



BB2 WIND FARM LIMITED

Berry Burn Wind Farm Extension – Borrow Pit Application

Soil and Peat Environmental Appraisal

December 2024

DATE ISSUED: 16/12/2024
JOB NUMBER: ED13835
REPORT NUMBER: 008
VERSION: V0.1
STATUS: FINAL

BB2 WIND FARM LIMITED

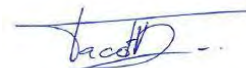
Berry Burn Wind Farm Extension – Borrow Pit Application

Soil and Peat Environmental Appraisal

December 2024

PREPARED BY:

Dr Taco Regensburg Principal Soil and Peat Scientist



REVIEWED BY:

Dr Bill Crooks Service Lead Soils – Associate
Director



APPROVED BY:

Dr Bill Crooks Service Lead Soils – Associate
Director



This report has been prepared by Wardell Armstrong LLP with all reasonable skill, care and diligence, within the terms of the Contract with the Client. The report is confidential to the Client and Wardell Armstrong LLP accepts no responsibility of whatever nature to third parties to whom this report may be made known.

No part of this document may be reproduced without the prior written approval of Wardell Armstrong LLP.



CONTENTS

1	INTRODUCTION	1
1.1	Background	1
1.2	Site description	1
1.3	List of Definitions	2
2	LEGISLATION AND POLICY	4
3	DESK STUDY.....	6
3.1	Consultation.....	6
3.2	Soils	6
3.3	Substrate.....	7
3.4	Peat instability	8
3.5	Habitat and NVC communities.....	8
4	SITE SURVEY	8
5	PLHRA UPDATE FOR BORROW PIT LOCATIONS	10
6	APPRAISAL OF IMPACT.....	12
6.1	Methodology of assessment.....	12
6.2	Potential Effects	14
6.3	Mitigation measures	16

TABLES

Table 1. Mapped Soil Types present within the Site	7
Table 2. Level of Effect.....	14

APPENDICES

Appendix 1 – Borrow pit soil depth data – Micrositing survey November 2024

Appendix 2 – Borrow pit soil depth data – Phase 1 and Phase 2

DRAWINGS/FIGURES

ED13835 018 Peat Depth and Geomorphology

ED13835 019 Surface Firmness

ED13835 020 PLHRA Slope Gradient

ED13835 021 PLHRA Peat Depth

ED13835 022 PLHRA Substrate

ED13835 023 PLHRA Slope Shape

ED13835 024 PLHRA Drainage Proximity

ED13835 025 PLHRA Historic Instability

ED13835 026 PLHRA Likelihood of Peat Instability (Hazard)

ED13835 027 PLHRA Potential Adverse consequences (Exposure) Zones

ED13835 028 PLHRA Peat Landslide Risk (Hazard Ranking)

1 INTRODUCTION

1.1 Background

1.1.1 Wardell Armstrong LLP have been commissioned by BB2 Wind Farm Limited. (hereafter known as 'BB2') to prepare a soil and peat appraisal to support an application for planning permissions for the following Proposed Development:

'Proposed 2no. borrow pits within the Site of the consented but unbuilt Berry Burn Wind Farm Extension'.

1.1.2 The purpose of the Proposed Development is to extract hard rock from two borrow pits to facilitate construction of the Berry Burn Wind Farm Extension. The two borrow pit search areas are referred to collectively as 'the Site'.

1.1.3 Section 36 consent and deemed planning permission for the Berry Burn Wind Farm Extension was granted on 08 December 2021 (reference: 20/01026/S36) (the Consented Development). The permission included for two borrow pit search areas known as Borrow Pit 1 (hereafter refer to as BP1), and Borrow Pit 2. A Ground Investigation (GI) was undertaken by The Natural Power Consultants Limited in October to December 2023 to provide information on the type and quality of borrow pit material and the depth of peat and overburden available within the footprint of these two consented borrow pits

1.1.4 The results of the GI indicated at Borrow Pit 2 did not have sufficient viable material for use as a borrow pit. In order to source the track and compound aggregate for wind farm construction works from an onsite source, it was decided to extend the area of BP1 and to create a new borrow pit (Borrow Pit 2a, hereafter refer to as BP2a). Drawing ED13835/002 Combined BP PoAN Redline Boundary and ED13835/003 Wider Location Plan show the locations of BP1 and BP2a, as well as the wider boundary of the Berry Burn Wind Farm Extension.

1.1.5 The Proposed Development will consist of two borrow pits, BP1 is at National Grid Reference (NGR) NJ 07515 45162 and BP2a is located at NGR NJ 09907 44842.

1.2 Site description

1.2.1 The Site lies within Moray Council's boundary, approximately 12 kilometres (km) south of Forres on the Altyre Estate and covers two distinct areas with a combined area of 14.08 hectares (ha). The total footprint impacted by excavation works and proposed storage areas extends to approximately 8.13 ha. The Site currently comprises open

moorland aside from the BP1 area which incorporates part of the footprint of a now restored borrow pit, associated with the operational Berry Burn Wind Farm.

- 1.2.2 Drawing ED13835/009 Indicative Borrow Pit 1 Design shows the design of BP1. BP1 would be worked in two benched extraction areas; the lower extraction area would generate approximate 122,000m³ of aggregate while the upper extraction area would generate approximate 117,800m³ of aggregate. The lower extraction area would be worked to a floor level at approximately 354 metres Above Ordnance Datum (mAOD) and the upper extraction area worked to a floor level at approximately 380mAOD. The depth of the working for both benched extraction areas is up to approximately 25 metres below existing ground level (mB EGL).
- 1.2.3 Drawing ED13835/010 Indicative Borrow Pit 2a Design shows the design of BP2a. BP2a would be worked as a single benched extraction and would generate approximately 44,000m³ of aggregate. BP2a would be worked to a floor level at approximately 356mAOD resulting in a final working depth of approximately 25m.
- 1.2.4 In addition to the mineral extraction at both BP1 and BP2a, there would be areas for temporary peat and overburden storage and a network of surface water drainage channels designed to collect and direct runoff and water occurring within the borrow pit excavations to discharge points. Drainage from within the borrow pit areas would be directed to a catch pit / outfall. Sediment management measures would be used within the drainage channels including but not limited to strawbales, silt fencing and rock filter dams. At the base of steeper bench faces there would be rock traps and edge protection bunds. Both borrow pits will be restored using overburden and peat.

1.3 List of Definitions

- 1.3.1 A general introduction and definitions relating to peatlands are listed below.

Bogs

- 1.3.2 Wetlands in which peat is accumulating, includes blanket bogs described above and basin bogs.

Peat

- 1.3.3 In this document organic profiles over 0.5 m in depth are referred to as 'peat'. Following the NatureScot definition, an organic soil is recognised as peat if its organic

matter content is > 60% by dry weight¹. Peat is characterised by partially decomposed remains of plants and soil organisms which have accumulated in situ under waterlogged conditions. Peat accumulates where the rate of input of organic material from the surface exceeds the rate of decomposition and ‘turn-over’ of this new material.

Organic soils

- 1.3.4 In this document organic soils with a profile depth below 0.5 m are referred to as ‘organic soils’. Profiles below 0.5m in depth may comprise of peaty gleys, other organo-mineral soils. Peaty gleys and organo-mineral soils are characterised by an organic matter content between 15% and 60 %, due to a 5 centimetre (cm) to 50 cm thick organic horizon (O – organic horizon developed under water-saturated conditions). Mineral soils, as defined for the purpose of soil management here, are those soils which do not contain the organic horizon (humus horizon <5 cm thick can be present) and have the organic matter content in the topsoil below 15 %.

Peatlands

- 1.3.5 The Wildlife Management and Muirburn (Scotland) Act 2024 (WMMSA)², received Royal Assent on 20 April 2024, and widened the scope of the Scottish legal definition of peatlands. The WMMSA now defines peatland as land where the soil has a layer of peat with a thickness of more than 0.4 m. This contrasts with the earlier definition by NatureScot³ covering land with a peat layer of at least 0.5 m in depth. However, to keep in line with NatureScot regulation on soil disturbance associated with windfarm developments, this report recognises peatlands as a landform with peat layers at least 0.5 m in depth.

Acrotelm

- 1.3.6 The acrotelm, or acrotelmic peat, is the upper aerobic layer of peat and consists of living and partially decayed plant material. It typically has a higher hydraulic conductivity and is defined in relation to distance to the permanent water table.

¹ Bruneau, P.M.C & Johnson, S.M. 2014. Scotland’speatland-definitions & information resources. Scottish Natural Heritage Commissioned Report No701. Available at: <https://media.nature.scot/record/~6bb36f7d96>

² <https://www.legislation.gov.uk/asp/2024/4>

³ Bruneau, P.M.C & Johnson, S.M. 2014. Scotland’speatland-definitions & information resources. Scottish Natural Heritage Commissioned Report No701. Available at: <https://media.nature.scot/record/~6bb36f7d96>

Acrotelm thickness can vary with the topography and degree of peat disturbance, e.g. through drainage.

Catotelm

- 1.3.7 The catotelm, or catotelmic peat, layer lies beneath the acrotelm, consists of highly decayed material, and is significantly denser, with low hydraulic conductivity, and is permanently saturated with water.

Grips

- 1.3.8 Drainage ditches cut in peatland to improve value for agriculture, forestry, or other purposes (e.g. accessibility for moorland management).

Reinstatement

- 1.3.9 A process of placing peat within an area for the purpose of restoration, when peat is brought from another location or temporarily excavated during construction and put back.

Restoration

- 1.3.10 A process of assisting the recovery of a system that has been degraded, damaged, or destroyed. For the purpose of this report, the restoration may or may not involve reinstatement of peat, i.e. translocation of peat from one area to the other, e.g. covering of bare peat with acrotelm turves or backfilling gullies.

Peat Landslide Hazard and Risk assessment (PLHRA)

- 1.3.11 The PLHRA aims to assess the peat landslide risk and its potential consequences on sensitive receptors to inform the iterative design process and, where following optimisation residual risk was still present, determine the requirements for mitigation measures and inform geotechnical investigation prior to excavations commencing.

2 LEGISLATION AND POLICY

- 2.1.1 A brief summary of the currently applicable planning policy framework is set out below.

- 2.1.2 National Planning Framework 4 (NPF4) was adopted in February 2023. NPF4⁴ sets out the national spatial strategy for Scotland. It sets out spatial principles, regional priorities, national developments and national planning policies.
- 2.1.3 Policy 5 ‘Soils’ discusses protection of carbon-rich soils, restoration of peatlands and minimising disturbance to soils from development. Policy 5 (d) stipulates the need to undertake a detailed site-specific assessment to identify:
- the baseline depth, habitat condition, quality and stability of carbon rich soils;
 - the likely effects of a development on peatland, including on soil disturbance; and
 - the likely net effects of a development on climate emissions and loss of carbon.
- 2.1.4 Under NPF4 Policy 5, all developments on carbon rich soils need to adhere to a mitigation hierarchy which has been developed to ensure adverse impacts are first avoided and then minimised through best practice. To demonstrate that this approach has been followed a peat management plan should be submitted alongside other appropriate plans required for restoring and/or enhancing the site into a functioning peatland system capable of achieving carbon sequestration.
- 2.1.5 Moray Council adopted its MLDP⁵ in July 2020, which replaced the previous 2015 MLDP.
- 2.1.6 Policy EP16 (Geodiversity and Soil Resources) notes that where peat and other carbon rich soils are present, disturbance to them may lead to the release of carbon dioxide contributing to greenhouse gas emissions. The policy states that major developments will only be permitted where it has been demonstrated that unnecessary disturbance of such interests has been avoided, that the benefits of the development outweigh any detrimental impacts and there is no viable alternative.
- 2.1.7 The Peatland Survey: Guidance on Developments on Peatland⁶ provides a consistent peat survey methodology since 2017, with a particular focus on wind farm developments and its use in terms of assessment guidance remains unchanged.

⁴ Scottish National Planning Framework 4. Adopted in 2023. Available at <https://www.gov.scot/publications/national-planning-framework-4>.

⁵ Moray Council (2020) Moray Local Development Plan. Available at: <http://www.moray.gov.uk/>

⁶ Scottish Government, Scottish Natural Heritage, SEPA (2017) Peatland Survey. Guidance on Developments on Peatland. Available at: <https://www.gov.scot/publications/peatland-survey-guidance/>

2.1.8 Guidance for peat instability assessments remains unchanged from the guidance used to inform the 2020 Environmental Impact Assessment (EIA) Report for the Consented Development. The update to the PLHRA follows the same assessment structure as that presented in the PLHRA that accompanied the 2020EIA Report for the Consented Development (Technical Appendix 12.4). A summary of the PLHRA outcomes for the Proposed Development is set out in Section 5.

