

# Preliminary Peat Landslide Hazard and Risk Assessment

**Project Name – Cambushinnie 400kV Substation**

**Project Code – LT520 (60721943)**

**April 2025**



TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

## Table of Contents

<b>1</b>	<b>Introduction .....</b>	<b>4</b>
1.1	General.....	4
1.2	Assessment Team .....	5
1.3	Site Location and Description .....	5
1.4	Assessed Areas.....	6
1.5	Scope of Report.....	7
1.6	Limitations.....	8
<b>2</b>	<b>Methodology.....</b>	<b>10</b>
2.1	Desk Top Review .....	10
2.2	Assessment Approach.....	10
2.3	Good Practice Guidance.....	11
2.4	Summary of Surveys .....	11
2.5	Site Infrastructure Design .....	11
<b>3</b>	<b>Baseline Environment .....</b>	<b>13</b>
3.1	Topography and Slope Analysis .....	13
3.2	Historical OS Mapping and Aerial Photography Review .....	13
3.3	Current Land Use .....	14
3.4	Geology and Soils .....	14
3.5	Mining and Quarrying .....	16
3.6	Hydrogeology .....	17
3.7	Hydrology .....	17
3.8	Climate .....	18
3.9	Flooding.....	18
3.10	Geomorphology .....	19
<b>4</b>	<b>Sources of Peat During Construction .....</b>	<b>20</b>
4.1	Walkover Survey .....	20
4.2	Peat Investigations.....	21
<b>5</b>	<b>Site Based Excavation &amp; Management Assessment .....</b>	<b>26</b>
5.1	General Information on Peat .....	26
5.2	Factors Controlling Peat Instability .....	27
5.3	Peat Failures.....	29

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

6	Peat Landslide Hazard and Risk Assessment .....	31
6.1	General.....	31
6.2	Triggering and Preparatory Factors Relevant to the Project .....	31
6.3	Consequences of Peat Failure.....	32
6.4	Qualitative Risk Assessment .....	32
6.5	Estimating the Hazard.....	34
6.6	Peat Slide Assessed Hazard Plan.....	42
7	Mitigation Measures.....	53
7.1	General.....	53
7.2	Mitigation Measures.....	53
7.3	Potential Peat Slide Indicators .....	56
8	Conclusions and Recommendations.....	57
8.1	Conclusions .....	57
8.2	Recommendations .....	58
	Appendix A Figures .....	59
	Appendix B Peat Investigation Technical Notes .....	60

TEM-NET-ENV-XXX	<b>Preliminary Peat Landslide Hazard and Risk Assessment</b>	<b>Applies to</b>
		Transmission ✓

# 1 Introduction

## 1.1 General

AECOM Limited (AECOM) have been appointed by SSEN Transmission (the Applicant) to produce a Preliminary Peat Landslide Hazard and Risk Assessment (PLHRA) with respect to the following Proposed Developments:

- Proposed Cambushinnie 400 kV substation – Consent will be sought under by the applicant under the Town and Countryside
- Overhead line tie overhead Line (OHL) tie-in from the Cambushinnie 400kV substation to the existing Beaully Denny OHL, – Consent will be sought by the applicant under section 37 of the Electricity Act;
- A new haul road that bypasses the need to route construction traffic through Braco village, the applicant will progress this under a separate Planning Application.

This PLHRA has been prepared as an overarching document covering the proposed Cambushinnie 400kV substation and OHL tie-in listed above (for the purposes of this document the 'project' is defined as the proposed Cambushinnie substation and the OHL tie-in). The proposed haul road is not considered as part of this document as the areas crossed are not recorded as a peatland habitat and negligible peat, if any, is anticipated.

The Proposed Developments are required to enable connections to meet the Electricity System Operators (ESO) Pathway to 2030 Holistic Network Design (HND); which identified the requirement to reinforce the onshore corridors between Beaully and Peterhead, Beaully and Spittal in Caithness, and an offshore subsea cable between Spittal and Peterhead as well as the need to upgrade the 275kV Beaully-Denny circuit. In December 2022, the Office of Gas and Electricity Markets (Ofgem), approved the need for the upgrade of the existing Beaully-Denny 275kV circuit as part of the (Accelerated Strategic Transmission Investment) ASTI framework as a Great Britain wide programme of investments. Ofgem's decision approved all SSEN Transmission's Pathway to 2030 projects, which includes the Proposed Developments. The Proposed Developments, alongside several other major network upgrades planned in the north of Scotland, is therefore part of a Great Britain wide programme of works that are required to meet UK and Scottish Government energy targets.

This document has been prepared to inform the planning authority Perth and Kinross Council (PKC) and Energy Consents Units (ECU) to confirm the initial infrastructure design phase of the Proposed Developments.

The Project as defined for the purposes of this PLHRA will comprise the following:

- Temporary construction compound (including a temporary potable water borehole for welfare during construction, with expected volume extracted of less than 10m3 per day) and laydown area;
- Substation platform of approximately 410 m x 220 m with associated earthworks;
- Two 400/132kV transformers, a new 400kV double busbar and ancillary equipment;
- A new control building (approximately 24 m x 49 m) with a maximum height of 7 m above the finished surface level;
- Existing access track upgrades between the B8033 and existing Braco West Substation;
- Construction of new access track from the existing Braco West Substation to the proposed Cambushinnie substation platform;
- Upgrades to the existing Cambushinnie Hill track;



TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

- Construction of new access track from the northwestern edge of the proposed Cambushinnie substation platform to the Sustainable Drainage System (SUDS) basin;
- Permanent drainage systems including a SUDS basin;
- One permanent borehole for site water supply located on approach to the main access gate of the proposed Cambushinnie substation (expected volume extracted of less than 10m3 per day);
- Landscaping and biodiversity enhancements; and
- Palisade perimeter fence of maximum height of 4 m above the finished surface level
- Overhead Line (OHL) tie ins from the proposed substation to the existing Beaully-Denny OHL;
  - Temporary OHL diversion including two temporary towers;
  - New permanent tower to allow tie-in.

The Project will comprise upgrades to the existing access track from the B8033 to existing Braco West substation as shown in **Figure 1, Appendix A Figures**. However, for the purposes of this Preliminary PLHRA, the Project Site ('the Site') only includes the area shown in **Figure 2, Appendix A Figures**. The upgrades to the existing access track are minor with proposals typically comprising widening of the existing track. Peat is also only anticipated to be present towards the western extent of the existing access track, although no ground investigation data is available along the existing access track. For this preliminary assessment the peat landslide risk along the existing access track is considered to be negligible, although this will be revisited as part of the Final PLHRA carried out post-consent, on design maturity and further information becoming available. For the purposes of this preliminary assessment, no further information on the existing access track has been provided.

## 1.2 Assessment Team

The assessment works were undertaken by a team of engineering geologists and geotechnical engineers all of whom have previous experience in undertaking peat assessments.

The team was led by a Chartered Engineering Geologist with over 28 years industry experience and in particular within the renewables energy sector. He has managed and assessed geotechnical risks and undertaken geohazard assessments within peatland environments and with a previous employer (Halcrow Group Ltd) also undertook the checkers role on many PLHRA reports on behalf of the ECU.

The site walkovers and site works (i.e. peat probing & peat coring) have been undertaken by various teams and personnel including engineering geologists, geotechnical engineers and a ground investigation contractor all of which have experience in working and assessing peatland environments.

## 1.3 Site Location and Description

The Project Site is located just to the west and southwest of the existing Braco West Substation, on the southern facing slopes of Feddal Hill approximately 4.0 km west of the village of Braco, within Perth & Kinross. The National Grid Reference (NGR) to the approximate centre of the Project area is NN 79267 08941. Note for the purposes of this PLHRA, 'the Site' refers to the location as shown on **Figure 2, Appendix A Figures** and does not include the existing access track which is to be upgraded from the B8033 to the existing Braco West Substation.

TEM-NET-ENV-XXX	<b>Preliminary Peat Landslide Hazard and Risk Assessment</b>	<b>Applies to</b>
		Transmission ✓

The Site is within land used for commercial forestry. Recent site visits observed much of the Site contained felled trees which had been recently replanted although towards the western and southern boundaries mature and semi-mature trees were still present. Within the zone of mature trees in the western extent of the Site, wind-blown fallen trees are also present. Mature and semi-mature trees were also noted just out-with the east and southeast boundaries of the Site, as well as young trees being present immediately to the northwest of the northwestern boundary. Within the northwest of the Site the northeast – southwest trending Beauly to Denny overhead electrical line is present.

## 1.4 Assessed Areas

Where assessment of the existing access track is considered to be required, this will be undertaken as part of a Final PLHRA which shall be undertaken post consent as part of the detailed design process, after full development of the proposals and inclusive of any new information or investigations that become available.

Peat restoration and reuse areas are proposed within the Site. The preliminary proposals for peat reuse are split into three areas: dressing of slopes and verges (relating to the proposed substation platform earthworks, new access track and SUDS basin), specific peatland restoration areas and peatland restoration through reinstatement of natural drainage conditions. A peat management plan (PMP)<sup>1</sup> has been produced for the Project to accompany the EA. The PMP should be referred to for further details on the actual peat reuse and restoration proposed.

The dressing of slopes and verges is not anticipated to create a significant peat landslide risk, as the size/thickness of these are likely to be minimal and controlled by the Designer to ensure stability. As such, this Preliminary PLHRA does not assess the potential peat landslide risk posed by reuse of the peat in dressing of slopes and verges.

At the peatland restoration areas, it is proposed to deposit peat in these areas essentially increasing the overall peat thickness. As part of the proposals, earthwork bunds are proposed within each restoration area to act as both a roadway to deposit the peat and also to provide some support for the displaced peat. At present the plans for the restoration areas are indicative and require geotechnical design to ensure they meet the required stability. As a detailed geotechnical design of the peatland restoration area is still to be undertaken and this will in-effect ensure stability of these areas, this Preliminary PLHRA does not assess the potential peat landslide risk posed by the specific restoration areas. The effects of constructing these restoration areas as relates to the surrounding peat is, however, indicatively assessed.

For the peatland restoration through reinstatement of natural drainage conditions, the proposals indicate this will be undertaken through infilling of both drainage ditches and furrows within the Site. Over time this should increase the groundwater level present within the Site, although until the groundwater level stabilises will likely result in less stable peat conditions. At present it is assumed all areas of the Site, outwith the proposed works and other restoration areas, will have drainage ditches and furrows infilled. However, the exact locations where this is feasible is not yet determined, as a detailed survey of the Site is required. As the exact details and locations of the infilling is still to be determined, as well as the phasing of these works in relation to the construction of the Project, this Preliminary PLHRA does not assess the potential peat landslide risk posed by the reinstatement of the natural drainage conditions.

<sup>1</sup> AECOM on behalf of SSEN Transmission (2025) Stage 1 Peat Management Plan, Cambushinnie 400kV Substation, LT520, April 2025

TEM-NET-ENV-XXX	<b>Preliminary Peat Landslide Hazard and Risk Assessment</b>	<b>Applies to</b>
		Transmission ✓

## 1.5 Scope of Report

The scope of this report comprises a summary of the methodology used for the Preliminary PLHRA; a review and assessment of the baseline conditions based on available geological, hydrogeological and topographic information for the Site; an estimate of the geotechnical hazards and risks associated with peat slides during and post construction; a qualitative risk assessment in relation to the peat encountered; a summary and discussion of potential mitigation and control measures to reduce the risk caused by the presence of peat; and present any conclusions and recommendations which can be drawn from the information and assessments undertaken as part of this preliminary PLHRA.

Available information includes:

- Digital topographic datasets showing the slope angles within the Site;
- Historic OS Mapping and Aerial photography;
- Geological datasets showing the published superficial and solid geology;
- Geo-environmental Desk Study produced by SSEN Transmission<sup>2</sup>;
- AECOM Geo-Environmental Desk Study<sup>3</sup>
- Information collected during walkover surveys;
- Peat depths recorded by peat probing surveys and peat depths and composition recorded by peat coring; and
- Ground investigation information<sup>4</sup> from intrusive works undertaken within the Site.

This PLHRA was conducted in general accordance with the guidance provided in Peat Landslide Hazard and Risk Assessments – Best Practice Guide for Proposed Electricity Generation Developments<sup>5</sup>. The guidance follows a staged approach methodology in relation to the peat stability risk as follows:

- Preliminary Assessment;
- Hazard and Risk Rating;
- Stability Analysis (if required); and
- Detailed Quantitative Risk Assessment (if required).

As part of this PLHRA a qualitative hazard and risk ranking review was undertaken in accordance with the published guidance<sup>5</sup>.

The layout of the Project has been frozen for the purposes of the planning application and given the stage of the project, the design has not yet reached maturity. . As such, intrusive investigations have been undertaken to inform the layout and planning stage design of the Project with peat depths estimated through widespread peat probing and more targeted exploratory holes. As the Project is at the planning stage, a quantitative slope stability analysis to estimate Factors of Safety and a quantitative hazard and risk assessment have therefore not been undertaken. To

<sup>2</sup> Scottish and Southern Electricity Network (2023). *LT520 – Braco West Substation, Geo-Environmental Desk Study*. Doc Ref. LT520-BRCW-GDS-CIV-001, Rev. 1.0, October 2023.

<sup>3</sup> AECOM Ltd (AECOM) (2024). *LT520 Cambushinnie 400kV Substation, Geo-Environmental Desk Study*, Report No. 60721943, July 2024.

<sup>4</sup> Igne Ltd (2024). *Braco West Sites 2 & 3, Report on Ground Investigation*. Contract No. 26555, Report Issue: Draft, January 2024.

<sup>5</sup> Scottish Government (2017). *Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments*, Prepared for Energy Consents Unit Scottish Government, Second Edition, April 2017.

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

support the detailed design of the Project, post consent, the Principal Contractor may undertake further peat surveys and investigative works, although at this stage these have not been confirmed.

The reuse of peat is proposed as part of the Project. However, this Preliminary PLHRA does not take into account the peat reuse or restoration areas (as discussed in **Section 1.4**), although it is acknowledged the areas of reuse or restoration may impact on the overall peat stability both of the existing deposits and of the placed peat.

