007**	**129489**						**110153**	**15926**	**132715**	

Total Excavated Volume Acrotelm Peat (m^3)	**109482**
Total Excavated Volume Catotelm Peat (m^3)	**20007**
Total Excavated Volume Peat (m^3)	**129489**
Total Re-use Volume Acrotelm Peat (m^3)	**110153**
Total Re-use Volume Catotelm Peat (m^3)	**15926**
Total Re-use Volume of Peat (m^3)	**132715**
Net Balance (m^3)	**-3226**

Annex B Peat Coring Data

Technical Appendix 10.2: Peat Management Plan

Carn Fearna Wind Farm

Carn Fearna Wind Farm Ltd

SLR Project No.: 402.064563.00001

Peat Core Log

Hole No. **PC01**

Sheet 1 of 1

Project: Carn Fearna WF	Client: Carn Fearna WF Ltd		Dates: 21-05-2024
Project No: 402.064563.00001	Logger: CR	Approved By: RW	Coordinates: E: 241508.00 N: 862264.00
Location: Garve	Hole Type: HA	Level:	Vertical Scale: 1:16

Water	Depth (m)	Sample Type	Depth	Recovery (%)	Depth (m) / Discontinuity Detail	Level (mAOD)	Legend	Stratum Description
	0.00 - 1.00				0.50			Brown fibrous PEAT. (H3, B3).
	1	C	0.00 - 1.00	Recovery = 100%				Dark brown pseudo-fibrous PEAT. (H4, B3).
	1.00 - 2.00							
	2	C	1.00 - 2.00	Recovery = 100%	2.00			Peat Core Complete at 2.00m

Remarks:

Peat Core Log

Hole No.
PC02
Sheet 1 of 1

Project: Carn Fearna WF	Client: Carn Fearna WF Ltd		Dates: 21-05-2024
Project No: 402.064563.00001	Logger: CR	Approved By: RW	Coordinates: E: 241323.00 N: 862611.00
Location: Garve	Hole Type: HA	Level:	Vertical Scale: 1:16

Water	Depth (m)	Sample Type	Depth	Recovery (%)	Depth (m) / Discontinuity Detail	Level (mAOD)	Legend	Stratum Description
	0.00 - 1.00	C	0.00 - 1.00	Recovery = 100%	1.00			Dark brown pseudo-fibrous PEAT. (H4, B2). Peat Core Complete at 1.00m

Remarks:

Peat Core Log

Hole No. **PC03**

Sheet 1 of 1

Project: Carn Fearna WF	Client: Carn Fearna WF Ltd		Dates: 21-05-2024
Project No: 402.064563.00001	Logger: CR	Approved By: RW	Coordinates: E: 242344.00 N: 863549.00
Location: Garve	Hole Type: HA	Level:	Vertical Scale: 1:16

Water	Depth (m)	Sample Type	Depth	Recovery (%)	Depth (m) / Discontinuity Detail	Level (mAOD)	Legend	Stratum Description
	0.00 - 1.00	C	0.00 - 1.00	Recovery = 100%	1.00			Brown fibrous PEAT. (H3, B3).
	1.00 - 2.00	C	1.00 - 2.00	Recovery = 100%	2.00			Brown pseudo-fibrous PEAT. (H4, B3).
	2.00 - 2.60	C	2.00 - 2.60	Recovery = 100%	2.60			Dark brown pseudo-fibrous PEAT. (H5, B3).
								Peat Core Complete at 2.60m

Remarks:

Peat Core Log

Hole No.
PC04
Sheet 1 of 1

Project: Carn Fearna WF	Client: Carn Fearna WF Ltd		Dates: 21-05-2024
Project No: 402.064563.00001	Logger: CR	Approved By: RW	Coordinates: E: 278325.00 N: 822938.00
Location: Garve	Hole Type: HA	Level:	Vertical Scale: 1:16

Water	Depth (m)	Sample Type	Depth	Recovery (%)	Depth (m) / Discontinuity Detail	Level (mAOD)	Legend	Stratum Description
	0.00 - 1.00	C	0.00 - 1.00	Recovery = 100%	1.00			Brown fibrous PEAT. (H3, B2).
								Peat Core Complete at 1.00m

Remarks:

Peat Auger 1
0 – 1.0m

Peat Auger 1
1 – 2.0m

SLR

Suite 223ab
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South Gyle
Edinburgh
EH12 9DQ

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Fax: 0131 335 6831
Web: www.slrconsulting.com

Project : Carn Fearna Wind Farm

Carn Fearna WF Ltd

Project No. :- 402.064563.00001

Date :- May 2024

Peat Auger 2
0 – 1.0m

Peat Auger 3
0 – 1.0m

SLR

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South Gyle
Edinburgh
EH12 9DQ