3 DESK STUDY

3.1 Consultation

3.1.1 Moray Council issued a Screening Opinion in respect of the Proposed Development in August 2024 confirming that EIA is not required. Throughout the production of this report, reference has been made where required to the EIA Report for the Consented Development (referred to as the 2020 EIA Report).

3.1.2 The Proposed Development will likely reduce the overall impacts of the Consented Development, on receptors previously identified for soils (including peat) in the 2020 EIA Report. There have been no reported substantial changes in ground conditions since the 2020 EIA Report, confirmed by a site visit in August 2024. For these reasons, statutory bodies that were consulted with regards to soil topics for the 2020 EIA Report for the Consented Development were not re-consulted for this assessment in preparation of the Soil and Peat Appraisal for the Proposed Development.

3.2 Soils

3.2.1 Soil types present in BP1 and BP2a have been reviewed by examining Chapter 12 Figure 12.3 and Figure 12.6 of the 2020 EIA Report, which identified two dominant soils: Blanket Peat, and a Strichen peaty gley podzol.

3.2.2 Blanket bog is the most common form of peat in Scotland, formed under cool maritime conditions (areas of high rainfall, often with low temperatures). Dead plant material builds up faster than it can be broken down by soil organisms. They contain a large store of carbon and are considered very important for nature conservation.

3.2.3 Peaty gley deposits are naturally poorly drained soils that develop under conditions of intermittent or permanent waterlogging. Soils are typically greyish or blue with orange mottling. Peaty gleys have an organic surface horizon. They are highly extensive soils, particularly in northern and western districts and are listed among principal soils, generally together with peat, in a large number of map units. Podzols typically form in

acid, coarse textured, well drained materials. Surface vegetation is usually coniferous woodland or heather moorland. Podzols are generally nutrient deficient and heavily leached in the upper horizons resulting in a bleached appearance, with an accumulation of thin layers of iron/aluminium oxides or organic material at lower levels within the soil profile, with an orange-brown or black colour respectively. Peaty podzols have an organic surface horizon. In areas with low slope angles, e.g. in parts of BP1, waterlogging may occur above the ironpan; this can produce a soil intermediate between a podzol and a gley.

Soil Association*	Soil Series	Main soil subgroup	Parent Material
Organic Soils	Blanket Peat	Dystrophic blanket peat	Organic deposits
Strichen	Gaerlie	Peaty gley podzols	Drifts derived from arenaceous schists and strongly metamorphosed argillaceous schists

*James Hutton Institute (2016) 1:25,000 National Soil Map of Scotland, digital dataset

3.2.4 Observations made during the 2024 survey generally agree with the mapped soil types (Table 1 and Chapter 12 Figure 12.3 of the 2020 EIA Report), but there are locations where organic soils are present outside their mapped areas or where their extent is less than mapped, which is to be expected from a map of this scale. Therefore, to determine the presence and depth of peat within the Site, the survey data has been used rather than the published mapping.

3.2.5 Made Ground is present within BP1, in the form of existing access tracks and backfilled overburden from the original borrow pit location associated with the operational Berry Burn Wind Farm. The British Geological Survey (BGS)⁷ do not record any ‘Made Ground’ within the BP2a area.

3.3 Substrate

3.3.1 A Ground Investigation (GI) report details comprehensive investigations that were carried out between October and December 2023. The results of the GI highlighted significant variations in peat thickness, glaciofluvial deposits, and the presence of bedrock across the site of the Consented Development, particularly Nethybridge Psammite Formation.

⁷ British Geological Survey (2024) GeoIndex Onshore [online]. Accessed October 2024. Available at: <https://mapapps2.bgs.ac.uk/geoindex/home.html>

3.4 Peat instability

3.4.1 The geomorphic site walkover in 2020 to inform the 2020 EIA Report identified an area of inactive historic peat instability near the Loch Noir, but the failure appeared to be currently inactive (see Chapter 12 Figure 12.12 of the Consented Development 2020 EIA Report).

3.5 Habitat and NVC communities

3.5.1 National Vegetation Classification (NVC) information was interpreted from Chapter 9 ‘Ecology’ of the 2020 EIA Report, which showed the dominant habitats around BP1 and BP2a are dry and wet dwarf shrub heath with dry modified bog and wet modified blanket bog occurring to a lesser extent over deeper soil profiles.

4 SITE SURVEY

4.1.1 A microsites survey was undertaken on 7 November 2024, involving peat depth penetration measurements within the footprint of the Proposed Development. The purpose of this survey was to assess ground conditions around the footprint of the Proposed Development infrastructure, including the location of the two proposed borrow pits in preparation of construction works on the Consented Development commencing in 2025.

4.1.2 Peat depths were investigated using a collapsible aluminium or carbon-fibre avalanche pole or peat probe of approximately 15 mm diameter, in a process commonly referred to as peat probing. Probing locations were selected within the Site to complement the existing data set as presented for the Consented Development. Soil depths were recorded at a 10m grid within the extent of extraction areas and at a 20 m grid in a 50 m buffer zone for soil storage areas. The maximum depth was reached unless the resistance of peat makes the probing insecure due to excessive loads. The type of substrate present under peat is recorded based on the feel upon refusal (depth at which resistance was too great to insert the probe deeper) as: C – clay, S – sand, G – gravel, R – rock, W – wood, and X – uncertain or base not reached. Records of the 2024 survey are included in Appendix 1.

4.1.3 Various drains were identified surrounding both BP1 and BP2a.

- 4.1.4 Surface firmness was estimated using the methodology set out in the Scottish Government peat survey guidance⁸. Surface firmness was only recorded when the probe location was in peat and is shown in Drawing ED13835 019 Surface Firmness. Firmness across the Proposed Development was classed as Firm, except for deep peat pockets locally within the boundary of BP2a, which often coincided with ponding water on the surface.
- 4.1.5 The lower bench of BP1 shows peat at depth of up to 1m. The soil storage areas on the roadside show peaty soils with depths below 0.5m. Soil depth in the upper bench of BP1 is limited to 0.5m, with a single point going as deep as 0.7m. Probed locations around the proposed peat storage area of BP1 show deeper peat up to 1.4 m.
- 4.1.6 BP2a is located in and around a flush area, surrounded by steep slopes. The north-west boundary is relatively flat and is characterised by peat layers up to 1 m in depth, with deeper peat extending to the north and northeast beyond the BP2a boundary. The southwest slopes within BP2a are characterised by rock outcrop, surrounded by a band of peaty soils (<0.5m). The flush area in the valley showed peat depths up to c. 3m in depth.
- 4.1.7 Both borrow pit locations had generally firm surfaces.
- 4.1.8 The area of inactive historic peat instability, near Loch Noir (see Chapter 12 Figure 12.12 of the 2020 EIA Report), was identified to potentially affect the proposed track towards BP2a. The 2024 survey did not find evidence that this rupture has increased in extent, and therefore the baseline for historic peat instability for the Site is assumed to be unchanged from the 2020 EIA Report.
- 4.1.9 To interpolate depth data across the Proposed Development, soil depth data from Phase 1 and 2 surveys associated with the 2020 EIA Report and the 2024 survey were combined, the results of which are shown in Drawing ED13835 018 Peat Depth and Geomorphology. For reference the selected phase 1 and 2 data associated with the 2020 EIA Report is included in Appendix 2.
- 4.1.10 As the majority of the area within the Proposed Development that is considered for stripping of soils (extraction areas) was recorded as shallow peat (<1m) or peaty soils (<0.5m), the collection of core samples was omitted.

⁸ Scottish Government, Scottish Natural Heritage, SEPA (2017) Peatland Survey. Guidance on Developments on Peatland. Available at : <https://www.gov.scot/publications/peatland-survey-guidance/>

5 PLHRA UPDATE FOR BORROW PIT LOCATIONS

- 5.1.1 Micrositing data across BP1 and BP2a collected during the November 2024 site survey have been used to update peat depth mapping in line with the Scottish PLHRA guidance⁹, to produce updated PLHRA figures, using the same methodology and assessment criteria as described in Chapter 12 Technical Appendix 12.4 of the 2020 EIA Report.
- 5.1.2 The peat slide risk assessment methodology is based on scoring of the following six preparatory factors:
- slope gradient – drawing ED13835 020 PLHRA Slope Gradient;
 - peat depth – drawing ED13835 021 PLHRA Peat Depth;
 - substrate type – drawing ED13835 022 PLHRA Substrate;
 - slope shape – drawing ED13835 023 PLHRA Slope Shape;
 - drainage proximity – drawing ED13835 024 PLHRA Drainage Proximity;
 - historic instability – drawing ED13835 025 PLHRA Historic Instability.
- 5.1.3 These factors are qualitative but are given numeric scores that reflect their relative contribution to the overall likelihood of peat slide. This is further modified by weighting of the scores, with slope and peat depth determining two thirds of the results, and the remaining four factors one twelfth each, which result in a Likelihood of Peat Instability (Hazard) as shown in Figure ED13835 026.
- 5.1.4 The exposure to peat landslide (adverse consequence) was expressed as a weighted factor showing lower exposure with increasing distance away from the proposed development footprints respectively¹⁰. The classification of the exposure was classified into four bands of 50m increase, as is shown in ED13835 027 PLHRA Potential Adverse consequences (Exposure) Zones.
- 5.1.5 The risk was estimated by multiplying the likelihood score by the adverse consequences category and the results are shown in Drawing ED13835 028 – Peat Landslide Risk (Hazard Ranking).

⁹ Scottish Government, 'Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments', April 2017. Scottish Government, 'Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments', April 2017.

¹⁰ MacCulloch, 'Guidelines for The Risk Management of Peat Slips on The Construction of Low Volume/Low Cost Roads Over Peat'.

- 5.1.6 Slopes range from 3 to 9 degrees for most of the upper bench of BP1. Slopes on the lower bench are the result of previous restoration following aggregate extraction, including some steeper faces that are inconsistent with those in the natural surroundings.
- 5.1.7 The lower bench of BP1 shows peat depth up to 1m. The soil storage areas on the roadside show peaty soil depths below 0.5m. Soil depth in the upper bench of BP1 is limited to 0.5m, with a single point going as deep as 0.7m. Probed locations around the proposed peat storage area of BP1 show deeper peat up to 1.4 m. Substrate under BP1 is predominantly undulating bedrock with more irregular bedrock or sandy structures in the upper bench. Slope shape is mostly concave or planar, with exceptions at the roadsides and previous worked faces. BP1 is not influenced by active historic instabilities, except one location where an inactive slip on the northwest of the lower bench occurs.
- 5.1.8 BP1 is flanked by various natural and manmade drainage features to the north and south of the boundary. The likelihood of peat landslide was estimated to be unlikely to probable for the extraction zones of BP1, unlikely for the peat storage area of the upper bench, but a mixture of spots of probable and likely scores closer to drainage features, comprising storage areas for overburden and peat adjacent to the lower bench. Where steep slopes occur in BP1 (see Drawing ED13835 020), probable likelihood of peat landslide resulted in a moderate risk. Peat landslide risk for the remainder of BP1 is considered to be mostly Low.
- 5.1.9 The surface area of BP2a is characterised by a flush area located between southwest and northeast steep slopes > 9 degrees. The north-west boundary is relatively flat and is characterised by peat layers up to 1 m in depth, with deeper peat extending to the north and northeast beyond the BP2a boundary and the lower lying flush.
- 5.1.10 Substrate is a mixture of undulating bedrock, with visual rock outcrop in the northeast of the BP2a boundary. Slope shapes are mostly concave, with the exception adjacent to rock outcrops and steeper slopes. Although BP2a is characterised by a small water carrying flush, the feature was not characterised as a significant drainage feature for the wider Consented Development. Signs of recent or historic instability were not identified within the BP2a boundary. As a result, likelihood of peat landslide is primarily classed as Unlikely to Probable, due to presence of steep slopes, to Likely where convex slope shapes occur. The position of consented Turbine 6 and the river Lossie were considered the main receptors for exposure to potential runoff of peat

landslides (adverse consequences) within the BP2a boundary, resulting in a Moderate to Low risk for the majority of the BP2a area, with Negligible locally outside the influence zone of Turbine 6 and River Lossie.