Development of this PLHRA will require to be undertaken, post-consent, considering the final design of the Project (inclusive of the peat reuse and restoration areas) and considering any new further information (e.g. investigation data, survey data, etc.) becoming available. This PLHRA is therefore preliminary.

## 1.6 Limitations

AECOM does not warrant or guarantee to any party in any way the completeness or accuracy of the documentary information submitted by third parties during the course of this study. Any assessment(s), interpretation(s), conclusion(s) or opinion(s) contained herein is or are made by AECOM in good faith based on information available at the time of compilation of the report and are made for the sole and exclusive use of the Applicant.

AECOM accepts no liability towards third parties for decisions made by any such based on information or statements contained herein. Third parties making use of any information or statement of any kind whatsoever presented or contained within this report or attachments hereto do so at their own risk.

Where peat depth has been determined through peat probing, it should be noted that due to the nature of the probing and as no sample is recovered during the advancement of the probe, the peat depth recorded is only an estimate based on the judgement of the probe operator. More intrusive ground investigation techniques, where samples are recovered, is required to more accurately determine the peat depth and truth the probed depths. The intrusive records available for the Site have been reviewed against the probed depths to verify the probed results. However, the intrusive investigation does not cover the full probed areas and as such the peat depth where no intrusive investigation is in the near vicinity continues to be an estimate, as noted early in this paragraph.

Peat probing has been undertaken across much of the Site to cover the proposed infrastructure and restoration areas. However, the whole of the Site and proposed infrastructure could not be probed due to wind fallen trees or dense woodland. Where the peat probe data has been interpolated out to the boundary of the Site from points which are not within 10 m of the boundary, this was undertaken using estimation and professional judgement. There is therefore the potential for the peat to be different in thickness than predicted, which may increase or decrease the predicted peat slide assessed hazard. Further investigation is proposed as part of the design development and as such data gaps are anticipated to be filled as a result, during future reporting. Where data gaps remain, these shall be discussed and assessed further as part of the final PLHRA undertaken post-consent and following design maturity.

Ground surveys indicate likely conditions but investigate only a relatively small volume of the ground in relation to the size of the Site and can only provide a general indication of site conditions. The comments made and recommendations given in this report are based on AECOM's

TEM-NET-ENV-XXX	<b>Preliminary Peat Landslide Hazard and Risk Assessment</b>	<b>Applies to</b>
		Transmission ✓

understanding of the ground conditions at the time of the preparation of this report. There may be exceptional ground conditions on the Site which have not been disclosed, and which have therefore not been taken into account in this report.

The assessment of the peat slide hazard is based on the effect the proposed works could have on the surrounding peat in its current condition, situation and thickness. Where reference is made to peat restoration areas in the assessment section, this relates to how these works may affect the stability of peat that is currently present surrounding the area, during the restoration works. No allowance has been made to account for the proposed change in peat thickness or the potential change in hydrology or peat condition within the restoration areas. The detailed design of the restoration areas will consider and assess the stability of the peat mass as a whole both during and following deposition. During the detailed design process any mitigation measures required to reduce the likelihood or exposure of a peat slide occurring as a result of the peat restoration areas will be included. The findings of the detailed design will then be included in the Final PLHRA, post-consent and following design maturity.

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

## 2 Methodology

### 2.1 Desk Top Review

An initial desk top review was undertaken, comprising the review and analysis of available information from sources as detailed below:

- British Geological Survey (BGS)<sup>6</sup> for geology and hydrogeology;
- National Ground Subsidence – Landslide information as provided within the Groundsure Report obtained contained within Appendix C of the AECOM Geo-Environmental Desk Study<sup>3</sup>;
- Scotland’s Soils<sup>7</sup> for soil coverage;
- Centre for Ecology and Hydrology (CEH), National River Flow Archive (NRFA)<sup>8</sup> for flows and rainfall;
- SEPA<sup>9</sup> for river basin management plans, groundwater classification, groundwater vulnerability, water quality and hydrogeology;
- Historic OS maps (available within Appendix C of the AECOM Geo-Environmental Desk Study<sup>3</sup>) and Aerial Photography<sup>10</sup>; and
- Digital Terrain Model (DTM) for topography.

The initial desk top review was carried out by AECOM with full details provided in the Geo-Environmental Desk Study Report undertaken for the Project<sup>3</sup>. A summary of the information relevant to this PLHRA Report can be found in the ‘Baseline Environment’ in **Section 0** of this report.

### 2.2 Assessment Approach

A single stage assessment of the peat slide Hazard Ranking has been completed for the Project. The Hazard Ranking is based on the output from Geographic Information Systems (GIS) software using a multi-criteria analysis. The outputs generated from the GIS assessment can be overly conservative in areas and therefore a review of the Hazard Rankings is also undertaken. This review considers the factors contributing to the peat landslide hazard in more detail and rationalises whether the Hazard Ranking can be reduced. The assessment of the Hazard Rankings inclusive of the review and any reduction considered appropriate is presented in **Section 0** of this PLHRA.

The outputs from the assessment of the Hazard Rankings form the basis of the overall PLHRA outcome and to whether any mitigation measures are required.

<sup>6</sup> British Geological Survey (2024). *Hydrogeological Maps*. [Online] [accessed September 2024] available from: [Hydrogeological maps | British Geological Survey \(BGS\)](#)

<sup>7</sup> NatureScot (2024). *Scotland’s Soils Maps*. [Online] [accessed September 2024] available from: [https://map.environment.gov.scot/Soil\\_maps/?layer=1](https://map.environment.gov.scot/Soil_maps/?layer=1)

<sup>8</sup> Centre for Ecology and Hydrology (2024). *National River Flow Archive* [Online] [accessed September 2024] available from [Data | National River Flow Archive](#)

<sup>9</sup> Scottish Environmental Protection Association (2024). [Online] [accessed September 2024] available from: [Water | Scottish Environment Protection Agency \(SEPA\)](#)

<sup>10</sup> Google (2024). *Google Earth Pro, Imagery courtesy of Airbus*. [Online] [Accessed August 2024] available from: [earth.google.com/static/multi-threaded/versions/10.59.0.2/index.html?](https://earth.google.com/static/multi-threaded/versions/10.59.0.2/index.html?)

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

## 2.3 Good Practice Guidance

The following good practice guidance was used to inform this appendix:

- Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments<sup>5</sup>;
- SEPA Regulatory Guidance – Developments on Peat and Off-site Uses of Peat<sup>11</sup>;
- Floating Roads on Peat<sup>12</sup>;
- Constructed Track in the Scottish Uplands<sup>13</sup>;
- Good Practice during Wind Farm Construction<sup>14</sup>;
- Guidance on Developments on Peatland, Peatland Survey<sup>15</sup>; and
- Developments on Peatland: Guidance on the assessment of peat volumes, reuse of excavated peat and the minimisation of waste<sup>16</sup>.

## 2.4 Summary of Surveys

The following surveys have been undertaken for the Project:

- Initial phase of ground investigation covering both intrusive exploratory holes and peat probing was undertaken by Igne in November and December 2023;
- Additional peat probing undertaken by AECOM in March 2024;
- A site walkover was conducted by AECOM in May 2024; and,
- Supplementary peat probing and peat coring undertaken by AECOM in December 2024.

The peat probing locations from the Igne and AECOM peat probing surveys, are shown on **Figure 7, Appendix A Figures. Section 4** provides further details on the surveys undertaken and their findings. Other features as observed during the walkover survey and investigative works are shown on **Figure 3, Appendix A Figures**.

## 2.5 Site Infrastructure Design

The peat depth assessment identified that peat depths ranging from absent to 1.0m cover the majority of the Site, with localised areas where peat depths were recorded up to 3.0m and isolated locations where recorded peat depths were >3.0m also identified. Significant deposits of peat >2.0m in depth were identified along the northwestern boundary of the Site and to the northwest of the Site. Generally, the Site infrastructure was located out-with this deeper peat area with only the temporary overhead line diversion extending into the vicinity.

<sup>11</sup> Scottish Environment Protection Agency (SEPA) (2017). *SEPA Regulatory Guidance – Developments on Peat and Off-site Uses of Waste Peat*, SEPA Guidance, WST-G-052. Version 1., May 2017

<sup>12</sup> Scottish Natural Heritage and Forestry Commission Scotland (SNH & FCS) (2010). *Floating Roads on Peat, A Report into Good Practice in Design, Construction and Use of Floating Roads on Peat with particular reference to Wind Farm Developments in Scotland*, August 2010.

<sup>13</sup> Scottish Natural Heritage (SNH) (2015). *Constructed Tracks in the Scottish Uplands*, 2nd Edition, September 2015.

<sup>14</sup> Scottish Renewables (SR), Scottish Natural Heritage (SNH), Scottish Environment Protection Agency (SEPA), Forestry Commission Scotland (FCS), Historic Environment Scotland (HES), Marine Scotland Science (MSS) and AECOW (SR, et al) (2019). *Good Practice during Wind Farm Construction*, 4th Edition, 2019.

<sup>15</sup> Scottish Government, Scottish Natural Heritage, SEPA (2017). *Peatland Survey. Guidance on Developments on Peatland*

<sup>16</sup> Scottish Renewables (SR) and Scottish Environment Protection Agency (SEPA) (SR & SEPA) (2012). *Developments on Peatland: Guidance on the assessment of peat volumes, reuse of excavated peat and the minimisation of waste*, Version 1, January 2012.



TEM-NET-ENV-XXX	<b>Preliminary Peat Landslide Hazard and Risk Assessment</b>	<b>Applies to</b>
		Transmission ✓

It is acknowledged that there are very localised areas where peat >2.0m is recorded underlying the Project, however, it was not possible to design the layout to avoid these completely considering the engineering constraints of the Project. Where deposits >2.0m in depth are recorded underlying the Project, further consideration as to how these may affect the Project and how the removal of the deposits can be minimised is being considered.

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

## 3 Baseline Environment

### 3.1 Topography and Slope Analysis

An Ordnance Survey 5m DTM file was obtained for the Site. This file was used to produce the contour data as shown on **Figure 4, Appendix A Figures**. A summary of the elevation data is also presented below.

The topographic data obtained indicates the Site is located on the southern facing slopes of Feddal Hill. Within the area the land generally slopes southwards from approximately 260mAOD in the northwestern corner to approximately 200mAOD in the southwestern and continues to fall southwards out with the boundary of the Site.

The 5m DTM was used to create a slope assessment of the Site with this shown on **Figure 4, Appendix A Figures**. A review of this figure shows that the Site has slope gradients typically up to 10° with a very localised area with up to 15° slope gradient towards the southern boundary of the Site. Generally, the slope gradients in the northern half of the Site are recorded up to 5°.

### 3.2 Historical OS Mapping and Aerial Photography Review

Historic OS mapping was obtained for the Site as part of the Groundsure Report obtained for the Desk Study and is included as Appendix C of the AECOM Geo-Environmental Desk Study<sup>3</sup>. Review of the earliest available map from 1862 identified the Site was generally undeveloped open moorland, with several access tracks present within and water courses present in the southwestern corner. The Site use generally remained unchanged until around 2001 when forestry plantation was then recorded across the Site. By 2010 the existing access track within the Site was recorded, and by 2024 the Site was shown in its present-day layout and land use.

Historic aerial imagery for the Site was obtained through the time slider feature of Google Earth<sup>10</sup>. The earliest available aerial photograph with good resolution was from 2005 and recorded that the Site was within a conifer plantation with mature unfelled trees present throughout. The existing Braco West substation had not been constructed, however, the existing access track leading to the Braco West substation from the B8033 was in its present alignment. By 2015 much of the conifers within the Site had been felled, although many still remained particularly within the southeast and southwest, and the Braco West substation appears to be under construction with the northeast – southwest trending Beauly to Denny overhead electrical line also under construction. The access track located within the northwest of the Site was present presumably to facilitate the construction of the Beauly to Denny overhead line as part of the Braco West substation's development. By 2017 construction of the Braco West substation had been completed, as was the Beauly to Denny overhead line to the west of the existing substation. An additional branch of access track was present within the south and southwest of the Site with all the existing tracks within the Site now in their present alignment. By the most recent aerial photography available from 2021, the plantation within and surrounding the Site was in its present state of felling/replanting.

No obvious evidence of peat instability features were noted from review of the available historic and current OS mapping or aerial photography.

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

### 3.3 Current Land Use

The current land use of the Site was assessed based on recent ordnance survey mapping and aerial imagery available through Bing Maps<sup>17</sup> and through consultations with the Applicant.

The Site is dedicated forestry plantation (coniferous wood) with the majority of the Site having been recently felled and replanted. Firebreaks and ridings are present, and aerial imagery clearly shows drainage channels and forestry planting ploughs throughout the Site. Within the northeast of the Site is the existing Braco West Substation and running within the Site in the northern half is the existing northeast – southwest trending Beauly to Denny overhead electrical line. Within the northern half of the Site is also a northeast – southwest trending access track, with a spur off this access track also noted trending northwest – southeast and present within the southwest of the Site. Both access tracks extend out-with the Site. Towards the southern boundary of the Site, the source of two watercourses is shown. What appears to be watercourses or drainage channels are also recorded within the northeast of the Site towards the existing Braco West Substation.

### 3.4 Geology and Soils

#### *Superficial Geology (Drift Deposits)*

A review of the British Geological Survey (BGS) Onshore GeoIndex Viewer<sup>18</sup> indicates the Site to predominantly underlain, from surface, by peat. Glacial till is recorded from surface within the south of the Site. Towards the eastern extent of the Site, an area where no superficial deposits are recorded is indicated by the BGS suggesting that bedrock is close to surface in that area. Given the potential presence of shallow bedrock adjacent to the Site, this may indicate that locally peat is directly overlying bedrock, which is likely to be weathered. Where not directly overlying bedrock, the peat is anticipated to be underlain by glacial till. The extents and location of the recorded superficial deposits across the Site are shown on **Figure 5, Appendix A Figures**.

Although not recorded by the BGS, as watercourses are recorded within the south of the Site, there is potential for alluvial deposits to be present in the immediate vicinity of these watercourses. Again, although not recorded by the BGS made ground is also anticipated within the Site associated with the existing developments (e.g. access track, substation, overhead line, etc.).