Tel: 0131 335 6830
Fax: 0131 335 6831
Web: www.slrconsulting.com

Project : Carn Fearna Wind Farm

Carn Fearna WF Ltd

Project No. :- 402.064563.00001

Date :- May 2024

Peat Auger 3
1.0 – 2.0m

Peat Auger 3
2.0 – 2.6m

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EH12 9DQ

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Web: www.slrconsulting.com

Project : Carn Fearna Wind Farm

Carn Fearna WF Ltd

Project No. :- 402.064563.00001

Date :- May 2024

Peat Auger 4
0 – 1.0m

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SLR

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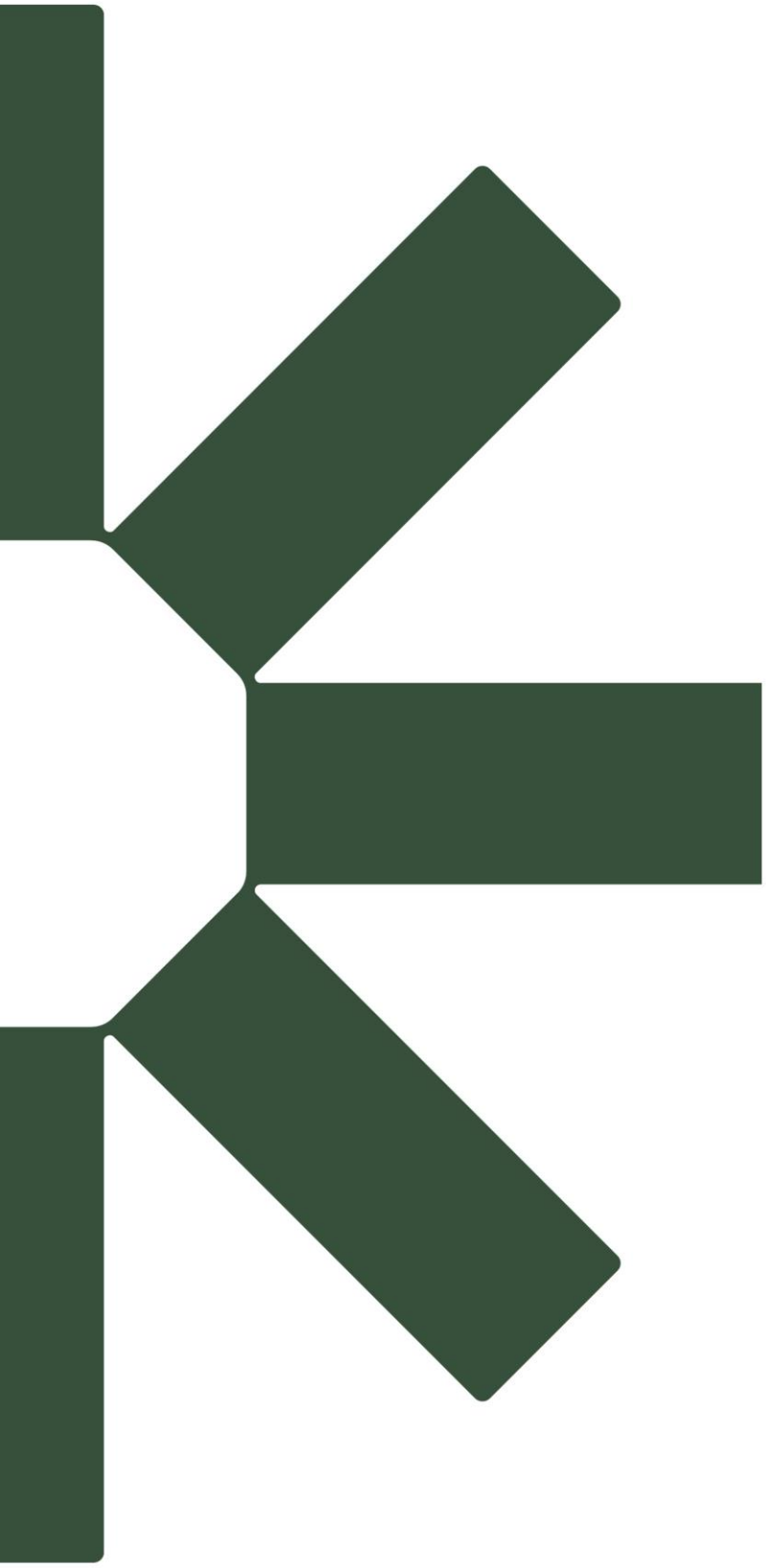
Project : Carn Fearna Wind Farm

Carn Fearna WF Ltd

Project No. :- 402.064563.00001

Date :- May 2024



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