6 APPRAISAL OF IMPACT

6.1 Methodology of assessment

6.1.1 The environmental impact of the Proposed Development has been determined by reviewing baseline conditions and potential changes to it as result of the Proposed Development. The below section outlines an approach for receptor analysis, determining the level of change from the baseline conditions and the resulting level of effect the Proposed Development has on the identified receptor.

Sensitivity of peatland

6.1.2 The potential effects of the Proposed Development have been assessed by considering a combination of receptor sensitivity and magnitude of change from the baseline.

6.1.3 Soils play a major role in the context of climate change as they support the ability to uptake and store carbon from the atmosphere. Peat soils in this respect form a particularly important component in the climate change nexus as they provide the potential to accumulate carbon indefinitely in the right conditions. Potential impacts of the Proposed Development on each of these functions was assessed.

6.1.4 In healthy upland peatlands, water filtration is fulfilled by the upper layer of peat (acrotelm), rather than the full depth of the peat deposit. The lower layer of peat (catotelm) often shows a decreasing hydraulic conductivity with depth. Where the deposit is underlain with bedrock of lower impermeability, deep drainage is impaired. As a result, in blanket bog water filtration is primarily fulfilled by the top layer of the peat and above ground vegetation. The function of controlling the rate at which rain reaches the watercourses in peatland areas is dependent on the surface roughness provided by the vegetation, as peat deposits often provide little or no capacity to store additional water due to already being saturated.

6.1.5 For mineral soils, the capacity to store water and mitigate its flow depends on the conditions of the soil surface, the level of organic matter content, and the structure of deeper soil layers.

6.1.6 Due to the nature of peat, storing carbon and gas exchange, together with supporting habitats for unique plants and animals are highly pronounced functions.

- 6.1.7 While the function of supporting plants and animals is considered in Chapter 9 ‘Ecology’ of the 2020 EIA Report, the type of vegetation present is a main indicator for carbon sequestration activity of blanket bog, therefore its condition is used as a factor in determining the sensitivity of the peatland to change.
- 6.1.8 A high sensitivity is associated with locations within a SSSI or active Blanket Bog habitat or peat deeper than 1 m, with water table higher than 0.3m, and good vegetation cover, or peatland containing significant carbon stock and actively sequestering carbon, thus highly sensitive to changes in water table.
- 6.1.9 A medium sensitivity is associated with degraded (through erosion, drainage etc.) peat of varying depth, generally less than 1m, with water table below 0.3m in most locations, and as a result unlikely to be peat forming.
- 6.1.10 A low sensitivity is assumed for locations where peat is sporadic discontinuous, peat depths below 1m deep or peaty soils (less than 0.5m of peat), that do not form a functioning peat bog, with water tables below 0.3m. It also includes areas where peat is damaged by overgrazing, forestry, agriculture and/or highly eroded.

Level of change

- 6.1.11 For this appraisal the level of change from the baseline condition is determined by the area of land impacted by soil disturbance and area prone to landslide risk. Development in areas of Moderate and High peat landslide risk should be avoided and minimised by design where possible. Should development take place in areas of Moderate and High Landslide risk, measures should be in place to mitigate on- and offsite effects to adjacent land following industry guidance best practice. The below section sets out four classes of change based on the severity of impact one could expect in relation to construction on peatlands.
- 6.1.12 A High level of change is considered if an action occurs that has a potential to cause total loss of or alteration to the baseline resource such that post development characteristics, quality and, in consequence, function(s) of the receptors would be fundamentally and irreversibly changed.
- 6.1.13 Where loss of, or alteration to, the baseline resource occurs such that post development characteristics or quality would be partially lost or changed at a local level, is considered a Medium level of change.

6.1.14 A Low level of change is considered when no material effects occur on the condition of the receptor. Small changes to the baseline resource, which are detectable, but the underlying characteristics or quality of the baseline situation would be similar at a local and site level to pre-development conditions.

6.1.15 The level of change is considered Negligible when a very slight change to the baseline conditions would occur at a local and site level, which is barely distinguishable, or approximates to the ‘no change’ situation.

Level of Effect

6.1.16 The level of impact combines the receptor sensitivity and the level of change. This is a general approach to, or guidance for, assessing the Level of Impact associated with the Proposed Development.

Table 2. Level of Effect				
Receptor Sensitivity	Level of change			
	High	Medium	Low	Negligible
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Minor
Low	Moderate	Minor	Minor	Negligible

6.2 Potential Effects

Sensitivity of peatland

6.2.1 There are a range of potential effects associated with working the two borrow pits which could adversely affect the quantity and quality of the peat and soils. Potential effects include:

- Loss and fragmentation of peatland due to peat disturbance within the Site;
- Destabilisation of the peat, resulting in an increased risk of peat slide during excavations (refer to Drawing ED13835 020-028);
- Water discolouration and increased sediments in watercourses, from water draining from construction areas (refer to the accompanying Water Environmental Appraisal); and
- Loss of carbon stores contained within the undisturbed peat that have the potential to be released as CO₂ and other greenhouse gases.

6.2.2 Direct potentially negative effects on all peat and soils may arise from:

- Damage and loss during handling and storage required for earthworks (e.g. drying, loss of vegetation, structure and water holding capacity);
- Mixing of distinct soil layers, acrotelm with lower horizons of the catotelm, resulting in the loss of seed banks contained in the acrotelm; and
- Compaction through trafficking and inappropriate use of construction machinery that results in a reduction in the quality and functioning of peat and soils adjacent to working areas.

6.2.3 Where practical and taking account of other constraints, such as geotechnical safety buffers etc., borrow pits are located away from areas of habitat that are defined as blanket bog and ground water dependent terrestrial ecosystems (GWDTE) (refer to Water Environmental Appraisal and the Ecology Appraisal). NVC information was interpreted from the Ecology Appraisal, which showed the dominant habitats around BP1 and BP2a are dry and wet dwarf shrub heath, dry modified bog, and wet modified blanket bog to a lesser extent over deeper soil profiles. The ecological characterisation did not include key species (e.g., M19, M17 and M25) limiting the importance of the habitat as compared to intact blanket bog.

6.2.4 Combining the characterisations of peat depth and vegetation composition, the Site of the Proposed Development is considered to be of Low sensitivity in terms of peatland.

Level of change

6.2.5 For each borrow pit, where possible, the access track and associated infrastructure has been designed to minimise the potential disturbance on adjacent areas of blanket bog habitat.

6.2.6 However, the nature of the Proposed Development will result in the permanent displacement of peat (>0.5m) and peaty-gley podzols (<0.5m).

6.2.7 For BP1 the impacted land comprises of a c. 3.6 ha extraction area, c. 1.1 ha overburden storage area and c. 0.92 ha temporary peat storage area. Peat landslide risk is considered to be Low, and Moderate where steep slopes occur. A minor part to the east of BP1 is classed as Negligible risk of peat landslides.

6.2.8 A total impacted area associated with BP2a comprises c. 1.24 ha for the extraction area, c. 0.7 ha for overburden storage area and c. 0.57 ha area for temporary peat storage. Peat landslide risk is Moderate to Low with the moderate risk occurring

directly adjacent the consented position of Turbine 6 due to deep peat and steep gradients.

6.2.9 There is likely to be a combined disturbance (alteration) to c. 8.13 ha of the baseline resource such that post development characteristics or soil quality would be partially lost or changed across this area at a local level. The borrow working areas will be restored and therefore the extent of the alteration to peat and soils resources, will be limited.

6.2.10 Peat landslide risk is generally Low or Negligible for both borrow pit locations, with areas classed as Moderate over steep slopes within BP1 related to manmade slopes, and steep slopes within BP2a in the vicinity of Turbine T6.

6.2.11 The overall level of change associated with the Proposed Development footprint, comprising c. 8.13 ha of land take, is considered to be Medium.

Level of Effect

6.2.12 Considering mitigation by design and standard best practice, the level of change on the peat resource (including the surface organo-mineral horizon), would be Medium due to the potential loss or damage of c. 8.13 ha of land and Low peat landslide risk with Moderate locally (majority of land classed as Low). Combined with a Low peatland receptor sensitivity, the level of effect would be considered as Minor (see Table 2).

6.3 Mitigation measures

6.3.1 The section below outlines best practice construction techniques that the contractor would be expected to adopt to further minimise the potential for adverse effects upon the soil and peat resource.

6.3.2 Standard best practice (standard mitigation measures) during peat handling, for minimisation of disturbance, reinstatement of peat and restoration of peatland will be included in the Peat Management Plan (PMP) which will be submitted pursuant to condition 19 of the Consented Development decision. Briefly those measures will comprise:

- Separate excavation, handling and storage of acrotelm, catotelm, and mineral subsoil (under peat or peaty-gley podzol soils);
- Progressive reinstatement of peat at the margins of infrastructure and restoration of degraded areas of blanket bog during the construction phase;

- Early removal of drainage once it is not required for construction; and
- Monitoring of vegetation, water table levels and peat stability during the operational phase of the Consented Development.

6.3.3 The PMP (which is in draft format as of December 2024) assumes that the top layer of organo-mineral soils (peaty gley podzols) will be treated in the same way as acrotelm peat. The mineral subsoil will be reused as engineering fill where suitable, either in-situ or another location within the Consented Development footprint, e.g. as a sub-base of cut tracks.

6.3.4 The borrow pits will be fully restored using peat originating from the borrow pit areas, before the extraction, and any additional peat excavated from track and turbine locations of the Consented Development. The two borrow pit voids will be restored with peat (up to a maximum 2.0m deep in the borrow pit voids, consistent with condition 19 of the Consented Development consent) to an area of blanket bog, and on slopes to dry heath.

6.3.5 There are no locations where the infrastructure would be located on areas of high peat instability risk.

6.3.6 The main mitigation measures where any risk from peat landslide is identified would comprise:

- Construction activities will be undertaken by suitably qualified personnel;
- Detailed geotechnical investigation in areas of moderate peat landslide risk affected by the Proposed Development;
- Maintenance of existing drainage patterns through detailed drainage design; and
- Engineering measures, such as slope buttressing and a rock-filled road construction (where necessary).

6.3.7 Following the PLHRA, it is concluded that peat landslide risk in BP1 and BP2a can be effectively controlled with best practice and the proposed mitigation measures.

APPENDICES

Berry Burn Wind Farm Extension

Borrow Pit assessment

Appendix 1 Micrositing data for BP1 and BP2a (November 2024)

Depth (cm)	Substrate	Firmness	x	y	Note
5	C	3	307435.0	845070.1	Rock outcrop in the area
5	C	3	307440.8	845049.2	
20	C	3	307455.2	845071.0	
0	G	3	307473.1	845114.5	
20	R	3	307473.1	845094.5	
10	R	3	307473.1	845054.5	
5	R	3	307475.8	845067.2	
5	R	3	307475.8	845067.2	
5	R	3	307497.7	845076.1	Rock outcrop in area
0	R	3	307513.1	845094.5	
0	G	3	307513.1	845294.5	
0	R	3	307513.1	845274.5	
20	R	3	307513.1	845254.5	
0	R	3	307515.3	845078.3	
0	G	3	307533.1	845134.5	
5	R	3	307533.1	845114.5	
100	R	3	307533.1	845334.5	
110	R	3	307533.1	845314.5	
40	R	3	307533.1	845294.5	
40	R	3	307533.1	845274.5	
5	G	3	307533.1	845254.5	
10	R	3	307536.4	845074.0	
10	R	3	307536.4	845074.0	
70	C	3	307551.5	845240.1	
15	S	2	307551.7	845257.4	
0	G	3	307553.1	845134.5	
0	R	3	307553.1	845114.5	
40	R	3	307553.4	845071.5	
40	R	3	307553.4	845071.5	
35	C	3	307553.8	845334.8	
45	S	2	307555.5	845275.6	
25	C	3	307556.4	845299.4	
50	C	3	307558.3	845318.2	Very firm, almost stuck the probe
0	G	3	307567.2	845177.1	Rock outcrop in the area
0	G	3	307572.0	845199.2	Rock outcrop in area
5	G	3	307573.0	845214.0	
90	R	3	307573.1	845334.5	
50	R	3	307573.1	845314.5	
20	C	3	307573.5	845070.8	