<sup>17</sup> Microsoft (2024). *Bing Maps*, available: <https://www.bing.com/maps/>, [Online] [accessed August 2024]

<sup>18</sup> British Geological Survey (BGS) (2024) *Onshore Geoindex*. [Online] available: <https://mapapps2.bgs.ac.uk/geoindex/home.html>, [accessed August 2024]

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

The BGS provide the following descriptions of the recorded and possible superficial deposits:

- Glacial Till – the BGS do not provide a description of this deposits, however, it is anticipated to consist of a variable proportion of clay, silt, sand and gravel with cobbles and boulders.
- Peat – “partially decomposed mass of semi-carbonized vegetation which has grown under waterlogged, anaerobic conditions, usually in bogs or swamps.”
- Alluvium – general term for clay, silt, sand and gravel deposited by a river, stream or other running water body. The deposit is typically described as “soft to firm consolidated, compressible silty clay, but can contain layers of silt, sand, peat and basal gravel.”
- Made Ground – the BGS do not provide a description of made ground, however, this is likely to be highly variable in its composition, dependant on its source and may contain anthropogenic material.

The information obtained from the BGS was supplemented through review of the National Soil Map of Scotland Viewer<sup>19</sup>. This source identified the following:

- The Site is predominately underlain by Balrownie soils consisting of peaty gleyed podzols. This soil is recorded as being derived mainly from sandstones of Lower Old Red Sandstone age, which are often water-modified. The soils are recorded as being formed on undulating uplands with gentle and strong slopes which are non-rocky.
- Locally within the northwestern corner of the Site and extending further north and west out with the Site, the mapping indicates organic soils consisting of dystrophic blanket peat are present. These soils are recorded as being formed in the uplands and northern lowlands on both gentle and strong slopes.

Review of the Carbon and Peatland 2016 Map layer of the National Soil Map of Scotland Interactive Map Viewer<sup>19</sup> was also undertaken. This source indicated that the Site is predominately underlain by Class 4 carbon and peatland soils. Locally in the northern half of the Site, Class 5 carbon and peatland soils are also recorded.

The 2016 Carbon and Peatland map provides further details on the classifications recorded as follows:

- Class 4 – Predominately mineral soils where some peat soil may be encountered. The areas are unlikely to be associated with peatland habitats or wet and acidic type soils. The area is also unlikely to contain carbon-rich soils.
- Class 5 – Recorded as a peat soil, where the soil information takes precedence over the vegetation data. No peatland habitat is recorded within the area; however, the soils are likely to be carbon-rich and contain deep peat. Bare soils may also be present within the area.

Based on the information reviewed, it is noted that peat deposits are likely to be present throughout the Site.

Taking cognisance of the available information, the substrate is likely to vary between glacial till and bedrock (likely weathered). Intrusive ground investigation has been undertaken and so the composition of the substrate underlying the Site can be better estimated through this. Discussion on the substrate underlying the peat within the Site is provided in **Sections 4.2** and **6.5** of this report.

<sup>19</sup> Scotland's Soils (2024). *National Soil Map of Scotland*, [Online] available: [https://map.environment.gov.scot/Soil\\_maps/?layer=1#](https://map.environment.gov.scot/Soil_maps/?layer=1#), [Accessed: August 2024].

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

A review of the landslide layer of the BGS Geoindex was undertaken as part of the superficial geology review, which indicated the BGS do not hold records of any landslides having occurred within or in close vicinity to the Site.

The potential for landslides is also identified as part of the natural ground subsidence assessment included as part of the Groundsure Report included within Appendix C of the AECOM Geo-Environmental Desk Study<sup>3</sup>. This source identified the Hazard rating in relation to landslides within the Site as 'Very Low'. This is defined as 'Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.'

#### *Solid Geology (Bedrock)*

A review of the BGS Onshore GeoIndex Viewer indicates the Site to be underlain by sandstone of the Teith Sandstone Formation. Surrounding the Site to the south, east and northeast, rock comprising mudstone and siltstone of the Cromlix Mudstone Formation is recorded. Both the Teith Sandstone Formation and Cromlix Mudstone Formation are part of the Stratmore Group. The extents and location of the recorded solid geology across the Site is shown on **Figure 6, Appendix A Figures**.

The BGS provide the following descriptions of the recorded solid geology:

- Teith Sandstone Formation – recorded to be of sedimentary rock type. Described as "reddish-brown, grey, purple and brown, cross-bedded sandstone, locally interbedded with siltstone and mudstone intercalations, conglomerate members and interbeds are common in the Highland Border area."
- Cromlix Mudstone Formation – recorded to be of sedimentary rock type. Described as "characteristically soft, bright red to dull brownish-red, maroon or purplish-brown, with green reduction spots in the north-eastern Midland Valley, generally massive but often thinly laminated, poorly-sorted, fine-grained silty sandstones, sandy siltstones, siltstones and mudstones, which lithologies may be locally interbedded with thin lenses of medium to coarse-grained pebbly sandstone."

#### *Structural Geology*

A review of the BGS Onshore GeoIndex Viewer indicates no faults are present within the Site. An inferred fault is recorded to be present approximately 30m south of the Site, orientated approximately east – west.

Surrounding and locally recorded within the south of the Site, a series of typically eastward trending glacial meltwater channels are shown. These channels may contain deposits of outwash gravels formed during glacial retreat.

The locations of the fault and glacial meltwater channels are shown on **Figure 6, Appendix A Figures**.

## 3.5 Mining and Quarrying

#### *Coal Mining*

The Coal Authority Interactive Map Viewer<sup>20</sup> indicates the Site is not within Coal Mining Reporting Area. Furthermore, there are no areas within the Site which fall within the Development High Risk Area designation and there are no mine entries recorded within 500m of the boundary of the Site.

<sup>20</sup> Coal Authority (CA) (2024). *Interactive Map*, [Online] available: <https://datamine-cauk.hub.arcgis.com/>. [Accessed: August 2024].

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

### Quarrying

Review of the Groundsure Report for the Site as contained within Appendix C of AECOMs Geo-Environmental Desk Study indicates no quarrying activities are recorded within 100m of the Site. This is confirmed through the review of the available historic OS mapping and aerial imagery for the Site.

A review of the Mine Plans Extents layer of the BGS Geoindex was also undertaken. Plans are shown to cover the entire Site. However, do not show underground mining at a depth shallow enough that will affect the Site.

The Active Mines and Quarries layer of the BGS Geoindex also indicates no active mines or quarries are present within or in the immediate surroundings of the Site.

## 3.6 Hydrogeology

An estimation of the groundwater productivity of the superficial deposits recorded within the Site was made using the guidance contained within the BGS Aquifer Productivity Report. The following aquifer productivity estimations were therefore made:

- Glacial Till – typically regarded as having a very low to low permeability and so are generally classed as not a significant aquifer;
- Alluvium – can have a varying permeability ranging from high to very low depending on the parent material making up the deposit. If the deposits are dominated by sand and gravel, then the deposits can be considered as a moderate to high productivity aquifer with potential yields from 1 to >10l/s. If the deposits are dominated by clay or silt, then they are likely to be classified as not a significant aquifer.
- Peat – peat is not covered within the guidance document; however, it is typically considered to have a relatively low permeability. Given this the peat is considered to not be a significant aquifer.

Review of the Hydrogeology 1:625,000 scale layer of the BGS Geoindex, provides information on the solid geology aquifer productivity. This indicates that the Strathmore Group, of which all rock formations recorded within the Site belong too, is a moderately productive aquifer. The BGS describe this as a "Sandstones, in places flaggy, with siltstones, mudstones and conglomerates and interbedded lavas locally yield up to 12l/s in parts of Strathmore."

## 3.7 Hydrology

The recorded hydrology for the Site, as recorded by OS mapping, is shown on **Figure 7, Appendix A, Figures**.

The majority of the Site appears to be drained by the two unnamed watercourses in the south. Both watercourses typically flow to the south and drain into the Crocket Burn at around Altersie, approximately 620m south southeast of the Site. The northeastern corner of the Site contains recorded watercourses which are assumed to be drainage channels associated with the existing Braco West substation. This drainage channel is locally assumed to drain the northeastern extent of the Site and is recorded to flow to the north, draining into the Bullie Burn approximately 200m north of the Site.

Given the land use of the Site is commercial forestry, it is known and anticipated that several drainage ditches and channels are present within the Site with these generally assumed to drain into the two recorded watercourses in the south of the Site.

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

One main river catchment is recorded within the Site; the Allan Water. The Crocket Burn and Bullie Burn, to which all watercourses and drainage ditches within the Site are anticipated to drain, eventually flow into the Allan Water, which is present at its closest point, approximately 3.1km southeast of the Site.

Review of SEPA's water classification hub<sup>21</sup> indicates no watercourses within the Site have been Classified by SEPA. However, the Bullie Burn located to the north of the Site and the Muckle Burn, where the Crocket Burn drains into to the south of the Site, have been classified by SEPA. Both of these have been classified with an overall status of 'Good'. As the watercourses within the Site and the Crocket Burn have not been classified by SEPA, it is assumed these have the same overall status classification as the Bullie Burn and Muckle Burn (i.e. overall status of 'Good').

Review of the National River Flow Archive (NFRA) shows no flow gauges are present for the watercourses located within the Site or for the watercourses to which the onsite ones flow into.

### 3.8 Climate

The rainfall data for the site is obtained through review of the catchment information tab relating to specific measurement gauges along watercourses, available from the National River Flow Archive (NRFLA) search data page<sup>22</sup>. This source indicated two gauging stations are located within 10km of the Site as follows:

- Located on the Allan Water at Kinbuck, approximately 3.2km south of the Site; and
- Located on the River Teith at Bridge of Teith Doune, approximately 10.0km southwest of the Site.

**Table 3-1** shows the annual average rainfall recorded from each of these gauging stations.

**Table 3-1 NRFA Rainfall Data**

Catchment	NGR	Gauge ID	Station Level (AOD m)	Period of Record	Annual Average Rainfall (mm)
Allan Water at Kinbuck	NN 792053	18001	92.99	1961 – 1990	1384
River Teith at Bridge of Teith, Doune	NN 725011	18003	14.84	1961 – 1990	2001

### 3.9 Flooding

Flooding information relevant to the Site has been obtained as part of the Groundsure Report contained in Appendix C of the AECOM Geo-Environmental Desk Study. This source record negligible risk of river and coastal flooding within the Site. Very localised small areas of surface

<sup>21</sup> Scottish Environment Protection Agency (SEPA) (2024). *Water Classification Hub*. [Online] available: <https://www.sepa.org.uk/data-visualisation/water-classification-hub/>, [Accessed: August 2024].

<sup>22</sup> National River Flow Archive (NFRA) (2024). *River Flow Data Search*, [Online] Available: <https://nfra.ceh.ac.uk/data/search>, [Accessed August 2024].



TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

water flooding are recorded within the Site with the highest risk being a 1 in 30-year rainfall event causing flooding of greater than 1.0m in depth.

The Groundsure Report indicates a negligible risk of groundwater flooding associated with the peat deposits recorded within the Site and a low risk associated with the glacial till recorded within the Site. See **Figure 5, Appendix A Figures** for the BGS recorded locations of these superficial deposits within the Site.

### 3.10 Geomorphology

The geomorphology of the Site is dominated by the topography and resulting drainage pattern. The topography of the Site is dominated by the southern facing slopes of Feddal Hill. Generally, the northern extent of the Site is flat because of being towards the crest of Feddal Hill with the topography then sloping generally to the south at slope gradients typically up to 10°. Drainage patterns are therefore typically trending to the south.

The flatter and less steep ground within the northern half of the Site are likely to represent wetter areas that are more likely to contain deeper peat accumulations. This is confirmed through the BGS recorded locations and extents of peat (see **Figure 5, Appendix A Figures**) as well as during the site walkovers (see **Section 4.1**). Along the steeper slopes within the south of the Site less thick peat accumulations and extents are anticipated, with the BGS recording glacial till from surface within the south of the Site (see **Figure 5, Appendix A Figures**).

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

## 4 Sources of Peat During Construction

### 4.1 Walkover Survey

Three site walkover surveys were undertaken within the Site to inform this report as follows:

- By AECOM in March 2024 as part of the additional peat probing undertaken;
- By AECOM in May 2024; and
- By AECOM in December 2024 as part of the supplementary peat probing undertaken.

Generally, the site walkover agreed with the features as identified in the 'Current Land Use' Section of this PLHRA (**Section 3.3**). The Site was found to be covered by commercial coniferous forestry with the woodland present varying in maturity. An access track was present within the north of the Site along with the existing overhead electricity line leading into the existing Braco West Substation in the northeastern corner of the Site. The existing watercourses as identified in **Section 3.7** were not observed as part of the walkovers, however, drainage channels, some of which were deep (i.e. >1.0m in depth), were observed throughout the Site. Observations made on the batters of the drainage channels showed both areas of deep peat (>1.0m in depth) and more shallow peat (approximately 0.5m in thickness) with these observations typically agreeing with the probing discussed in the next section of this report. The peat observed within the Site was noted as being likely disturbed as part of the felling and replanting process of the commercial forestry operations. The maturity of the woodland in the Site was typically observed as recently felled and replanted with young trees, although there were areas of mature trees in the western extent of the Site, with semimature trees in the south and southwest of the Site.

Ground conditions across the Site were noted to vary. Within the north of the Site where the land was flatter and where deeper peat deposits are anticipated; the ground conditions were noted as softer and wetter underfoot. This would suggest that peat is present and may indicate deeper deposits. Along the steeper topography in the south of the Site the underfoot conditions were noted as being firmer and drier potentially indicating the absence or thinner peat deposits being present. No evidence of peat landslide or peat cracking were noted during any of the Site walkovers.

There were no peat instability features observed during the Site surveys. Fallen trees were noted as part of the Site walkovers, within the west of the Site associated with the mature woodland. Observations suggested that the tree root systems were fairly shallow within the superficial and that, where observed, at least a peaty topsoil was present with deeper peat deposits possible.

Observations made in relation to the maturity of woodland and saturated ground conditions of the Site are shown on **Figure 3, Appendix A Figures** of this report.