Depth (cm)	Substrate	Firmness	x	y	Note
20	C	3	307573.5	845070.8	
5	C	3	307573.7	845277.2	
35	G	3	307573.9	845235.4	
5	R	3	307574.2	845117.6	Rock outcrop in the area
10	G	3	307574.5	845258.9	Gravel on surface
15	S	2	307575.3	845136.8	
0	G	3	307577.1	845157.4	
0	R	3	307593.1	845134.5	
0	R	3	307593.1	845114.5	
10	R	3	307593.1	845334.5	
80	R	3	307593.1	845314.5	
20	R	3	307593.1	845294.5	
10	R	3	307593.1	845274.5	
20	R	3	307593.1	845254.5	
10	R	3	307593.1	845214.5	
10	R	3	307593.1	845194.5	
0	R	3	307593.1	845174.5	
0	R	3	307593.1	845154.5	
0	G	3	307608.3	845195.2	Rocks on surface
0	G	3	307608.3	845195.2	Rocks on surface
40	C	2	307610.8	845333.1	From the bottom of a small gully
90	R	3	307611.9	845312.8	Adjacent to grip
60	X	3	307612.4	845294.9	
5	C	3	307612.5	845216.7	
0	R	3	307613.1	845154.5	
60	R	2	307613.1	845134.5	
0	R	3	307613.1	845114.5	
20	R	3	307613.8	845237.7	
35	R	2	307614.3	845259.2	In vicinity of Bog Pool
70	G	3	307614.8	845276.4	
60	R	3	307633.1	845334.5	
30	R	3	307633.1	845314.5	
40	R	3	307633.1	845294.5	
60	R	3	307633.1	845274.5	
20	R	3	307633.1	845254.5	
20	R	3	307633.1	845234.5	
20	R	3	307633.1	845214.5	
0	R	3	307633.1	845194.5	
15	R	3	307633.1	845154.5	
5	G	3	307633.1	845134.5	
60	R	3	307633.1	845174.5	
15	G	3	307633.1	845114.5	
10	R	3	307649.6	845132.1	

Depth (cm)	Substrate	Firmness	x	y	Note
10	R	3	307649.6	845132.1	
60	R	3	307650.8	845302.8	
60	R	3	307650.8	845302.8	
0	R	3	307650.9	845109.3	
0	R	3	307650.9	845109.3	
50	R	3	307651.1	845336.3	
50	R	3	307651.1	845336.3	
50	R	3	307653.0	845316.9	
40	R	3	307653.1	845235.9	
70	R	3	307653.2	845255.7	
5	R	3	307653.8	845183.1	
70	R	3	307654.2	845280.9	
20	R	3	307654.6	845220.1	
20	R	3	307654.8	845200.0	
10	R	3	307658.5	845164.4	
60	C	3	307673.1	845198.3	
100	S	2	307673.8	845335.5	
65	S	3	307674.6	845139.8	
60	C	2	307674.7	845297.4	
95	C	1	307674.8	845255.1	
75	S	2	307675.3	845311.7	
85	C	1	307675.4	845278.0	
55	S	3	307675.4	845220.0	
45	S	3	307675.7	845239.3	
60	S	3	307676.3	845161.6	
50	C	3	307677.8	845114.1	
90	S	3	307678.6	845180.0	
60	R	3	307687.1	845285.9	
60	R	3	307687.1	845285.9	
70	R	3	307689.8	845248.5	
70	R	3	307689.8	845248.5	
80	R	3	307690.1	845225.9	
80	R	3	307690.1	845225.9	
80	R	3	307691.0	845313.1	
70	R	3	307691.9	845268.5	
40	R	3	307694.6	845150.4	
65	R	3	307695.0	845168.6	
50	R	3	307695.1	845206.6	
80	R	3	307695.5	845189.7	
60	R	3	307696.0	845333.9	
65	R	3	307698.2	845136.7	
70	C	3	307709.9	845213.3	
70	R	3	307710.3	845130.8	

Depth (cm)	Substrate	Firmness	x	y	Note
75	C	3	307710.4	845294.8	
50	R	3	307710.5	845174.6	
40	R	3	307710.6	845174.9	
85	S	2	307711.3	845272.8	
45	C	0	307711.3	845223.0	Bog Pool
50	S	3	307711.4	845156.2	
60	C	2	307711.8	845233.1	
70	S	2	307712.8	845252.6	
50	R	2	307714.6	845195.2	
80	G	2	307715.0	845317.7	
140	C	2	307718.2	845335.2	
140	C	2	307718.2	845335.2	
130	R	3	307726.7	845340.9	
130	R	3	307726.7	845340.9	
70	X	2	307729.5	845276.7	
0	R	3	307731.3	845174.8	
75	R	3	307732.2	845292.4	
70	R	3	307732.7	845311.4	
80	R	2	307732.8	845256.5	
50	R	3	307733.4	845199.6	
55	C	3	307734.6	845151.1	
80	R	3	307736.8	845238.4	
60	R	2	307736.9	845216.6	
60	R	3	307750.8	845312.9	
85	R	3	307751.0	845278.9	
80	R	3	307751.9	845235.1	
60	R	3	307754.3	845219.1	
60	R	3	307755.1	845299.5	
60	R	3	307756.3	845259.2	
50	C	3	309731.0	844909.5	
280	X	2	309735.0	844953.3	
90	C	3	309735.7	844936.7	
280	X	1	309735.9	844974.5	
280	X	3	309753.1	844994.5	
280	X	3	309753.1	844974.5	
190	R	3	309753.1	844954.5	
20	R	3	309753.1	844934.5	
60	R	3	309753.1	844914.5	
15	R	3	309771.6	844951.8	
280	X	2	309772.5	844975.8	
280	X	2	309774.7	844995.2	
60	R	3	309775.0	844933.2	
280	X	3	309793.1	845014.5	Under cables of met mast

Depth (cm)	Substrate	Firmness	x	y	Note
280	X	3	309793.1	844994.5	
200	R	3	309793.1	844974.5	
30	R	3	309793.1	844954.5	
45	C	3	309814.0	844972.8	
280	X	2	309815.0	844992.9	
280	X	2	309815.9	845014.4	
160	C	3	309833.1	845034.5	
200	R	3	309833.1	845014.5	
90	R	3	309833.1	844994.5	
10	R	3	309833.1	844974.5	
165	R	2	309851.9	845014.0	
130	C	3	309852.7	845034.3	
85	R	3	309854.8	844992.6	Disturbed area nearby with rock outcrop
280	X	2	309873.1	845054.5	
280	X	2	309873.1	845034.5	
220	R	2	309873.1	845014.5	Locally wetted
280	X	2	309893.1	845014.5	
280	X	1	309896.9	844994.6	
10	R	3	309913.1	844994.5	
60	R	3	309913.1	844974.5	
15	R	2	309916.6	844770.2	
85	R	3	309920.3	844773.9	Change of vegetation, base of slope
115	C	3	309930.8	844755.5	
70	R	3	309933.1	844954.5	
10	R	3	309933.1	844814.5	
0	R	3	309933.1	844794.5	Rock outcrop
0	R	3	309934.2	844780.8	Base of slope, close to rocks
80	R	3	309939.3	844881.1	
20	R	3	309939.3	844861.1	
50	R	3	309939.3	844841.1	
90	R	3	309939.5	844900.0	
90	C	3	309945.1	844906.3	
10	R	3	309949.5	844737.8	Rock outcrop
10	R	3	309953.1	844814.5	
20	R	3	309953.1	844794.5	
120	S	3	309964.8	844849.7	
80	R	3	309973.1	844834.5	
50	R	3	309973.1	844814.5	
35	C	3	309991.3	844852.8	
20	R	3	309993.1	844834.5	
0	G	3	309993.1	844814.5	Rock outcrop
30	R	3	309993.1	844794.5	
30	R	3	309993.1	844774.5	

Depth (cm)	Substrate	Firmness	x	y	Note
20	R	3	309993.1	844754.5	
160	R	3	309993.1	844734.5	
40	R	3	309993.1	844714.5	
10	C	3	310012.8	844781.5	
80	R	3	310013.1	844734.5	
50	R	3	310013.1	844714.5	
10	C	3	310013.9	844812.5	
70	C	3	310014.5	844831.8	
10	C	3	310015.0	844761.3	
50	R	2	310017.1	844744.1	On different ground cover at base of the slope
50	R	2	310017.1	844744.1	On different ground cover at base of the slope
10	C	3	310017.7	844798.6	
40	R	3	310033.1	844734.5	
10	C	3	310034.3	844776.4	
10	C	3	310047.0	844783.2	On margin of the forest
10	C	3	310047.0	844783.2	On margin of the forest

Berry Burn Wind Farm Extension
Borrow Pit assessment
Appendix 2 Soil depth data Phase 1
(September 2018) and Phase 2 (October 2019)

Depth (cm)	Substrate	Firmness	x	y
20	R	3	307327.0	845246.4
45	R	3	307330.6	845251.8
45	R	3	307337.5	845258.3
45	R	3	307337.7	845247.7
120	R	2	307343.1	845162.7
90	S	3	307346.2	845177.2
100	R	2	307346.3	845163.1
160	R	3	307347.3	845224.9
20	R	3	307349.3	845268.4
65	R	3	307352.3	845230.3
80	R	3	307352.3	845239.2
50	S	3	307352.4	845148.6
100	G	3	307354.4	845187.9
115	R	3	307356.0	845214.8
25	S	2	307356.3	845145.0
75	R	3	307356.6	845185.3
75	S	3	307359.1	845258.4
160	C	3	307359.6	845232.0
60	R	3	307359.7	845206.1
40	R	3	307359.9	845281.0
35	R	3	307360.2	845248.4
20	R	3	307362.5	845198.2
40	R	3	307364.3	845241.9
60	R	3	307364.9	845290.2
45	R	3	307365.1	845129.0
40	R	3	307369.0	845131.9
135	C	3	307369.8	845238.5
40	R	3	307371.6	845134.5
70	S	3	307371.6	845110.6
75	C	2	307372.4	845290.7
50	R	3	307372.4	845217.3
65	R	3	307374.9	845197.0
85	R	3	307376.0	845209.1
30	R	3	307377.3	845224.8
40	R	3	307379.1	845159.5
70	R	3	307380.0	845182.8
75	S	3	307380.2	845120.8
125	C	3	307380.6	845246.6

Depth (cm)	Substrate	Firmness	x	y
80	C	3	307381.8	845285.6
35	R	3	307382.2	845106.6
60	R	3	307385.0	845206.5
50	R	2	307386.1	845085.3
60	R	3	307387.3	845223.8
60	S	3	307388.0	845107.8
50	R	3	307388.7	845114.4
85	R	2	307389.2	845240.5
40	R	3	307389.2	845143.9
160	C	3	307390.7	845247.6
35	R	3	307392.5	845285.6
5	R	3	307393.7	845228.7
15	R	3	307394.7	845278.7
65	S	2	307395.4	845206.7
20	R	2	307395.6	845129.1
140	R	2	307395.9	845242.9
15	R	3	307396.0	845241.0
85	S	3	307396.1	845093.6
85	R	3	307396.8	845266.1
45	R	3	307398.0	845294.6
10	R	3	307398.7	845210.1
70	R	3	307399.3	845284.9
55	R	3	307399.4	845275.7
70	R	1	307400.0	845088.4
105	R	3	307401.2	845297.9
95	R	2	307402.2	845118.6
90	S	3	307402.2	845115.5
320	X	3	307402.6	845255.9
30	R	3	307404.8	845209.0
30	R	3	307406.6	845124.6
260	S	2	307406.9	845269.7
25	R	3	307407.4	845231.5
220	R	3	307409.4	845251.8
30	G	2	307410.8	845179.7
190	R	3	307413.5	845292.0
35	G	2	307418.4	845087.7
70	R	2	307418.9	845118.1
55	R	3	307418.9	845255.2
50	R	3	307423.0	845273.5
75	S	3	307423.1	845111.3
135	R	3	307423.6	845288.7
15	R	3	307425.9	845290.1
25	R	3	307427.0	845277.2

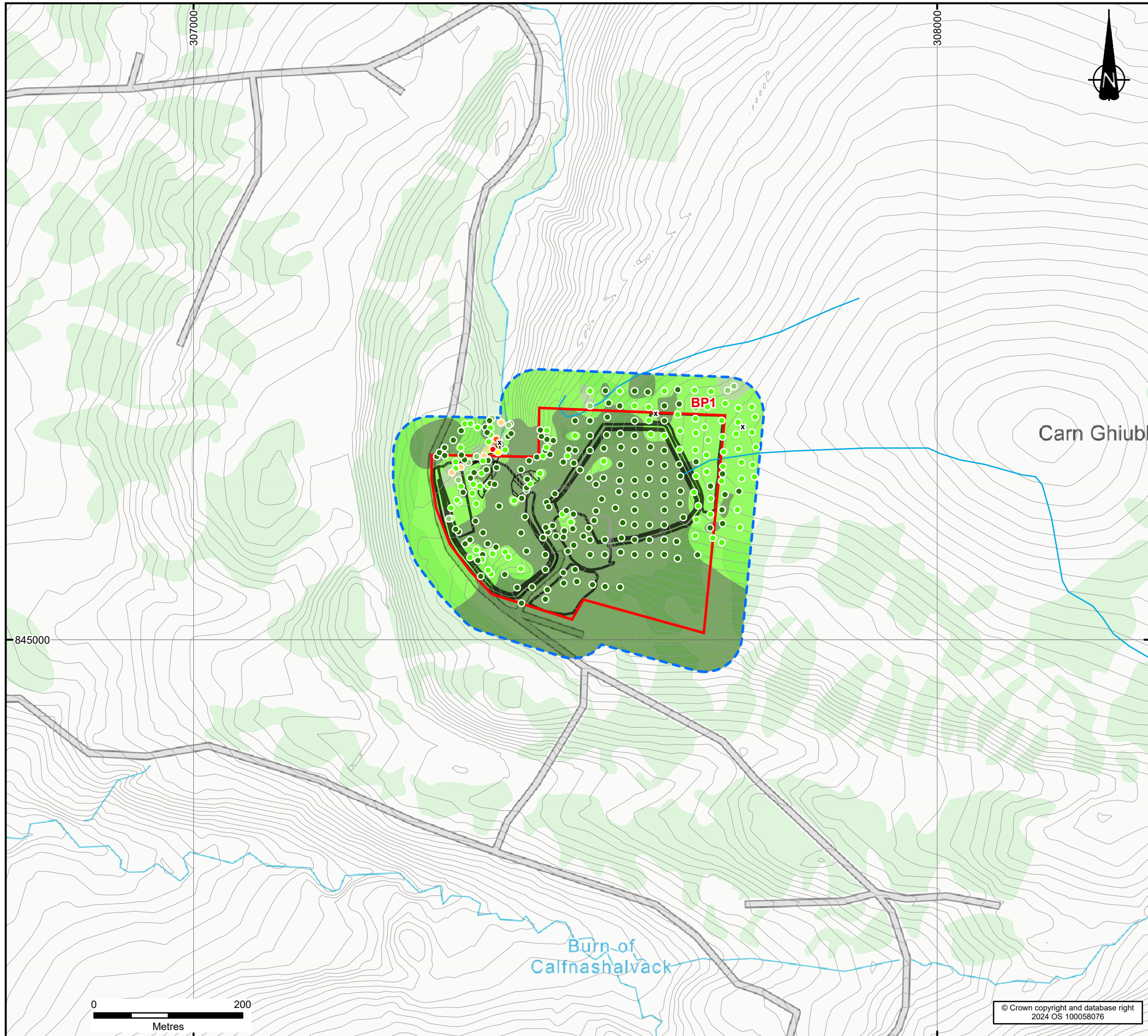
Depth (cm)	Substrate	Firmness	x	y
60	R	3	307431.2	845187.1
100	R	1	307440.0	845095.4
15	R	2	307440.2	845143.7
25	R	2	307440.3	845228.8
40	C	2	307441.2	845190.2
10	R	2	307445.7	845165.4
15	G	2	307447.7	845201.2
0	R	3	307447.8	845119.2
30	S	2	307448.0	845204.3
25	R	2	307448.7	845215.8
15	R	3	307451.3	845240.7
55	R	2	307452.3	845209.8
15	R	3	307461.6	845245.7
60	G	3	307465.8	845223.8
45	C	3	307466.3	845282.0
25	R	3	307467.7	845273.4
60	G	2	307469.9	845247.0
5	R	3	307470.0	845137.4
20	R	2	307472.9	845254.7
20	R	3	307473.5	845151.2
55	G	2	307474.4	845258.6
30	R	3	307474.7	845184.8
45	G	3	307475.1	845269.4
60	C	3	307475.1	845281.5
10	R	3	307476.3	845145.0
20	R	3	307477.4	845178.7
30	G	2	307479.3	845249.1
25	R	3	307482.8	845153.5
50	G	3	307483.8	845267.9
10	R	3	307485.9	845196.2
10	R	2	307487.4	845139.3
60	R	3	307496.1	845169.1
30	R	2	307497.1	845238.9
35	R	3	307497.3	845137.9
5	R	3	307497.3	845090.2
50	R	3	307498.6	845146.4
40	R	3	307501.3	845173.7
55	R	3	307502.8	845247.2
10	R	3	307503.4	845118.9
30	R	3	307504.5	845256.3
70	R	3	307507.3	845158.2
30	R	3	307509.9	845149.2
40	R	3	307510.7	845168.9

Depth (cm)	Substrate	Firmness	x	y
10	R	3	307511.3	845127.1
40	R	3	307511.4	845237.5
40	R	3	307519.7	845228.4
10	R	3	307524.3	845139.2
20	R	3	307531.3	845150.1
50	R	2	307531.6	845217.6
35	R	3	307538.6	845160.3
30	R	3	307541.1	845208.9
40	R	3	307541.2	845173.2
20	R	3	307548.8	845189.1
30	R	2	307551.1	845217.7
55	R	3	309776.9	844922.5
50	X	3	309786.0	844917.8
70	G	3	309791.5	844933.9
60	R	3	309798.4	844936.4
65	R	3	309801.6	844897.0
60	G	3	309804.7	844915.8
50	G	3	309818.7	844937.4
85	R	3	309819.2	844902.0
65	G	3	309819.8	844879.2
25	R	3	309821.0	844959.9
230	X	2	309821.1	844857.6
60	S	3	309822.0	844919.1
230	S	3	309837.1	844860.6
85	R	3	309840.4	844939.8
60	G	3	309840.8	844899.8
75	R	3	309841.7	844918.7
50	G	3	309842.4	844957.7
70	S	3	309842.8	844879.2
95	R	2	309854.3	844856.3
85	R	2	309857.9	844918.2
45	R	2	309859.6	844899.5
120	R	2	309860.2	844877.7
80	R	2	309860.9	844978.1
65	C	2	309861.5	844959.7
125	R	2	309861.9	844939.7
60	C	2	309868.1	844793.0
155	C	1	309870.1	844991.2
55	C	1	309870.4	844895.4
90	S	3	309879.1	844918.4
70	X	3	309879.8	844896.9
110	R	3	309879.8	844978.1
170	R	3	309880.5	844857.9

Depth (cm)	Substrate	Firmness	x	y
110	G	3	309880.6	844956.8
70	R	3	309881.0	844935.5
30	R	3	309883.3	844878.6
75	R	3	309885.2	844838.2
50	R	2	309896.8	844957.0
60	R	2	309898.3	844893.7
85	R	2	309898.9	844977.3
90	R	2	309899.1	844875.6
50	R	2	309899.2	844915.1
30	R	2	309900.3	844863.7
85	R	2	309900.7	844955.5
55	R	2	309902.0	844936.7
70	R	2	309917.7	844958.5
80	R	2	309918.6	844918.7
80	R	3	309918.8	844879.1
5	R	2	309919.3	844804.5
60	R	2	309919.5	844898.4
75	R	2	309920.2	844935.4
80	R	2	309920.2	844879.6
65	R	2	309920.3	844860.3
70	R	3	309920.4	844918.6
35	R	3	309920.4	844958.7
70	R	3	309920.5	844900.4
60	R	3	309920.5	844838.3
50	W	2	309920.8	844839.0
45	R	2	309921.4	844818.9
60	R	3	309921.5	844859.2
70	R	3	309921.9	844941.2
20	R	3	309924.3	844816.9
95	R	2	309942.4	844938.5
100	R	2	309943.1	844916.7
120	R	2	309959.3	844898.8
80	R	3	309959.5	844858.1
95	R	2	309959.8	844838.0
70	G	3	309962.7	844837.2
120	R	2	309962.9	844858.5
100	S	2	309964.4	844874.7
80	R	2	309964.8	844874.9
95	R	3	309965.8	844894.3
75	C	2	309968.8	844894.4
0	R	3	309968.9	844766.3
25	C	3	309969.6	844795.2
80	S	1	309969.9	844729.5

Depth (cm)	Substrate	Firmness	x	y
40	C	3	310038.5	844794.8

DRAWINGS/FIGURES



KEY

	Site Boundary	Depth (cm)
	PLHRA Study Area	0.0 to 0.5 m
	Borrow Pit	0.5 to 1.0 m
	Development Footprint	1.0 to 1.5 m
	Flush	1.5 to 2.0 m
	Historic Instability	2.0 to 2.5 m
	2 m Contours	2.5 to 3.0 m
	Ditch	3.0 to 4.0 m

Peat Depth Interpolation (m)

	0.0 to 0.5 m
	0.5 to 1.0 m
	1.0 to 1.5 m
	1.5 to 2.0 m
	2.0 to 2.5 m
	2.5 to 3.0 m
	3.0 to 4.0 m

Notes:
 Boundaries are indicative.
 Depths are representative for the shown probing points only and may include soft substrate below peat. Points labelled with an 'X' indicate where it was uncertain if the base of peat was reached (e.g. due to extreme stiffness of peat); refer to Appendix 12.2 for details. 2m contours derived from OS Terrain 5 DTM. Contains Ordnance Survey data. © Crown Copyright and database right 2024. Approximate ditch locations provided by Avian Ecology Ltd.

B A	SYMBOLY AMENDMENTS FIRST ISSUE	12/24 12/24	SRW TR	TR NS	NS NS
REVISION	DETAILS	DATE	DRAWN	CHKD	APPD

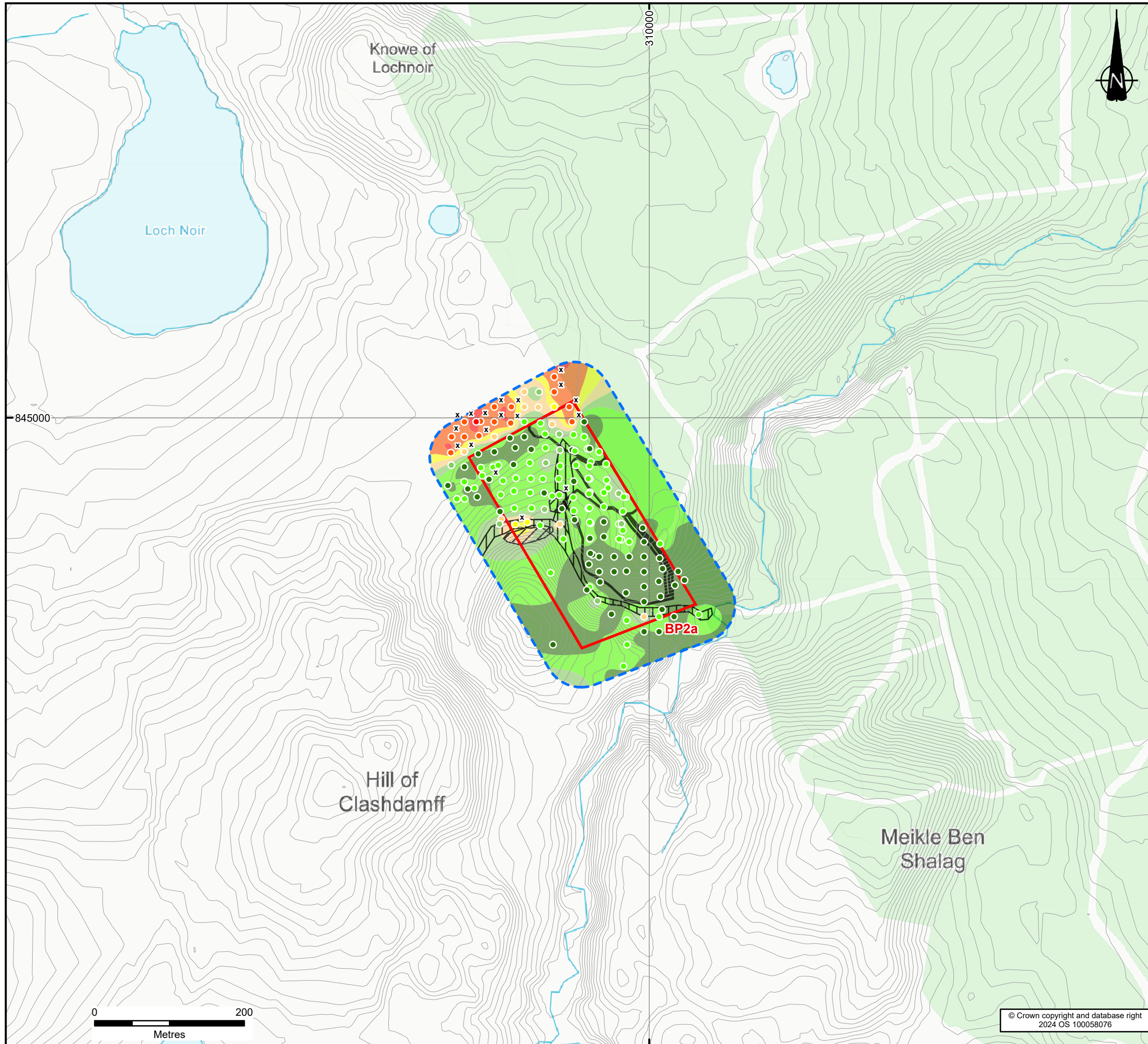
CLIENT
BB2 WIND FARM LIMITED

PROJECT
BERRY BURN EXTENSION WIND FARM

DRAWING TITLE
PEAT DEPTH AND GEOMORPHOLOGY

DRG No.	ED13835/018/1	REV	B	SUIT. CODE	---
DRG SIZE	A3	SCALE	1:5,000	DATE	18/12/2024
DRAWN BY	SRW	CHECKED BY	TR	APPROVED BY	NS