#### *Watercourses/Ponds*

As highlighted above, the watercourses recorded from the Desk Study within the Site were not observed as part of the Site walkovers. Numerous drainage channels were observed within the Site associated with the forestry works, however, minimal water and no perceptible flow was observed in these. The drainage channels observed are not included as part of the OS mapping on **Figure 7, Appendix A Figures** of this report.

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

## 4.2 Peat Investigations

Multiple peat investigations were undertaken across the Site to ensure adequate coverage for use in the planning stage design. Note where peat investigations were undertaken, these were scoped taking cognisance of the Peatland Survey Guidance<sup>16</sup>.

### *Initial Ground Investigation (2023)*

An initial phase of ground investigation was undertaken by Igne in November and December 2023. The investigation included 4795 peat probes, 17 no. boreholes and 20 no. trial pits. The results of the investigation are included within Igne's Factual Report<sup>4</sup>. **Figure 10** within **Appendix A Figures** shows the locations of the boreholes and trial pits undertaken by Igne.

The peat probing was undertaken across two possible locations for the Project, the proposed Site and a location just to the north of the proposed Site. The peat probes were undertaken to give an initial understanding of the peat extent and depth across the possible Site locations to allow selection of the Site with the thinnest peat deposits. The peat probing undertaken was at approximate 10m centres across the possible substation platform locations. Estimated peat depths from this survey ranged from absent to 7.0m.

The intrusive investigation (i.e. trial pits and boreholes) were typically undertaken within the Site to allow outline design of the Project to be undertaken. The peat encountered within the exploratory holes varied between 0.2m (BH14 New & TP13 New) to 2.0m (BH13) in thickness with the thickness of peat generally greater towards the northwestern boundary of the Site. Generally, the peat depths encountered were <1.0m in thickness and were locally recorded to be absent with the average thickness calculated at approximately 0.8m. The intrusive investigation results were reviewed against the peat probe data, with these generally showing agreement in peat depth. The peat deposits across the Site, as reported in Igne's Factual Report, are typically recorded to fall into two different types, as follows:

- soft dark brown spongy amorphous peat locally with cobbles and pieces of wood; and
- soft dark brown spongy pseudo-fibrous peat locally with pieces of wood.

Within BH13 where the deepest peat deposits were recorded a very soft plastic amorphous peat was recorded underlying the soft spongy amorphous peat at a depth of 1.2 m. Note, however, BH13 is situated just outwith the Site boundary to the west. No discernible trends were noted in relation to the spread of amorphous or pseudo-fibrous peat across the Site, and the acrotelm or catotelm was not identified.

SLR Consulting Limited produced a Ground Investigation Report (GIR) for the Project<sup>23</sup> which includes description on the peat findings and an engineering assessment. Generally, SLRs interpretation of the peat depths and extents agreed with the text provided in the paragraph immediately above. However, SLR note that although amorphous peat has been recorded within exploratory holes at several locations, they considered this to be more pseudo-fibrous in nature.

The substrate across the Site was recorded to vary between course-grained deposits typically of gravelly sand or sand & gravel, and fine-grained deposits typically of clay. The coarse-grained deposits were generally recorded within the southwest of the Site and the fine-grained deposits were generally recorded within the northeast of the Site.

<sup>23</sup> SLR Consulting Limited (2024) Braco West ASTI 400kV Substation, Ground Investigation Report, SLR Project No. 422.064790.00001, Revision: Final, 21 May 2024

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

#### *Additional Peat Probing (2024)*

Additional peat probing within the Site was undertaken by AECOM in March 2024. The additional probing was undertaken to cover areas of the Project which were not included as part of the initial probing. The probing was undertaken at 10m spacing throughout the proposed infrastructure not already covered to gain understanding of the peat depth.

In total 847 probes were proposed as part of the additional probing exercise, however, only 442 probes were able to be undertaken. This was due to windblown and the risk of windblown trees restricting access for the proposed probe locations in the southwest of the Site and dense forestry restricting access for probing in the south of the Site. **Figure 7, Appendix A Figures** presents the results of all of the probing undertaken and illustrates the probes which could not be completed.

Estimated peat depths from the additional probing ranged from absent to 3.7m, although the majority of probes recorded estimated peat depths <1.0m. A Technical Note providing full details on the additional probing undertaken by AECOM in March 2024 is provided as **Appendix B Peat Investigation Technical Notes**.

#### *Supplementary Peat Probing and Peat Coring (2024)*

A supplementary phase of peat depth probing was undertaken by AECOM in December 2024 and included 7 no. peat cores to identify composition of the peat deposits present. The supplementary probing was undertaken in 3 separate areas across the Site, targeting areas not previously probed. Note that 1280 probes were initially proposed for the supplementary peat investigation works, however, this was reduced to 683 as reasoned in the following text. In the area in the southeast of the main works area, the probing was based on an original 10m grid, however, after initial probing the peat depths encountered were typically estimated to be <1.0m in thickness and as such the density of probes was reduced to typical 10m spacing in the northeast – southwest orientation and 20m spacing in the southeast – northwest orientation. The grid was increased back to a 10m grid where deposits >1.0m were identified. In the area of the proposed OHL tie-in works, a typical 10m probing grid was undertaken across the proposed OHL tower and working platform locations. The last area probed was to the immediate east of the main works area and south of the existing Braco West Substation. The probing was undertaken here to gain understanding of the peat depths adjacent to the main works area and was undertaken in a typical 20m grid. Probing in this area was reduced from that initially proposed due to the presence of an underground 33kV cable and due to the presence of dense forestry in the east of the area. **Figure 7, Appendix A Figures** presents the results of all of the probing undertaken and illustrates the probes which could not be completed.

Estimated peat depths from the supplementary probing ranged from absent to 2.4m, although the majority of probes recorded estimated peat depths <1.0m with many indicating peat depths <0.5m.

As part of the peat investigation works undertaken, peat coring using a Russian Corer was also carried out. The cores were taken adjacent to trial pits previously undertaken in order to obtain samples for laboratory testing and to build on the peat description which had previously been omitted. The 7 no. peat cores were taken at locations corresponding to trial pits (TP's 01, 03, 04, 09, 10, 11 & 13) undertaken by Igne as part of the Initial Ground Investigation to provide further detailed descriptions on the composition of peat present within the Site. **Figure 10 in Appendix A Figures** provides the location of the Igne exploratory hole locations for reference. The peat depths encountered as part of the coring ranged from 0.25m to 1.0m. Descriptions of the peat

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

encountered were typically recorded as soft dark brown to brown fibrous to pseudo fibrous peat locally with occasional pieces of wood.

The Von Post Humification Scale<sup>24</sup> was used as part of the logging of the peat cores recovered, whereby the peat is classified in accordance with its degree of humification (decomposition) between H1 and H10, with H1 being completely undecomposed and H10 being completely decomposed. The peat was also classified in accordance with its moisture content using a scale of B1 to B5, with B1 as dry peat up to B5 which is very high moisture content. The peat recovered from the coring was recorded in the range H4 (slight decomposition) to H5 (moderate decomposition) / B2 (low moisture content), although locally moisture contents of B1 (dry) and B3 (moderate) were also recorded. Geotechnical laboratory testing was undertaken on core samples recovered during the peat coring exercise. These typically indicated water contents ranging from 486% to 822% and organic matter content (OMC) ranging from 59.1% to 71.7%. Given the high OMC, generally  $\geq 60\%$ , the peat present onsite would typically meet the minimum OMC required as per NatureScot's Guidance<sup>25</sup> of 60% to be considered a peat. However, there were two locations corresponding to TP03 & TP13, where lower OMCs were recorded; 9.7% and 14.7%, respectively. At TP13 this means the peat likely falls more into a peaty topsoil. Whereas, at TP03 the depth of the test was towards the base of peat layer (0.42m – 0.60m) and may indicate the peat is shallower here coming into a more organic mineral soil at this depth. The descriptions of the peat recovered from the AECOM peat coring typically indicate the peat is more fibrous or pseudo-fibrous in nature rather the amorphous recorded by Igne, therefore agreeing with SLR's Consultants assessment that the peat present within the Site is generally more fibrous in content than recorded by Igne.

The substrate was recorded in 5 no. of the cores taken and was typically described as a very sandy silty gravel, grading to a silty sand and gravel in one location.

A Technical Note providing full details on the supplementary probing undertaken by AECOM in December 2024 is provided as **Appendix B Peat Investigation Technical Notes**.

#### *Peat Probing Summary*

In total, 5920 probes were carried out for the Project. **Figure 7, Appendix A Figures** shows the locations of the peat probes undertaken across all surveys and indicates the estimated depth of peat encountered. **Figure 8, Appendix A Figures** then uses the results of the peat probes and their locations to create a peat depth interpolation plan for the Site. Note the peat depth interpolation was undertaken using the Inverse Distance Weighting methodology. It should be noted that there are areas of the Site where no peat probing has been carried out within 50m. In these areas the peat depth has been estimated based on the general peat depth from the nearby probes and by assuming a peat depth across the areas. It is acknowledged that peat depths may be greater than estimated in these areas, however, for this preliminary assessment the estimation is considered suitable. A final PLHRA will be required post-consent, following design maturity, where it is anticipated the Site will be clear felled and probed in full to allow informed peat depth thicknesses to be known throughout.

In general, the results of the peat probing within the Site indicate peat depths ranging from absent to 1.0m, with localised areas indicating peat depths up to 3.7m in the northern extent of the Site

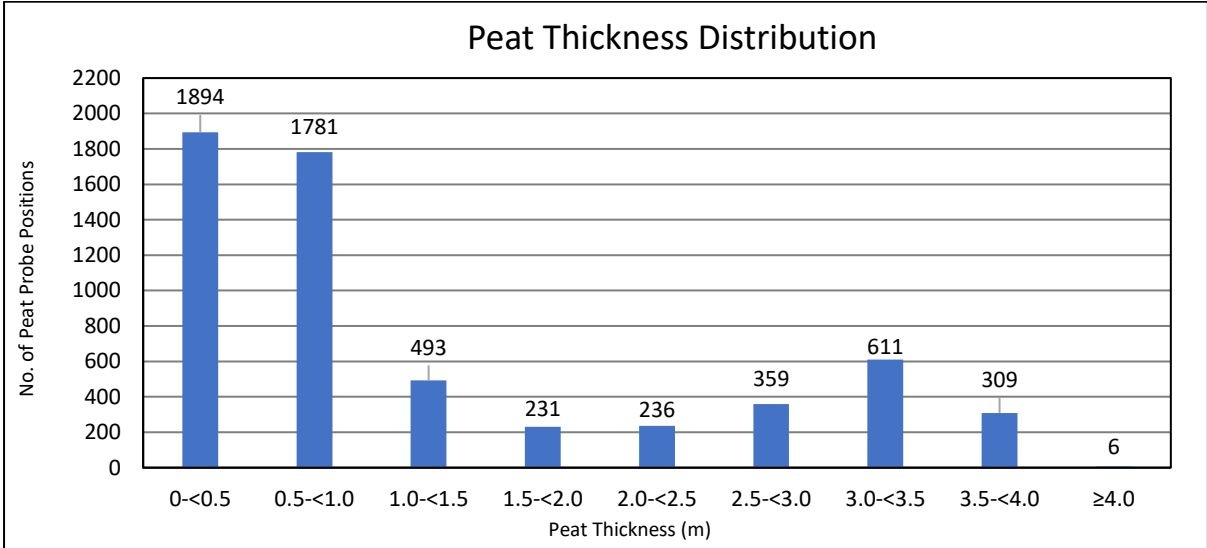
<sup>24</sup> Von Post, L. (1924) Das genetische System der organogenen Bildungen Schwedens, Comite International de Pedologie. IV Commission. No. 22., 1924.

<sup>25</sup> NatureScot (2023) Advising on peatland, carbon-rich soils and priority peatland habitats in development management. Available at: <https://www.nature.scot/doc/advising-peatland-carbon-rich-soils-and-priority-peatland-habitats-development-management> [accessed December 2024]

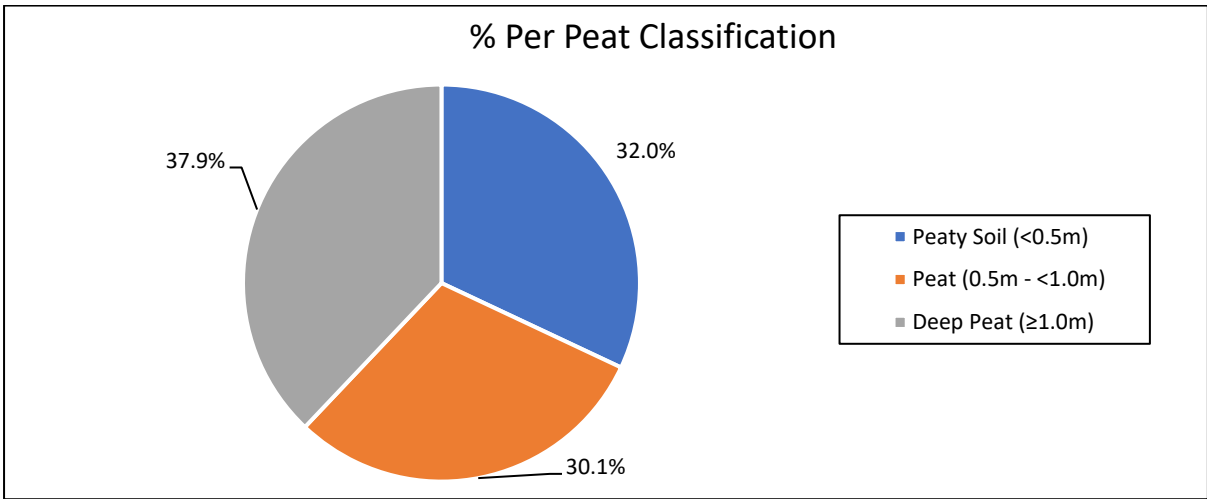
TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

and localised areas of up to 3.0m in the south of the Site, with very isolated probes also indicating peat depths >5.0m within the Site.

**Plot 1** and **Plot 2** below, present the distribution of peat probes against the thickness range recorded.



**Plot 1 - Peat Thickness Distribution**



**Plot 2 - Percentage Per Peat Classification**

When considering both the IGNE and AECOM peat probe surveys undertaken, 2245 of the probes (~37.9% of the 5920 no. total probes) indicate deep peat >1.0m in thickness. Peat deposits between 0.5m and <1.0m thick were recorded in 1781 no. of the probes (~30.1% of the 5920 no. total probes), and peaty soil <0.5m thick were recorded in 1894 no. of the probes (~32.0% of the 5920 no. total probes).

In relation to the Site, the deep peat deposits were typically located out with the boundary of the Site to the northwest, as shown on **Figure 7, Appendix A Figures** and underlying the alternate

TEM-NET-ENV-XXX	<b>Preliminary Peat Landslide Hazard and Risk Assessment</b>	<b>Applies to</b>
		Transmission ✓

possible substation location considered during the Site selection process. Peat and peaty soil deposits were generally encountered throughout the Site with no particular trend noted. Localised areas of deep peat deposits were identified within the Site typically along the northwestern boundary, within the southwest and towards the western extent. The deep peat deposits were typically recorded up to a depth of 3.5m, however, very localised probes encountered deeper deposits with the maximum being >5.0m within the Site. The areas of deeper peat generally agree with the understood geomorphology of the Site with the deeper peat deposits generally encountered in areas of flatter lying ground.



TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

## 5 Site Based Excavation & Management Assessment

### 5.1 General Information on Peat

The BGS describe peat as a “partially decomposed mass of semi-carbonized vegetation which has grown under waterlogged, anaerobic conditions, usually in bogs or swamps.”

Peat is characterised as generally having an extremely high-water content, high organic content, low bulk and dry densities, low shear strength and very high compressibility<sup>26</sup>. The Scottish Government guidance document<sup>15</sup> provides further information on the characteristics of peat indicating that dry peat is typically 90 – 95% organic matter and that it has special hydrological properties with water contents of around 90%.

Peat deposits are split into two layers an upper acrotelm and a lower catotelm. The acrotelm is typically <0.6m deep and is where there is a living root system which helps to loosely bind the plant remains together with a normal level of water table fluctuations also within the layer. The catotelm is a more decomposed layer which is below the water table level and is waterlogged. The position of the water table therefore controls the level of acrotelm and catotelm deposits which therefore control the stability of the peat deposits. For the purposes of this assessment, it has been estimated that the simple accepted assumption of the upper 0.3 m peat thickness being acrotelm and the rest of the peat thickness being catotelm.

BS 5930<sup>27</sup> provides a means for describing peat in the field in the form fibrous peat, pseudo-fibrous peat and amorphous peat. Fibrous peat is described as having clearly recognisable plant remains with the deposits also retaining some tensile strength. Pseudo-fibrous peat is described as a mixture of plant fibres and amorphous peat paste. Amorphous peat is described as having no recognisable plant remains with the deposits also having a ‘mushy’ consistency. The degree of decomposition of the peat can be further estimated in the field by applying the von Post Scale of humification<sup>27</sup> which ranges from H1 (no decomposition) to H10 (totally decomposed).

The Scottish Government Guidance document<sup>5</sup> records three different naming conventions depending on the depth of the peat deposits. These are listed as follows:

- Peaty Soil – a peat or surface organic soil with a depth of <0.5m;
- Peat – a peat of >0.5m but ≤1.0m depth and which has an organic matter content of >60%; and
- Deep Peat – a peat that is >1.0m depth.

The Scottish Government Guidance document also identifies three different types of peat deposits; raised bog, blanket bog and fen bog. The Wildlife Trust records that a raised bog is formed of deep peat which can be several metres higher than the surrounding ground level and covered with a surface layer of vegetation<sup>28</sup>. Generally, raised bogs are significantly wetter than the surrounding land and are fed almost entirely by rainwater. The Wildlife Trust<sup>29</sup> records that a blanket bog is generally an upland habitat with peat that has accumulated to a depth of at least 0.5m, typically on flat or gently sloping land where drainage is poor, and the peat is predominately fed by

<sup>26</sup> O’Kelly, B.C. (2017). *Measurement, interpretation and recommended use of laboratory strength properties of fibrous peat*, Geotechnical Research.

Volume 4 Issue GR3, ICE Publishing, October 2017

<sup>27</sup> British Standards Institute (BSI) (2020). *Code of practice for ground investigations*, BS 5930:2015 + A1:2020. BSI Standards Limited, May 2020.

<sup>28</sup> Wildlife Trust (2024a). *Raised Bog*, [Online] available: <https://www.wildlifetrusts.org/habitats/wetlands/raised-bog>, [Accessed August 2024].

<sup>29</sup> Wildlife Trust (2024b). *Blanket Bog*, available: <https://www.wildlifetrusts.org/habitats/wetlands/blanket-bog>, [Accessed August 2024].

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

rainwater. The International Peat Society<sup>30</sup> records fen peatlands as being located in depressions which have strong connections with groundwater that have been in contact with mineral bedrock or soil.

Peat accumulations are typically thickest in reasonably flat lying areas or topographic hollows where surface and groundwater drainage are often concentrated and thins as the local slope angle increases. On steep slopes the conditions are generally considered too steep for thick peat to form, although some peat may be present.

## 5.2 Factors Controlling Peat Instability

The Scottish Government Guidance document indicates that peat instability can manifest in a number of ways, which generally fall into two categories: minor instability and major instability. Minor instability are features which may be warning signs of major instability or possibly just simply represent a response to the land against drainage and gravity (e.g. creep). Localised and small tension cracks, tears in the acrotelm, compression ridges or bulges and thrusts in the peat deposits represent some features which represent minor instability. Major instability comprises an actual peat landslide which can vary in form and scale.

The Scottish Government Guidance document records that peat instability can be caused by a number of factors which can be split into two groups: preparatory factors and triggering factors. Preparatory factors increase the susceptibility of peat to become unstable (i.e. fail) without necessarily causing a peat landslide. As such, preparatory factors can influence peat stability over a long period of time. Triggering factors have an immediate or rapid effect on the peat changing its stability from stable to unstable. As such, triggering factors can be considered as being the cause of failure.

The main preparatory factors, which reduce the overall stability of peat include:

- Increase in the mass of peat (e.g. through vertical accumulation of peat, increase in water content and through afforestation within the peat);
- Reduction in shear strength of the peat or substrate through physical changes in its structure (e.g. creep or vertical fracturing), chemical or physical weathering or by clay dispersal in the substrate;
- Loss of surface vegetation (e.g. through burning, pollution or through deforestation) causing reduction in tensile strength;
- Increased buoyancy of the peat through increase in sub-surface water or wetting of desiccated areas; and
- Afforestation, which will reduce the water content of the peat body and increase the likelihood in the formation of desiccation cracks which are likely to be infiltrated by rainfall.

Triggering factors can be split into two types; natural events and man-made. Triggering factors covering the two types include:

- Natural Events:
  - High intensity and prolonged rainfall, in particular following a dry period, or melting of snow / ice causing a short-term high pore-water pressure at pre-existing or potential rupture surfaces;
  - Earthquakes causing rapid ground acceleration;
  - Erosion at the toe of a peat slope, reducing support to the upslope peat mass; and
  - Increased loading on the peat mass (e.g. through previous peat landslide debris).

<sup>30</sup> International Peat Society (2024). *Types of Peatland*. available: <https://peatlands.org/peatlands/types-of-peatlands/>, accessed August 2024.

TEM-NET-ENV-XXX	<b>Preliminary Peat Landslide Hazard and Risk Assessment</b>	<b>Applies to</b>
		Transmission ✓

- Man-made Events:
  - Alteration of hydrological regime by changing natural drainage paths;
  - Rapid ground accelerations caused by works (e.g. through blasting or vibrations of plant);
  - Extraction of peat at toe of slope, reducing support to the upslope peat mass;
  - Increased loading on the peat by plant, structures or overburden;
  - Earthworks including excavating, filling, stockpiling and embankment of material; and
  - Ground subsidence associated with mining.

While peat failures are often considered to originate in thick or extensive accumulations, it should be noted that instability can still occur in areas of limited peat thickness. The nature of the peat and the interface between the separate layers can also influence its stability. The plane of failure can be located at the interface between the upper, periodically saturated acrotelm layer and the underlying permanently saturated catotelm layer. The plane of failure can also be located at the interface between the peat and the underlying substrate.

Failure can occur due to heavy or prolonged rainfall or due to melting snow or ice which can cause short-term high pore-water pressure along pre-existing or potential rupture surface (e.g. between the substrate and the peat) and can increase the mass of the peat accumulation. This can be exacerbated by drying out of the peat (in summer months for example) leading to the formation of desiccation cracks which can in turn fill with water during rainfall resulting in a short-term increase in pore-water pressure and potentially cause failure. The influence of rainfall on potential peat failure is considered to be heavily dependent on the natural drainage regime within the peat. It should be noted that peat failures often occur after heavy rainfall events after the peat slope has been conditioned to fail after other processes. Given the effect of global warming and the anticipated greater frequency of extreme weather conditions, including more intense storms with heavy rainfall, the rainfall trigger of peat instability may be of more significant concern in the future.

Peat extraction can generate new drainage pathways, leading to a concentration of surface and / or groundwater flow and subsequently result in either increased erosion or concentration of water within localised areas of the accumulation, which can potentially increase the instability of the peat mass. Extraction or erosion can also have the effect of releasing the confining pressures acting on the peat, which can lead to the development of tension cracks in adjacent peat accumulations as a result of the loss in lateral support. Extraction or erosion of the peat mass at the toe of a slope also reduces the support to the upslope material which can result in peat slope failure.

TEM-NET-ENV-XXX	<b>Preliminary Peat Landslide Hazard and Risk Assessment</b>	<b>Applies to</b>
		Transmission ✓

Loading of peat causes an increase in the shear stress applied to the peat mass and can also generate the formation of tension cracks through compression and bulging of underlying or adjacent peat soils. In the case where tension cracks are formed, depending on the topography, the strength of the peat may be dramatically reduced and due to the alteration in loading, rainfall may not be required to initiate a failure.

Ground subsidence associated with the collapse of shallow underground workings and / or abandoned mine shafts may trigger localised peat slumps. Peat failures initiated by mining subsidence could be expected to typically involve peat slumping in towards the area affected by subsidence and their scale would be dependent on a number of factors including the depth of the peat deposits, the nature of the local hydrological regime and the topography of the surrounding area.

Rapid ground accelerations caused by either man-made vibrations or earthquakes increases the shear stresses within the peat mass and may trigger a peat landslide.

Tree felling (even where affected areas are subsequently re-planted) and permanent deforestation can impact upon the hydrogeological regime of the peatland area through reduced groundwater extraction and altered drainage pathways. This can lead to increased peat erosion and focused drainage and short-term high pore-water pressures within pre-existing or potential rupture surfaces in the peat accumulation, both of which can increase the risk of peat failure. Also, removal of trees can remove the potentially stabilising root systems, which can reduce the tensile strength of the peat mass.

Alteration of the hydrological regime can have long-term and far-reaching effects on the stability of peat accumulations. Alteration by diverting or blocking either man-made or natural surface drainage pathways or the proposed construction of new ditches can transport and concentrate water into areas which can cause potential peat instability.

Within peat accumulations, groundwater will generally flow more readily within the upper acrotelm layer relative to the underlying less permeable catotelm. Excavations within peat will influence existing drainage paths and local permeability. The construction of the Project will potentially generate an area of hydrological sensitivity due to the free draining nature of the construction stone.

It should be noted that peat is a natural feature which under the correct conditions will grow. It is likely that, on sloping ground and where the peat has been growing, there will be a time when the stabilising forces (e.g. internal strength of the peat and the interface with the underlying substrate) will be outweighed by the unstabilising forces (e.g. weight of the peat mass) and the peat accumulation will fail.

### 5.3 Peat Failures

Areas that have experienced historic peat instability are more likely to experience future instability issues during and post construction. It is therefore essential to identify and record any signs of past instability (e.g. cracking of the peat surface, any debris from past failures, peat creep, etc) as part of any peat instability assessment.

Peat failures can occur on gentle slopes, just as on steeper slopes, depending on the loading, drainage conditions and the condition of the peat structure. Changes in gradient, including the subsurface gradient of underlying strata, can also contribute to peat failure due to the potential short term excess pore-water pressures they can create within both concave and convex slope profiles and the gravitational effects on the peat mass.

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

### *Types of Peat Failure*

Table 2.1 of the Scottish Government Guidance document identifies a number of different types of peat failures, as follows:

- Bog Bursts – failure of a raised bog which involves the emergence of liquid basal peat followed by the settlement of the previously overlying residual peat. Typically recorded to occur on slopes with gradients between 2° and 5° with a typical peat thickness of between 2 and 5m;
- Bog Flow – failure of a blanket bog which involves the emergence of highly humified (decomposed) basal peat from a clearly defined source followed by the settlement of the previously overlying residual peat. Typically recorded to occur on slopes with gradients between 2° and 5° with a typical peat thickness of between 2 and 5m;
- Bog Slide – failure of blanket bog involving the sliding of the peat along a shearing surface within the peat mass. Typically recorded to occur on slopes with gradients between 5° and 8° with a typical peat thickness of between 1 and 3m;
- Peat Slide – failure of blanket bog involving sliding of entire peat mass on a shearing surface at the peat / substrate interface leading to a transitional type failure. Typically estimated to occur on slopes with gradients between 5° and 8° with a typical peat thickness of between 1 and 3;
- Peaty Debris Slide – Transitional failure in which the shearing surface is entirely located within the substrate. The covering layer of peat is part of the failure; however, the peat is only considered to be a secondary influence on the failure. Typically recorded to occur on slopes with gradients between 4.55° and 32° with a typical peat thickness of <1.5m; and
- Peat Flow – any other failure not covered by one of the above, in any other peat deposit (e.g. fen, basin bog, etc) and by any other failure mechanism.

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

## 6 Peat Landslide Hazard and Risk Assessment

### 6.1 General

Due to the presence of peat accumulations across the Site, a preliminary PLHRA was carried out to assess the risks posed by such soils to the Project.