© Crown copyright and database right
 2024 OS 100058076



KEY

Site Boundary	Peat Depth Interpolation (m)
PLHRA Study Area	0.0 to 0.5 m
Borrow Pit	0.5 to 1.0 m
Development Footprint	1.0 to 1.5 m
Flush	1.5 to 2.0 m
Erosion	2.0 to 2.5 m
2 m Contours	2.5 to 3.0 m
	3.0 to 4.0 m

Depth (cm)

- 0.0 to 0.5 m
- 0.5 to 1.0 m
- 1.0 to 1.5 m
- 1.5 to 2.0 m
- 2.0 to 2.5 m
- 2.5 to 3.0 m
- 3.0 to 4.0 m

Notes:
 Boundaries are indicative.
 Depths are representative for the shown probing points only and may include soft substrate below peat. Points labelled with an 'X' indicate where it was uncertain if the base of peat was reached (e.g. due to extreme stiffness of peat); refer to Appendix 12.2 for details. 2m contours derived from OS Terrain 5 DTM. Contains Ordnance Survey data. © Crown Copyright and database right 2024. Approximate ditch locations provided by Avian Ecology Ltd.

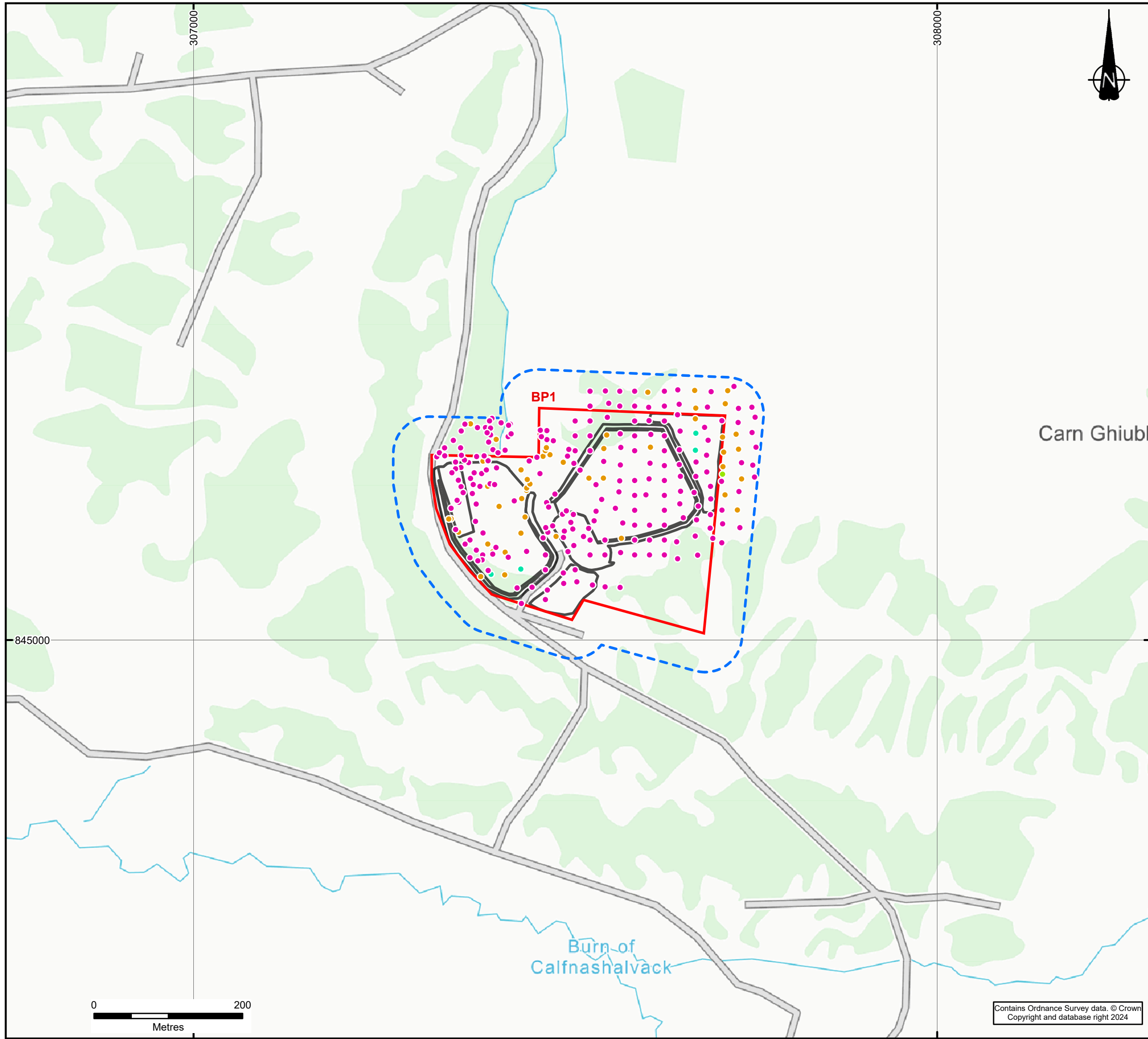
B A	SYMBOLY AMENDMENTS FIRST ISSUE	12/24 12/24	SRW TR	TR NS	NS NS
REVISION	DETAILS	DATE	DRAWN	CHKD	APPD

CLIENT
BB2 WIND FARM LIMITED

PROJECT
BERRY BURN EXTENSION WIND FARM

DRAWING TITLE
PEAT DEPTH AND GEOMORPHOLOGY

DRG No.	ED13835/018/2	REV	B	SUIT. CODE	---
DRG SIZE	A3	SCALE	1:5,000	DATE	18/12/2024
DRAWN BY	SRW	CHECKED BY	TR	APPROVED BY	NS



- KEY**
- Site Boundary
 - PLHRA Study Area
 - Borrow Pit Development Footprint
- Firmness**
- P0 - Surface too soft to walk on
 - P1 - Surface just passable
 - P2 - Surface fairly firm
 - P3 - Surface firm

Notes:
Boundaries are indicative.

B A	SYMBOLGY AMENDMENTS FIRST ISSUE	12/24	SRW	TR	NS
REVISION	DETAILS	DATE	DRAWN	CHKD	APPD

CLIENT
BB2 WIND FARM LIMITED

PROJECT
BERRY BURN EXTENSION WIND FARM

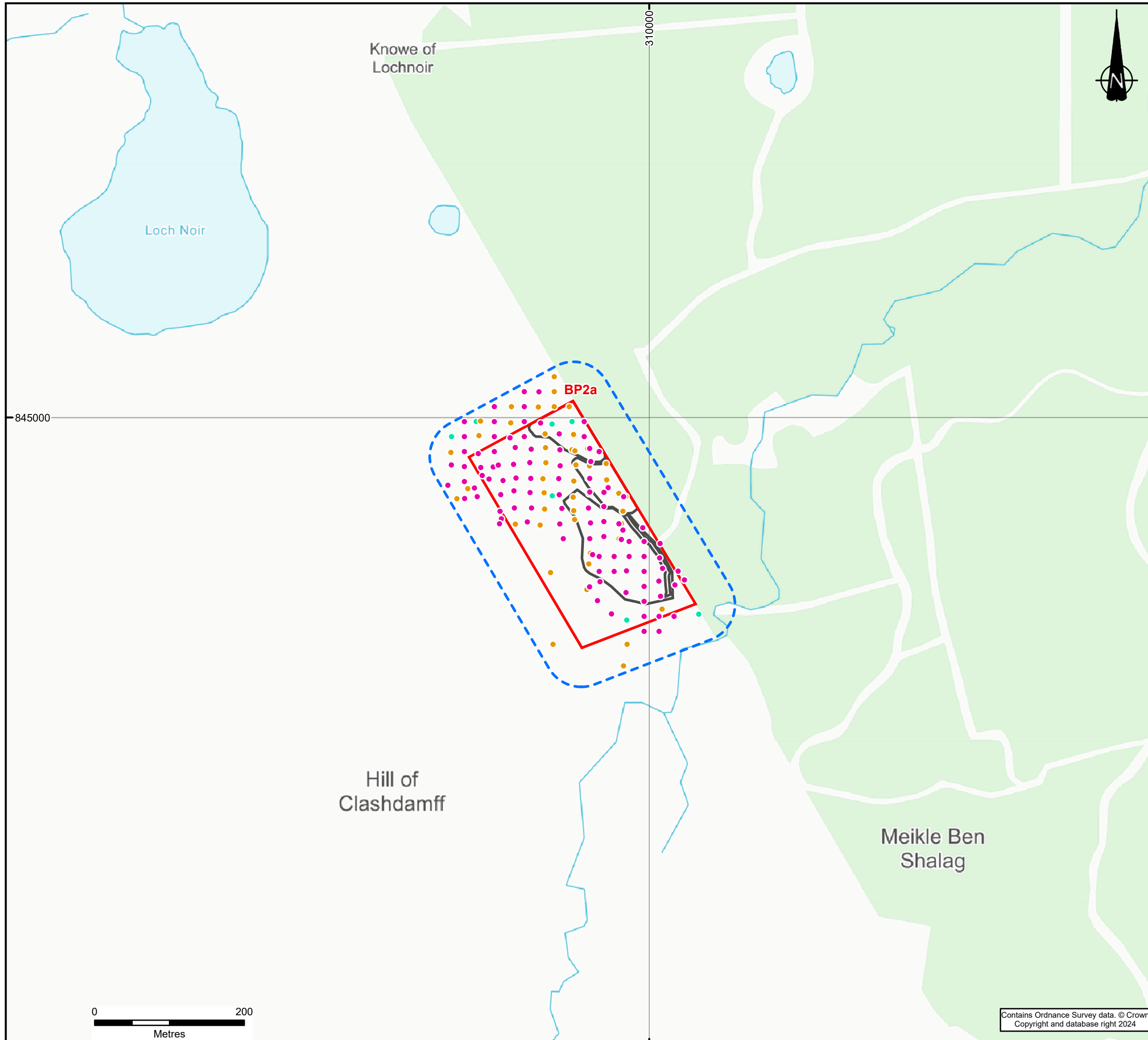
DRAWING TITLE
SURFACE FIRMNESS

DRG No. ED13835/019/1	REV B	SUIT. CODE ---
DRG SIZE A3	SCALE 1:5,000	DATE 18/12/2024
DRAWN BY SRW	CHECKED BY TR	APPROVED BY NS

PART OF SLR



Contains Ordnance Survey data. © Crown Copyright and database right 2024



- KEY**
- Site Boundary
 - PLHRA Study Area
 - Borrow Pit Development Footprint
- Firmness**
- P1 - Surface just passable
 - P2 - Surface fairly firm
 - P3 - Surface firm

Notes:
Boundaries are indicative.

B A	SYMBOLGY AMENDMENTS FIRST ISSUE	12/24	SRW	TR	NS
REVISION	DETAILS	DATE	DRAWN	CHKD	APPD

CLIENT
BB2 WIND FARM LIMITED

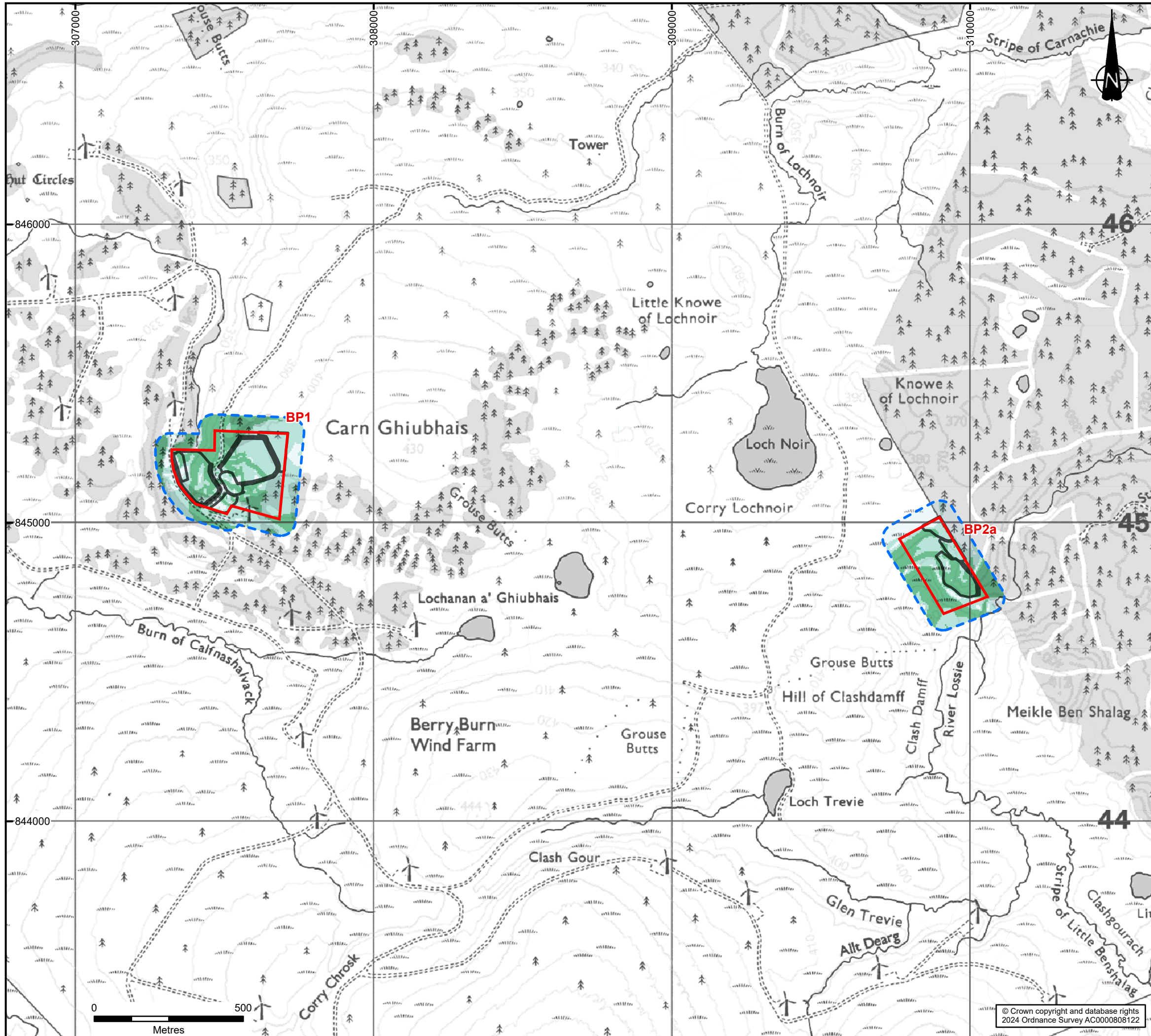
PROJECT
BERRY BURN EXTENSION WIND FARM

DRAWING TITLE
SURFACE FIRMNESS

DRG No. ED13835/019/2	REV B	SUIT. CODE ---
DRG SIZE A3	SCALE 1:5,000	DATE 18/12/2024
DRAWN BY SRW	CHECKED BY TR	APPROVED BY NS

PART OF SLR

Contains Ordnance Survey data. © Crown Copyright and database right 2024



KEY

- Site Boundary
- PLHRA Study Area
- Borrow Pit Development Footprint

Slope

- 0 to 3 degrees
- 3 to 9 degrees
- Greater than 9 degrees

Notes:

Boundaries are indicative.

Slope derived from OS Terrain 5. © Crown copyright and database rights 2024. Ordnance Survey Licence No. 100031673.

B A	SYMBOLGY AMENDMENTS FIRST ISSUE	12/24	SRW	TR	NS
REVISION	DETAILS	DATE	DRAWN	CHKD	APPD

CLIENT

BB2 WIND FARM LIMITED

PROJECT

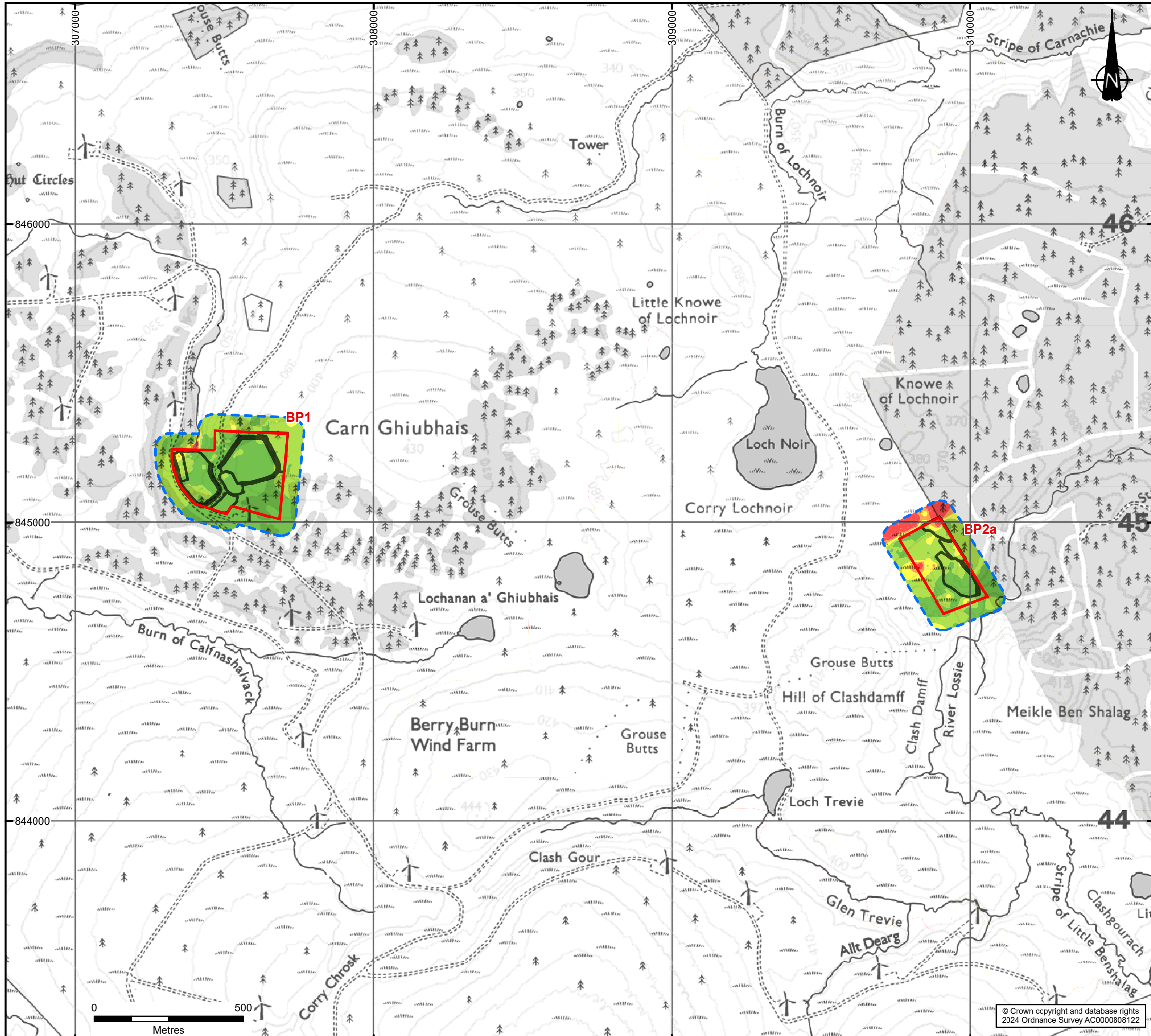
BERRY BURN EXTENSION WIND FARM

DRAWING TITLE

PLHRA - SLOPE GRADIENT

DRG No. ED13835/020	REV B	SUIT CODE ---
DRG SIZE A3	SCALE 1:12,500	DATE 18/12/2024
DRAWN BY SRW	CHECKED BY TR	APPROVED BY NS

© Crown copyright and database rights
2024 Ordnance Survey AC0000808122



KEY

- Site Boundary
- PLHRA Study Area
- Borrow Pit Development Footprint

Depth Interpolation

- 0 to 0.5 m - score 1
- 0.5 to 1.0 m - score 2
- 1.0 to 1.5 m - score 3
- 1.5 to 2.0 m - score 4
- >2.0 m - score 5

Notes:
Boundaries are indicative.

B A	SYMBOLGY AMENDMENTS FIRST ISSUE	12/24 12/24	SRW TR	TR NS	NS NS
REVISION	DETAILS	DATE	DRAWN	CHKD	APPD

CLIENT
BB2 WIND FARM LIMITED

PROJECT
BERRY BURN EXTENSION WIND FARM

DRAWING TITLE
PLHRA - PEAT DEPTH

DRG No.	ED13835/021	REV	B	SUIT. CODE	---
DRG SIZE	A3	SCALE	1:12,500	DATE	18/12/2024
DRAWN BY	SRW	CHECKED BY	TR	APPROVED BY	NS



KEY

- Site Boundary
- PLHRA Study Area
- Borrow Pit Development Footprint

Substrate Classification

- 0 - Rough and irregular bedrock or sand and gravel
- 3 - Undulating bedrock or partly-cohesive subsoil (sandy loam, silt loam)
- 5 - Smooth bedrock or cohesive-subsoil (clay loam, silty clay loam or clay texture)

Notes:
Boundaries are indicative.

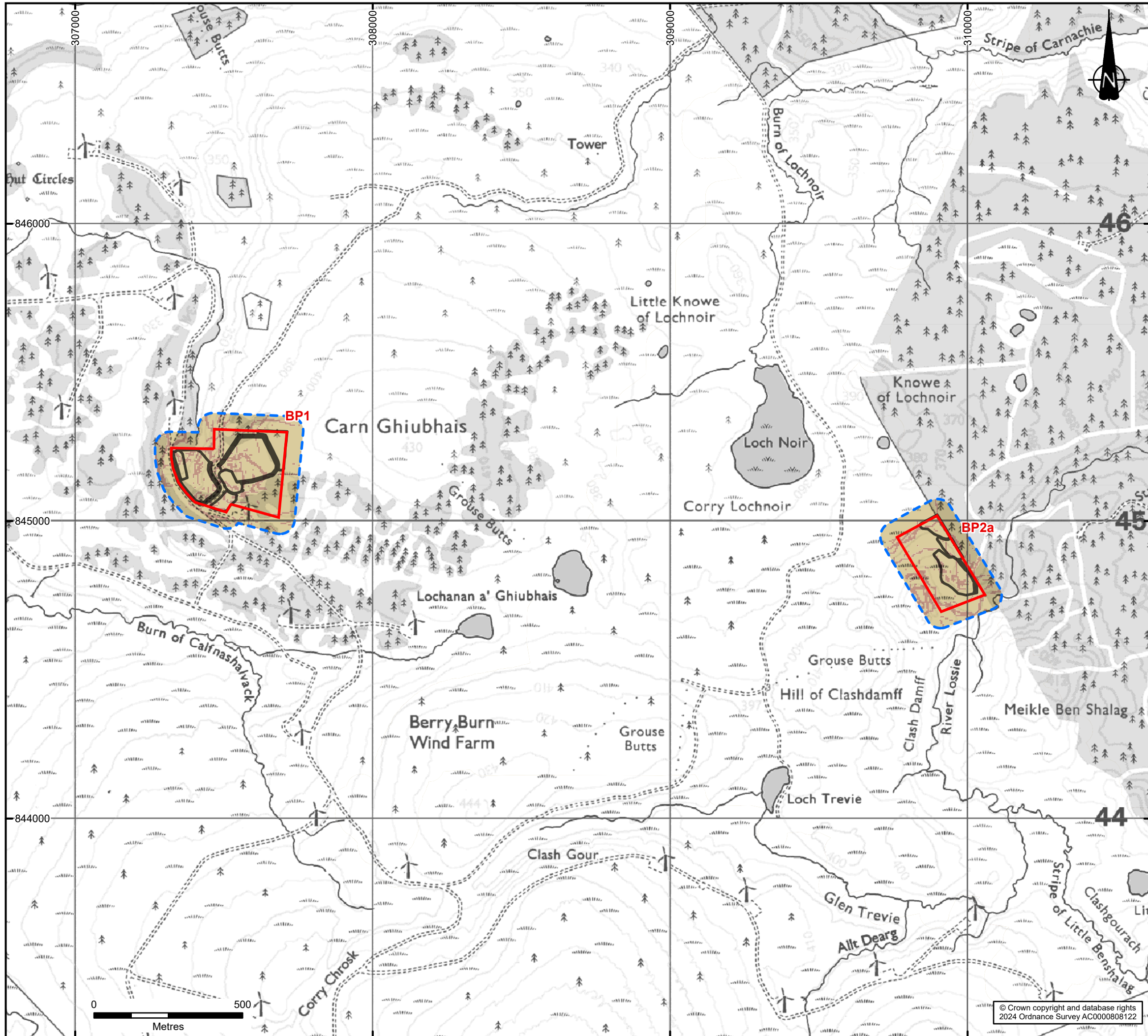
B A	SYMBOLGY AMENDMENTS FIRST ISSUE	12/24	SRW	TR	NS
	DETAILS	DATE	DRAWN	CHKD	APPD