Peat slides can represent a significant hazard and can occur during the construction, operation and decommissioning phases of a development. The nature of electricity generation developments in Scotland often situates them in areas where peat moorland is typically found, and it is inevitable that some alteration of the local hydrological regime of a site will occur due to the design and construction practices of such a development.

It is widely considered that development in areas of peat accumulation can have an effect on the stability of these soft soils through alteration of the drainage regime, alteration of loadings (both temporary loads during construction and final working loads), alteration of land use (e.g. removal of surface vegetation) and alteration of the topography. Any proposed development within such an area requires a PLHRA to characterise the site, identify issues and develop the required construction mitigation measures to reduce the risk of a failure occurring within the peat.

The key considerations of this assessment are that:

- Existing, historical or potential areas of instability are identified; and
- The Project, including construction works, does not result in an unacceptable risk of peat failure.

### 6.2 Triggering and Preparatory Factors Relevant to the Project

The following provides a summary of the relevant triggering and preparatory factors which relate to the Project:

- Rainfall is not a controllable factor. However, the assessment considers the potential effects of heavy rainfall at the Site;
- Peat loading, and peat extraction are potential hazards. However, both can be mitigated through particular working methodologies (to be identified in the site-specific construction methodology documents to be prepared by the Contractor prior to construction);
- The topography of the Site is characterised by relatively elevated and sloping terrain and the assessment should take cognisance of the combined topography and peat thickness;
- The creation of new drainage paths may lead to the potential channelling and ponding of run-off in areas of the Site, posing a potential hazard. This hazard can be minimised through the adoption of particular working methodologies (to be confirmed in site-specific construction methodology documents);
- The creation of rapid ground acceleration through plant and construction methods. This hazard can be reduced through the adoption of particular working methodologies and practices (to be confirmed in site-specific construction methodology documents); and
- The removal of surface vegetation (i.e. through tree felling and vegetation clearance). This hazard can be reduced by only removing vegetation where required to complete the Project.

Working methodologies / mitigation measures referred to above are discussed further in the **Mitigation Measures Section** of this report.

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

### 6.3 Consequences of Peat Failure

A key part of the risk assessment process is to identify the potential scale of peat failure should it occur and identify the receptors of the consequences. For the Site, the key potential sensitive receptors of peat failure are the following:

- The Project (e.g. new substation, proposed access track, damage to existing and proposed overhead lines, SUDS Basin, etc.);
- Existing development (e.g. existing Braco West Substation, access track, etc.);
- Site workers and plant (risk of injury / death or damage to plant);
- Wildlife (disruption or destruction of habitat);
- Watercourses and aquatic fauna;
- Site drainage (blocked drains / ditches leading to localised flooding / erosion); and
- Visual amenity (scarring of landscape).

### 6.4 Qualitative Risk Assessment

This preliminary PLHRA consists of a qualitative assessment based on an examination of available topographical maps and aerial photography, a digital terrain model, observations made during site visits, an assessment of peat probing and initial ground investigation results and engineering judgement.

The Qualitative Risk Assessment ('Hazard Ranking') was undertaken by identifying the factors that can cause landslide events and estimating the impact of such events on the Project. The Hazard Ranking has been undertaken in accordance with the Scottish Government Guidance<sup>5</sup>.

The Hazard Ranking was calculated using the following equation (Eq. 3 from the Scottish Government Guidance):

$$\text{Hazard Ranking} = \text{Hazard} \times \text{Exposure}$$

The terms Hazard is defined in this case as "the likelihood of the peat landslide event occurring." The term Exposure is defined in this case as "the impact and consequences that the event may have" or its "adverse consequences."

The Hazard scale used in this assessment is shown in **Table 6-1**, which is based on the scale recommended in Table 5.1 of the Scottish Government Guidance.

**Table 6-1 Peat Landslide Hazard Ranges over the Lifetime of the Project**

Peat Landslide Hazard Scale	Likelihood	Probability of Occurrence
5	Almost certain	> 1 in 3
4	Probable	1 in 10 – 1 in 3
3	Likely	1 in 10 <sup>2</sup> – 1 in 10
2	Unlikely	1 in 10 <sup>7</sup> – 1 in 10 <sup>2</sup>
1	Negligible	< 1 in 10 <sup>7</sup>



TEM-NET-ENV-XXX	<b>Preliminary Peat Landslide Hazard and Risk Assessment</b>	<b>Applies to</b>
		Transmission ✓

The Exposure scale used in this assessment is shown in **Table 6-2**, which is based on the scale recommended in Table 5.2 of the Scottish Government Guidance.

**Table 6-2 Peat Landslide Exposure Ranges over the Lifetime of the Project**

Peat Landslide Exposure Scale	Exposure	Impact as % damage to (or loss) of receptor	Example Consequences
5	Extremely high	> 100% of the asset	Loss of life or serious injury, major pollution incident, complete destruction of property or infrastructure or public road, major loss of habitat.
4	Very high	10% – 100%	Minor or non-serious injury, significant damage to property, significant pollution incident or significant loss of habitat.
3	High	4% – 10%	Minor pollution incident, minor damage to property or temporary closure of infrastructure, destruction of access track locally, significant delay to construction, localised loss of habitat.
2	Low	1% – 4%	Temporary closure of forest roads, minor delay to construction.
1	Very low	< 1% of the asset	Minor remediation of infrastructure or habitat.

Once all areas within the Site have been assigned a peat landslide Hazard and degree of Exposure, a Hazard Ranking can be estimated for the Project. The indicative Hazard Ranking used in this assessment are shown in **Table 6-3**, which is based on the scale recommended in Table 5.3 of the Scottish Government Guidance.

**Table 6-2 Indicative Hazard Levels**

Peat landslide Hazard	Peat Landslide Exposure				
	Extremely High	Very High	High	Low	Very Low
Almost Certain	High	High	Moderate	Moderate	Low
Probable	High	Moderate	Moderate	Low	Negligible
Likely	Moderate	Moderate	Low	Low	Negligible
Unlikely	Low	Low	Low	Negligible	Negligible
Negligible	Low	Negligible	Negligible	Negligible	Negligible

Where the Hazard Ranking for a zone is moderate or high, avoidance or specification of mitigation measures would normally be the only means by which project infrastructure could be considered acceptable within that zone at the Site.

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

The need for further investigation or specification of mitigation measures should be a function of the Hazard Rankings present on the Site. The Hazard Rankings and suggested actions used in this assessment are shown in **Table 6-4**, which is based on the scale recommended in Table 5.4 of the Scottish Government Guidance.

Table 6-3 Hazard Ranking and Suggested Actions

Hazard Ranking	Action suggested for each zone
High	Avoid project development at these locations
Moderate	Project should not proceed unless risk can be avoided or mitigated at these locations, without significant environmental impact, in order to reduce risk ranking to low or negligible.
Low	Project may proceed pending further investigation to refine assessment and mitigate hazard through relocated or re-design at these locations.
Negligible	Project should proceed with monitoring and mitigation of peat landslide hazards at these locations as appropriate.

## 6.5 Estimating the Hazard

To estimate the peatland landslide Hazard, the inputs used have been based on the major factors that can affect slope stability at the site, namely: slope angle, peat thickness, evidence of peat instability, substrate present within the Site, presence of forestry and hydrology. The selection of the ranges for ranking of these inputs was based on a literature review, site evidence and engineering judgment. A discussion on the rankings chosen for each of the main factors listed is given in the following sections.

### Slope Angle

Gravity is the primary driving force of all landslides and as such, slope angle is a significant factor in controlling the stability of peat soils.

Boylan, et al., 2008<sup>31</sup>, recorded although peat is known to have failed on relatively gentle sloping land, with the majority of failures occurring on ground sloping between 4° and 8°, this is likely to correspond to these slope angles being favourable to significant peat accumulation, and therefore more closely linked to the thickness of peat.

Shallower sloping ground is considered to have a reduced likelihood of failure, since there is less gravitational force to facilitate instability. As such, gentle slopes are not considered to be as susceptible to failure as steeper slopes.

As a result, assigned rankings relating to slope angle vary between 0.5 (where slopes are almost flat) and 5 (where steep slopes are present), as presented in **Table 6-4**.

Table 6-4 Slope Angle Ranking (Ranking Factor 1)

Slope Angle (°)	Ranking
0 – 2	0.5

<sup>31</sup> Boylan, N., Jennings, P., and Long, M (Boylan, et al.) (2008). *Peat Slope Failure in Ireland, Quarterly Journal of Engineering Geology and Hydrogeology*, V. 41, No. 1, p. 93-108, February 2008.

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

< 2 – 5	1
< 5 – 10	2
< 10 – 15	3
< 15 – 20	4
≥ 20	5

Refer to **Figure 4, Appendix A Figures** for the topography across the Site.

#### Peat Thickness

Mills, A.J, 2002<sup>32</sup>, reports that peat slides most frequently occur in peat accumulations between 0.5m and 1.5m in thickness, while bog bursts commonly occur in peat ranging between 1.0m and 5.0m in depth. Warburton, et al., 2004<sup>33</sup>, defined peat slides as “slab-like, shallow translational failures with a shear failure mechanism operating at, or just below, the peat and underlying substrate interface”. Mills, A.J, 2002<sup>37</sup>, defined bog bursts as “involving large quantities of water and peat debris that flows downslope...usually associated with raised bogs” following bursting of peat in a near-liquid state through tears in the surface layers, possibly as a result of a build-up of hydrostatic pressures within the peat.

Peat failure may be facilitated through the development of weak layers within the peat mass which may either form naturally or by ‘hydrological factors. Peat has a natural anisotropic strength due to the process by which it is formed. In particular, the nature of the interface between the distinct layers within a peat mass is defined by hydrology. These distinct layers are:

- An upper vegetative mat consisting of the living vegetation of herbaceous plants, grasses and mosses;
- The acrotelm, which is the surface layer of an active peat forming mire; and
- The catotelm, which is the lower layer of an active peat forming mire.

The JNCC, 2011<sup>34</sup>, considered that the nature of the boundary between the acrotelm and catotelm, and between the catotelm and the underlying substrate (e.g. mineral soil, weathered rock) influence the strength of the peat mass.

Peat stratification and thickness are associated with one another. This is because thin deposits of peat are unlikely to have a catotelm and may mainly be composed of a vegetative mat and acrotelm. As such, with inherent strength because of a more fibrous morphology, peat thicknesses of less than 0.5m are not reported to fail catastrophically. However, thicker deposits are more likely to contain weaker layers or bands of pseudo fibrous / amorphous peat, which are more likely to fail.

For the purposes of this assessment, peat thickness has been ranked between 0.5 and 4. The ranking increases with depth; increasing values relate to more onerous conditions and reflect the tendency for ‘weaker’ peat to be present as thickness increases, in addition to the presence of a greater disturbing force as a consequence of the increasing thickness. The ranking adopted for peat thickness is given in

**Table 6-5.**

<sup>32</sup> Mills, A.J. (2002). *Peat Slides: Morphology Mechanisms and Recovery*, Submitted for the degree of Doctor of Philosophy, University of Durham.

<sup>33</sup> Warburton, J., Holden, J. and Mills, A.J. (2004). *Hydrological Controls of Superficial Mass Movements in Peat*. Earth Science Reviews 67 139 - 156.

<sup>34</sup> Joint Nature Conservation Committee (JNCC) (2011). *Towards an Assessment of the State of UK Peatlands*, JNCC Report No. 445.

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

Table 6-5 Peat Thickness Ranking (Ranking Factor 2)

Peat Thickness (m)	Ranking
≤ 0.5	0.5
>0.5 - 1.0	1
>1.0 - 2.0	2
>2.0 - 3.0	3
> 3.0	4

Refer to **Figure 8, Appendix A Figures** for the peat depths across the Site.

#### *Evidence of Peat Instability*

Evidence of previous or incipient peat instability may provide an indication that conditions at that location are favourable to peat instability and therefore the area may be prone to further instability. As such, it is considered that areas with evidence of peat instability will have a higher risk of failure than areas where no stability issues have been identified.

For the purposes of this assessment, where no peat instability is identified through the desk study or site visit, a ranking of 0 is applied. Where localised small-scale failures or instability features are identified, a ranking of 1 is used and where more widespread or large-scale failures are identified, a ranking of 2 is applied, as indicated in **Table 6-6**.

Table 6-6 Signs of Relic Failure Ranking (Ranking Factor 3)

Signs of Relic Failure in Vicinity	Ranking
Absent	0
Localised evidence of instability	1
Widespread evidence of instability	2

#### *Substrate*

As noted in the Peat thickness section above, it is considered that the nature of the boundary between the acrotelm and catotelm, and between the catotelm and the underlying substrate (e.g. mineral soil, weathered rock) influence the strength of the peat mass. The nature of the substrate can therefore play a part in the level of stability of a peat mass.

Where fine-grained deposits (e.g. clay or silt) are present at the interface, there is likely to be weathering and softening of the clay due to the peat likely being saturated, with poor or non-existent vertical drainage paths. This will result in a reduction of the undrained shear strength or effective shear strength parameters of the fine-grained deposits. This means failure could occur within the peat mass itself, at the interface with the fine-grained deposit or within the fine-grained deposit.

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

Where coarse-grained deposits (e.g. sand, sand & gravel or gravel) are present at the interface, the effective shear strength parameters are likely to be comparatively high compared to the fine-grained deposits. Where coarse-grained deposits are present failure is likely to occur in the peat mass itself.