CLIENT
BB2 WIND FARM LIMITED

PROJECT
BERRY BURN EXTENSION WIND FARM

DRAWING TITLE
PLHRA - SUBSTRATE

DRG No.	ED13835/022	REV	B	SUIT CODE	---
DRG SIZE	A3	SCALE	1:12,500	DATE	18/12/2024
DRAWN BY	SRW	CHECKED BY	TR	APPROVED BY	NS



KEY

- Site Boundary
- PLHRA Study Area
- Borrow Pit Development Footprint

Curvature Classification

- 0 - Concave or planar
- 5 - Convex

Notes:
 Boundaries are indicative.
 Slope derived from OS Terrain 5. © Crown copyright and database rights 2024. Ordnance Survey Licence No. 100031673.

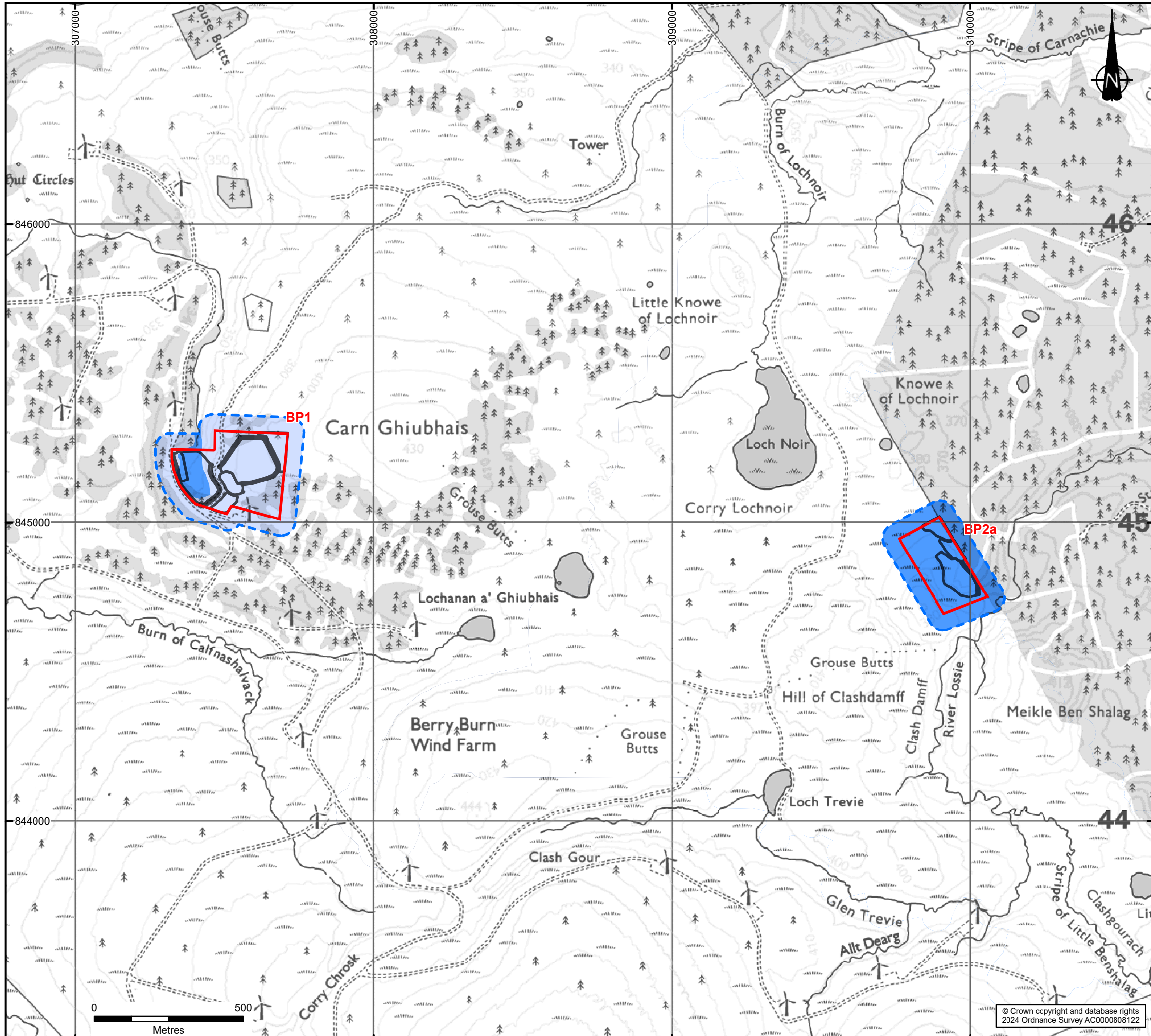
B	SYMBOLGY AMENDMENTS	12/24	SRW	TR	NS
A	FIRST ISSUE	12/24	SRW	TR	NS
REVISION	DETAILS	DATE	DRAWN	CHKD	APPD

CLIENT
 BB2 WIND FARM LIMITED

PROJECT
 BERRY BURN EXTENSION WIND FARM

DRAWING TITLE
 PLHRA - SLOPE SHAPE

DRG No.	ED13835/023	REV	B	SUIT CODE	---
DRG SIZE	A3	SCALE	1:12,500	DATE	18/12/2024
DRAWN BY	SRW	CHECKED BY	TR	APPROVED BY	NS



KEY

- Site Boundary
- PLHRA Study Area
- Borrow Pit Development Footprint

Drainage Proximity

- 0 - Intensive drainage network (e.g. many erosion gullies, frequent grips, except grips transverse to slope reaching the base of peat)
- 3 - No, or very few surface drainage pathways (man-made or natural)
- 5 - Flushes, peat pipes, springs, bog pools and some infrequent drainage features, transverse grips reaching the base of peat

Notes:
Boundaries are indicative.

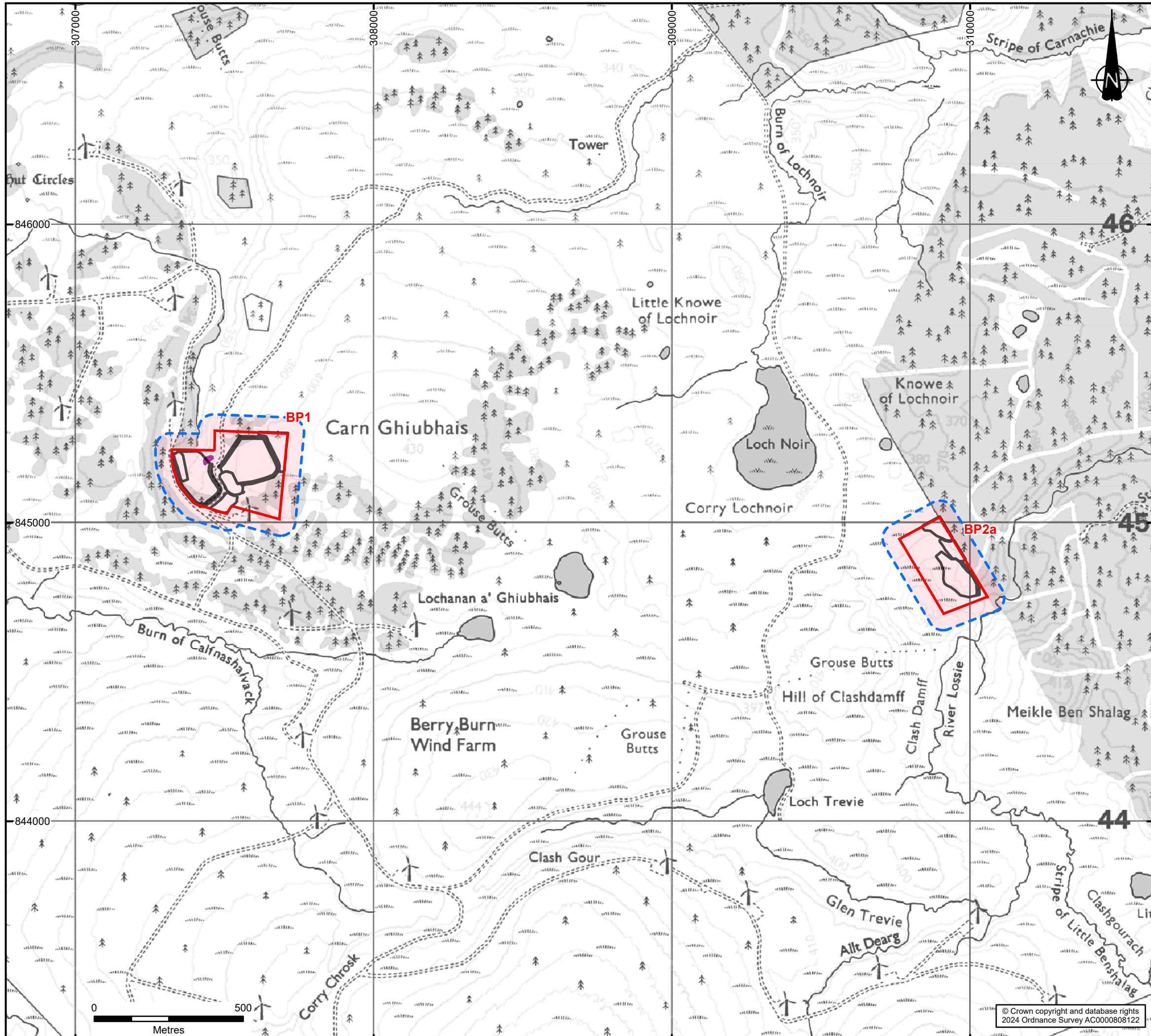
B	SYMBOLGY AMENDMENTS	12/24	SRW	TR	NS
A	FIRST ISSUE	12/24	SRW	TR	NS
REVISION	DETAILS	DATE	DRAWN	CHKD	APPD

CLIENT
BB2 WIND FARM LIMITED

PROJECT
BERRY BURN EXTENSION WIND FARM

DRAWING TITLE
PLHRA - DRAINAGE PROXIMITY

DRG No.	ED13835/024	REV	B	SUIT. CODE	---
DRG SIZE	A3	SCALE	1:12,500	DATE	18/12/2024
DRAWN BY	SRW	CHECKED BY	TR	APPROVED BY	NS



KEY

- Site Boundary
- PLHRA Study Area
- Borrow Pit Development Footprint

Historic Instability

- 0 - No signs of recent or historic instability
- 3 - Inactive historic instability

Notes:
Boundaries are indicative.

B	SYMBOLGY AMENDMENTS	12/24	SRW	TR	NS
A	FIRST ISSUE	12/24	SRW	TR	NS
REVISION	DETAILS	DATE	DRAWN	CHKD	APPD

CLIENT
BB2 WIND FARM LIMITED

PROJECT
BERRY BURN EXTENSION WIND FARM

DRAWING TITLE
PLHRA - HISTORIC INSTABILITY

DRG No. ED13835/025	REV B	SUIT CODE ---
DRG SIZE A3	SCALE 1:12,500	DATE 18/12/2024
DRAWN BY SRW	CHECKED BY TR	APPROVED BY NS

© Crown copyright and database rights
2024 Ordnance Survey AC0000808122