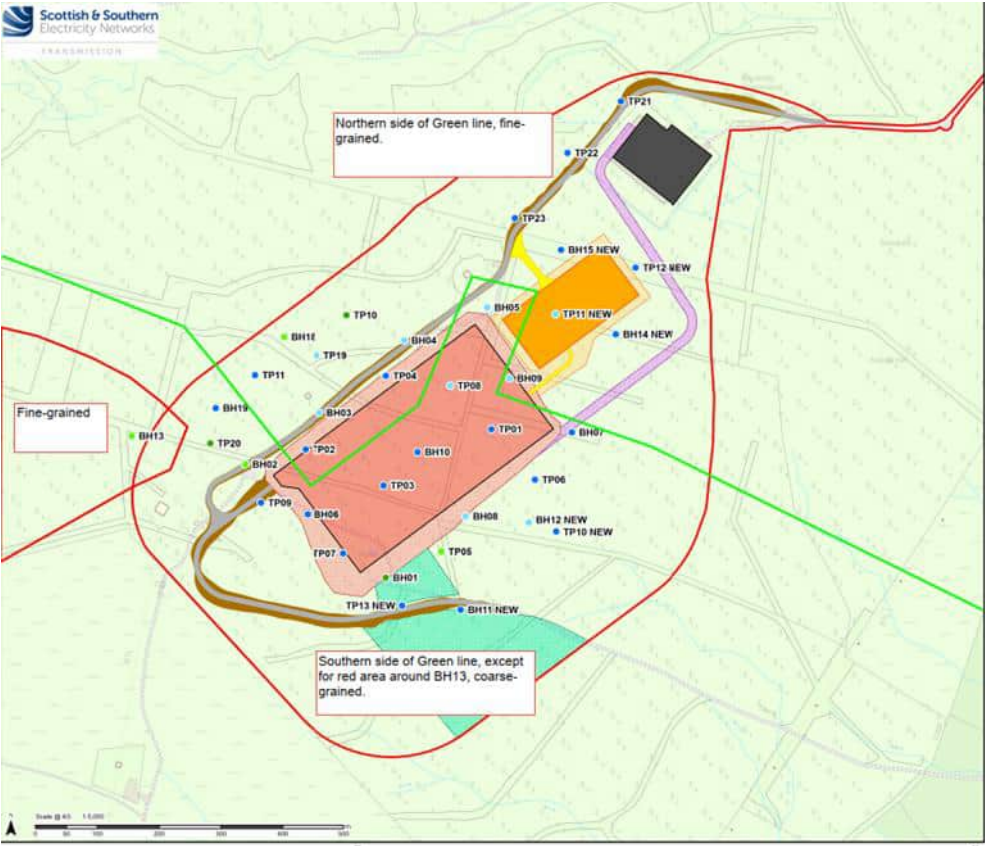
Rock provides a high strength substrate, where encountered, however, the rock surface may be smooth and as such can provide a weak interface with the peat. Failure of the peat may therefore occur within the peat mass itself or at the interface with the rock. For the purposes of this preliminary assessment any rock interface has been given a higher risk rating similar to that of the fine-grained interface. **Table 6-8** presents the ranking for the possible substrates which can be encountered at the Site.

**Table 6-7 Substrate Ranking (Ranking Factor 4)**

Substrate	Ranking
Coarse-grained (fine to coarse sand, sand & gravel, Gravel)	1
Fine-grained (silt or clay) & very clayey/silty fine to medium sand	2
Rock	2

The selection of the substrate present underlying the Site is based on the initial investigation undertaken by Igne. As highlighted in **Section 4.2** a mixture of fine-grained and coarse-grained deposits were encountered across the Site. The location where the substrate was encountered was taken into consideration and the Site split to take account of the substrate material encountered, as shown on **Insert 6-1** below.

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓



Insert 6-1 Substrate Distribution across the Site

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

### Presence of Forestry

The process of afforestation and subsequent deforestation can have significant effects on the structure and hydrological properties of peat soils, which may in turn result in an increased risk of peat failure.

During the planting operations, a series of drains are generally cut into the peat soil across the area to be afforested. Wilson & Hegarty, 1993<sup>35</sup>, These drains are typically between 0.4m and 0.6m deep and are cut perpendicular to the surface contours to allow drainage of the soils to fall away from the plantation. This process initially affects the structure and hydrology of the upper acrotelmic layer of peat. Drains were noted to have been installed within the forestry in the Site, as described, during the site walkover surveys undertaken.

Over the years and decades following initial planting, drying out and degradation of the peat adjacent to the furrows results in their widening. As the trees mature and their canopies grow, an increase in the capacity of the trees to intercept rainfall and for evapotranspiration to occur, results in further drying of the peat. Dry summers can also exacerbate the drying effects on the peat, with water uptake by root systems replacing drainage as the main cause of peat drying, resulting in the water table falling below the base of the furrows and causing cracking to extend deeper into the catotelmic layer. Eventually, the drying effects can cause the peat to crack, with the cracks typically following the lines of drains / furrows. No cracks were noted within the peat on-site during the site walkover surveys. However, the peat surface was typically obscured by vegetation and so cracks may have been present.

As the plantation matures, the peat is subject to progressive loading from the growing trees and the water table generally decreases in level. Over the lifetime of the forest, drainage ditches can become blocked due to the trees shedding their needles / leaves, ground vegetation cover infiltrating them and soils washing into them causing them to 'silt up'. This can prevent water draining away as intended and can cause a short-term high pore-water pressure build-up following periods of heavy rainfall. During the site walkover surveys, the drainage channels were generally noted to be free from debris.

As such, the process of afforestation can have a negative effect on the stability of peat.

Following deforestation, peat loading from the trees is largely removed and there is typically a rise in the water table. However, with the reintroduction of a higher water table level, a short-term increase of pore-water pressure may be established within the peat mass. Deforestation is considered to have a negative effect on peat stability but is considered less of a concern than when recently forested due to the overall reduction of peat loading.

Based on the above discussion, the following ranking for the presence of forestry is considered appropriate, as shown in **Table 6-9**.

**Table 6-8 Presence of Forestry Ranking (Ranking Factor 5)**

<sup>35</sup> Wilson, P. & Hegarty, C. (1993). *Morphology and Causes of Recent Peat Slides on Skerry Hill, Co. Antrim, Northern Ireland*. Earth Surface Processes and Landforms, Vol. 18, pp. 593 - 601.

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

Presence of Forestry in the Area	Ranking
Absent	0
Recently deforested / afforested	1
Present	2

Please refer to **Figure 3, Appendix A Figures** for the presence of forestry across the Site.

### Hydrology

Carling, 1986<sup>36</sup>, highlighted an increase in pore-water pressures generated by intense rainfall is a significant potential 'triggering mechanism' for peat slides. However, prolonged periods of heavy rainfall are not necessarily related to instability. Both the distribution and intensity of precipitation have a complex influence on the mass movement of peat.

In many cases of peat failures, a relatively dry period has been followed by intense rainfall. Although intense rainfall appears to be an important factor, it is important to recognise that the occurrence of an extreme event does not necessarily directly result in peat instability; this being a function of many factors and a combination of climatic preparatory events. For the purpose of this assessment, rainfall has been considered to be a constant for the entire site.

It has been noted that peat slides have been initiated along natural drainage lines or in association with artificial drainage<sup>34</sup>. Blocking of existing drainage paths could create a buoyancy effect which may reduce the strength of the peat or cause liquefaction due to raised pore-water pressures at the base of the peat.

Poorly drained areas (such as boggy ground with few / no drainage channels) are considered to be more susceptible to instability due to higher groundwater tables than well-drained areas.

Where drainage ditches become blocked with vegetation for example, water can build up in them allowing pore-water pressures to develop and exceed critical levels during or immediately following intense rainfall.

Generally, the site walkover surveys identified the drainage within the Site was well drained with a good drainage system in working order, however, locally boggy or saturated ground was also encountered.

The parameter for hydrology has been given a ranking value of between 0.5 and 2 as shown in **Table 6-10**.

Increasing values relate to relatively poorer drainage conditions that are considered likely to increase the probability of instability occurring.

<sup>36</sup> Carling, P (1986). *Peat Slides in Teesdale and Weardale, Northern Pennines, July 1983: Description and Failure Mechanisms. Earth Surface Processes and Landforms*. Vol. 11, pp. 193 - 206.



TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

Table 6-9 Hydrology Ranking (Ranking Factor 6)

Hydrology description	Ranking
Well drained with a good drainage system in working order	0.5
Boggy or saturated ground	1
Blocked drainage paths	2

Please refer to **Figure 3, Appendix A Figures** for the location of the boggy or saturated ground within the Site.

### Weightings

The factors affecting peat instability are not considered to contribute equally and as such, weightings have been applied based on AECOMs understanding of the Site and experience of assessing peat slide risk.

For example, as slope angle is considered to represent one of the main driving forces for peat instability, a weighting of 6 has been assigned to the factor to capture its importance in the mobility of peat. Likewise, evidence of peat instability is considered to be equally influential, as if the conditions in areas have resulted in failures in the past, similar failures could initiate in the future and therefore a weighting of 6 has also been assigned to this factor.

Peat depth is also considered to play a significant role in the stability of peat. As the thickness of peat increases, so does the weight of the peat, which could result in the activation of a slip plane. Also, due to the anisotropic nature and highly variable structure of peat, the thicker the deposits are, the more likely they are to have a greater number of weaker zones throughout its profile affecting the overall stability of the peat mass. This factor is, however, considered less influential to peat instability than the slope angle and evidence of peat instability and has therefore been given a lower weighting value of 4.

The type of substrate present within the Site can be significant as relates to the peat landslide risk. The presence of fine-grained or rock substrate can mean there is multiple potential failure zones and hence more chance of a peat landslide. The peat thickness can play an important role as to the increased risk of peat instability depending on the substrate present. This factor is, however, considered less influential than peat thickness and has therefore been given a lower weighting value of 3.

Forestry plays a significant role on the peat stability within the Site due to its extensive coverage. The planting process will likely have caused damage to the structure of the upper peat layer, additional loading on the peat from the weight of the trees and degradation of the peat by their drying out all of which can result in an increased risk of peat instability. However, this is not considered to be as significant a factor as peat thickness, slope angle and evidence of peat instability and has therefore been assigned a weighting value of 3.

Finally, the hydrology of the peat is also considered to contribute to its stability. However, due to the extent of the forestry across the Site, hydrology is considered to be less influential. This is because the hydrology is closely related to the drainage network throughout the forestry and this factor is therefore linked to and largely covered under the weighting applied to the forestry. However, it is still important to consider this factor, and as such it has been assigned a weighting value of 2.

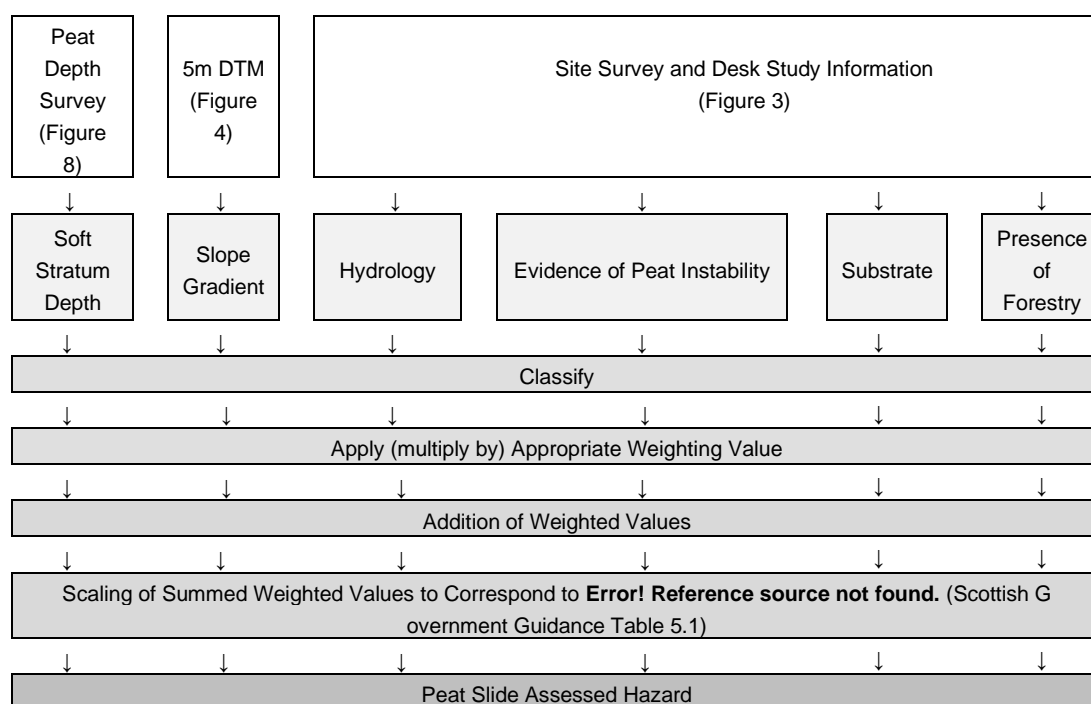
TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

The weightings assigned to each of the parameters are summarised in **Table 6-10**.

**Table 6-10 Weighting Values for Each Parameter**

Parameter	Ranking Factor	Weighting
Slope Angle	1	6
Signs of Relic Failure	2	6
Peat Thickness	3	4
Substrate	4	3
Forestry	5	3
Hydrology	6	2

To estimate the level of hazard across the Site and produce the Peat Slide Assessed Hazard (PSAH) plan, the classification and weighting was carried out in Geographic Information Systems (GIS) software using a multi-criteria analysis. The process used is illustrated in **Insert 6-2**.



**Insert 6-2 GIS Multi-Criteria Analysis**

The scaling of the Weighted Totals corresponds to **Table 6-1** (and the Scottish Government Guidance Table 5.1) and is shown in below.

**Table 6-11 Weighted Total vs Scale**

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

Weighted Total	Scale	Likelihood	Probability of Occurrence
> 50	5	Almost certain	> 1 in 3
41 – 50	4	Probable	1 in 10 – 1 in 3
31 – 40	3	Likely	1 in 10 <sup>2</sup> – 1 in 10
21 – 30	2	Unlikely	1 in 10 <sup>7</sup> – 1 in 10 <sup>2</sup>
< 20	1	Negligible	< 1 in 10 <sup>7</sup>

## 6.6 Peat Slide Assessed Hazard Plan

The assessed potential peat slide Hazard is presented in **Figure 9, Appendix A - Figures** and indicates that the potential peat slide Hazard across the Site is generally assessed to be 'Negligible' (1) or 'Unlikely' (2) with only minor areas assessed as being 'Likely' (3).

The majority of the proposed infrastructure, including the main substation and compound area, is located in areas assessed as 'Negligible' or 'Unlikely' potential peat slide Hazard. Small local areas of "Likely" peat slide Hazard are noted in the vicinity of the proposed access track to the west, proposed temporary overhead line diversion to the north and south of the proposed substation platform area.

### *Estimating the Exposure*

Following assessment of the potential peat slide Hazard, the potential impact and the consequences (i.e. Exposure) of a peat landslide has been assessed for both environmental exposure and infrastructure exposure.

The Exposure of a peat slide to the environmental receptors (e.g. watercourses, designated sites, ecologically important areas, etc) are based on the likely environmental impact resulting from a peat slide.

When considering the potential impact of a peat failure, the presence of any existing structures or infrastructure (e.g. forestry tracks etc.), future development (i.e. proposed infrastructure) and / or sensitive receptors (e.g. watercourses, designated sites, etc.) are taken into account.

When considering the baseline condition (i.e. the Site prior to construction), where no receptors are present the impact is typically considered to be 'very low' (i.e. Exposure rating of 1). Where existing forestry tracks are present and no change is proposed along these, an impact of 'very low' is also considered sufficient, due to the potential impact as a percentage of the total project cost likely to be less than 1% (i.e. Exposure rating of 1). Where the existing overhead line is present the exposure is raised to 'low' (i.e. Exposure rating of 2 – e.g. minor temporary closure of access roads or overhead line, minor delay to construction). The exposure is then raised to 'high' when in the vicinity of the existing Braco West substation (i.e. Exposure rating of 3 – e.g. minor damage to property or temporary closure of infrastructure). Where infrastructure is located within 50m of a watercourse, the impact is rated at 'high' (i.e. Exposure rating of 3 – minor pollution incident may occur).

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

When considering the potential impact, a peat failure during construction could have on the Project, the following was considered. Generally, where access tracks, compounds, overhead lines, and drainage systems are proposed, the impact is 'very low' or 'low' (i.e. Exposure rating of 1 or 2 – e.g. minor remediation of infrastructure or temporary closure of access roads, minor delay to construction). At the location of the proposed new substation an impact of 'high' is considered appropriate due to the increased impact on the cost of the Project (Exposure rating of 3 – i.e. significant delay to construction and increase in total cost). At the locations of the proposed peatland restoration areas an impact of 'low' is considered appropriate as depending on the phasing of the proposed peat deposition, any upslope or downslope failure is likely to cause instability of the recently placed peat and cause further damage to the restoration area (i.e. Exposure rating of 2 – e.g. minor remediation or minor delay to construction).

**Table 6-12** presents the qualitative assessment undertaken for the Site in a tabular format for each individual infrastructure component. Column 2 of the **Table 6-12** is to be cross-referenced with **Table 6-1** and refers to the peat slide Hazard value assigned to the infrastructure component (see **Figure 9, Appendix A Figures**). The peat slide Hazard may be assessed to be reduced during the evaluation process based on engineering judgement. Where any reduction has taken place, this will be discussed in the text within the table. It should be noted that the peat slide assessed Hazard includes a 50m buffer around each infrastructure component, as within this buffer zone is where it is considered the Project is most likely to affect the peat stability.

Column 3 of **Table 6-12** presents the assessed Exposure (see **Table 6-2 Peat Landslide Exposure Ranges over the Lifetime of the Project**) relating to the individual proposed infrastructure components and any existing infrastructure (i.e. existing forestry tracks). Column 4 of **Table 6-12** presents the assessed Exposure (see **Table 6-2 Peat Landslide Exposure Ranges over the Lifetime of the Project**) relating to the environmental receptors.

Column 5 of **Table 6-12** is to be cross-referenced with **Table 6-2** and **Table 6-4**, and gives the worst-case Hazard Ranking (i.e. Hazard Ranking = Hazard Scale x Exposure Scale), whereby the value given in Column 2 (the Hazard) is multiplied by the higher value of the two Exposure ratings given in Columns 3 and 4 and expressed as a number.

Column 6 of **Table 6-12** expresses the worst-case Hazard Ranking value as one of the four terms, which are shown in **Table 6-3**. When considering the worst-case Hazard this is considering what the worst-case combination of peat slide assess Hazard and infrastructure/environmental Exposure is. I.e. the worst-case peat slide Hazard may not interact with the worst-case infrastructure/environmental Exposure, and so the score chosen rationalises what the realistic worst-case combination between the two inputs would be.

Table 6-12 Qualitative Assessment of Peat Landslide Hazard, Exposure and Hazard Ranking

Area	Assessed Hazard (Worst Case)	Assessed Infrastructure Exposure	Assessed Environmental Exposure	Worst-Case Hazard Ranking	Worst-Case Hazard Ranking	Comment
See Figure 9, Appendix A - Figures for reference of infrastructure locations and assessed peat slide Hazard						
Proposed new substation (and associated earthworks)	3	2	2	6	Low	<p>Area of 'Likely' peat slide Hazard underlying and within 50m of the proposed new substation.</p> <p>The areas of 'likely' peat slide Hazard underlying the proposed substation and associated earthworks will be removed during the construction process, as the peat will be stripped and competent strata founded upon. Outwith the proposed substation itself, although areas of 'likely' peat slide Hazard are encountered within 50m these are located downslope or parallel with the proposed new substation and as such, are not considered to significantly adversely affect the proposed substation itself as the flow of peat would typically be away from the substation. The existing access track and proposed access track may be affected and therefore an Infrastructure Exposure rating of 'low' is considered suitable.</p> <p>No existing environmentally significant designation recorded within or in close vicinity to the proposed new substation and no watercourse recorded within 50m. Watercourse located downslope of proposed new substation 'likely' peat slide assessed Hazard and both South Restoration Area 1 &amp; South Restoration Area 2 are present downslope of the 'likely' peat slide assessed Hazard also. Therefore, environmental exposure of 'low' considered suitable.</p>
Proposed access track (and associated earthworks)	3 (2)	2 (3)	3	9 (6)	Low	<p>Area of 'Likely' peat slide Hazard underlying and within 50m of the proposed access track.</p> <p>The worst-case Infrastructure Exposure relates to the existing and proposed substations with an Exposure rating of 'High' applied. No 'likely' peat slide Hazard is within 50m of the proposed access track and upslope in the vicinity of the proposed new substation, and as such these two aspects would not interact with each other. An area of 'likely' peat slide Hazard is recorded underlying and immediately adjacent to the proposed track in vicinity of the existing Braco West substation. However, it is considered the majority of the 'likely' peat slide hazard would be removed as part of the works, as almost all the 'likely' peat slide Hazard is underlying the proposed access</p>

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

Area	Assessed Hazard (Worst Case)	Assessed Infrastructure Exposure	Assessed Environmental Exposure	Worst-Case Hazard Ranking	Worst-Case Hazard Ranking	Comment
						<p>track and would be excavated to allow its installation. The very small area of 'likely' peat slide Hazard left outwith the footprint of the access track after excavation, is downslope of the existing substation and so would not flow toward it. As such, the peat slide Hazard that would interact with the worst case Infrastructure Exposure is therefore considered to be 'unlikely' peat slide Hazard as shown with the ratings presented in brackets. The combination of worst-case Infrastructure Exposure and associated peat slide Hazard would give a Hazard Ranking of 'Low' as identified by the ranking in brackets.</p> <p>Out-with the existing and proposed substations areas of 'likely' peat slide Hazard within 50m of the proposed access track are present towards the eastern extent of the access track on the Site boundary and in the west of the Site. In these areas, taking into account the topography of the Site, the infrastructure which is likely to be affected would be the proposed access track itself, and the SUDS Basin. Therefore, an Infrastructure Exposure rating of 'low' is considered suitable. This combination, as shown by the ratings outwith the brackets (except for the Hazard Ranking column), would give a Hazard Ranking of 'Low'.</p> <p>No environmentally significant designation recorded within or in close vicinity to the proposed access track and no watercourse recorded within 50m. However, the area of 'likely' peat slide Hazard in the east is within 50m of a watercourse, therefore meaning a worst-case environmental exposure of 'high' is applied. In relation to the west of the Site watercourses are located downslope of the proposed access track 'likely' peat slide Hazard, as well as the West Restoration Area and the South Restoration Area 2. Therefore, an environmental exposure of 'low' considered suitable for this western section.</p>

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

Area	Assessed Hazard (Worst Case)	Assessed Infrastructure Exposure	Assessed Environmental Exposure	Worst-Case Hazard Ranking	Worst-Case Hazard Ranking	Comment
						Considering the worst-case peat slide Hazard of 'likely' would interact with the worst-case Environmental Exposure of 'high', this combination would give a Hazard Ranking of 'Low'.
<b>Proposed Temporary Overhead Line Diversion (inclusive of existing towers which the temporary OHL will tie-in to)</b>	2 (3)	3 (2)	1 (2)	6	Low	<p>Area of 'likely' peat slide Hazard are within 50m of the proposed temporary overhead line towers and working areas. The majority of the areas are very small and may be related to pixilation limitations related to the assessment with how the 5m DTM file is interpolated into a surface, as these areas typically appear to relate to a single pixilation of the assessment. In these cases, the 'likely' peat slide Hazard have been discounted as considering the surrounding peat slide Hazard these would not appear representative. The peat slide Hazard associated with the OHL would therefore typically be 'unlikely'. However, at the western extent of the temporary OHL where it ties into an existing tower, areas of 'likely' peat slide Hazard are present within 50m which are not discounted and are taken into account in the assessment.</p> <p>The worst-case infrastructure Exposure relates to the proposed substation, which is downslope of the proposed temporary overhead line. Therefore, the infrastructure Exposure has been rated as 'high'. The 'likely' peat slide Hazard would not interact with the proposed substation as the substation is upslope or parallel in the slope to these higher Hazard areas. Instead, the highest peat slide Hazard interacting with the proposed substation as a result of the OHL would be 'unlikely'. The highest infrastructure Exposure that would interact with the 'likely' peat slide Hazard would be the proposed access track and OHL towers themselves. In these cases the infrastructure Exposure has been assessed as 'low' as shown by the numbering within the brackets. When considering either combination of peat slide Hazard and Infrastructure Exposure presented above, the assessed Hazard Ranking is 'Low'.</p>

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

Area	Assessed Hazard (Worst Case)	Assessed Infrastructure Exposure	Assessed Environmental Exposure	Worst-Case Hazard Ranking	Worst-Case Hazard Ranking	Comment
						No environmentally significant designation recorded within or in close vicinity to the proposed temporary OHL and no watercourse recorded within 50m. However, the West Restoration Area is downslope of 'the likely' peat slide Hazard identified in the vicinity of the western extent of the temporary OHL. Environmental Exposure is therefore rated at 'low' for this western extent (as shown by numbering in the brackets) and 'very low' for the rest of the OHL alignment.
Proposed Temporary Access Tracks for Temporary OHL	2	3	1	6	Low	<p>Highest peat slide Hazard within 50m of proposed temporary access tracks is 'unlikely'.</p> <p>The worst-case infrastructure Exposure relates to the proposed substation, which is downslope of the proposed temporary access tracks. Therefore, the infrastructure Exposure has been rated as 'high'.</p> <p>No environmentally significant designation recorded within or in close vicinity to the proposed temporary access track and no watercourse recorded within 50m. Environmental Exposure therefore rated at its lowest at 'very low'.</p>
Proposed Overhead Line Tie-ins (relating to the proposed new permanent tower and the existing towers to the immediate	2	3	1	6	Low	<p>Highest peat slide Hazard within 50m of proposed tie-in is 'unlikely'.</p> <p>The worst-case infrastructure Exposure relates to the proposed substation, which is downslope of the proposed OHL tie-in works, and existing OHL line were works are proposed. Therefore, the infrastructure Exposure has been rated as 'high'.</p> <p>No environmentally significant designation recorded within or in close vicinity to the proposed OHL tie-in and no watercourse</p>



TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

Area	Assessed Hazard (Worst Case)	Assessed Infrastructure Exposure	Assessed Environmental Exposure	Worst-Case Hazard Ranking	Worst-Case Hazard Ranking	Comment
east and west)						recorded within 50m. Environmental Exposure therefore rated at its lowest at 'very low'.
Proposed Drainage System SUDs basin, related clearance and South Restoration Area 2	2 (3)	2	3 (2)	6	Low	<p>Area of 'likely' peat slide Hazard within 50m of proposed SUDs basin to the north. However, this has been covered by the proposed access track assessment and so is neglected for the proposed SUDs basin. Two other small areas of 'Likely' peat slide Hazard also noted, one within the proposed SUDs basin and the other to the south of proposed SUDs basin within the clearance area and to the south of South Restoration 2 area. The majority of the 'likely' peat slide within the SUDs basin is likely to be removed as part of its construction as the peat would be stripped from the basin. The remnants of this 'likely' peat slide Hazard would then be very small and not considered representative of the peat slide Hazard considering the surroundings. This 'likely' peat slide Hazard has therefore been discounted from the assessment. This leaves the only 'likely' peat slide Hazard taken into consideration within the assessment as the area located to the south of South Restoration Area 2. Elsewhere across the majority of the rest of the area within 50m the peat slide Hazard is assessed to be 'unlikely'.</p> <p>The worst-case infrastructure Exposure relates to the proposed access track which is to the north of the proposed SUDs basin and the basin itself. Therefore, the infrastructure Exposure has been rated as 'low'. This Infrastructure Exposure would not interact with the 'Likely' peat slide Hazard considered as this is downslope. Instead, the Infrastructure Exposure would interact with an 'unlikely' peat slide Hazard.</p> <p>No environmentally significant designation recorded within or in close vicinity to the proposed SUDs basin. A watercourse is</p>

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

Area	Assessed Hazard (Worst Case)	Assessed Infrastructure Exposure	Assessed Environmental Exposure	Worst-Case Hazard Ranking	Worst-Case Hazard Ranking	Comment
						located within 50m of the proposed clearance area for the SUDs basin to the east and therefore the worst-case environmental exposure of 'high' is considered suitable. The South Restoration Area 2 is also located to the south of the SUDs basin and so outwith the influence zone of the watercourse, an environmental exposure of 'low' could also be applied. In relation to the Exposure of the watercourse ('high') and the South Restoration Area 2 ('low'), the 'likely' peat slide Hazard would not interact with these as it is located downslope. Instead, the 'unlikely' peat slide Hazard would interact with these. In relation to the 'likely' peat slide Hazard to the south of the restoration area this would interact with a watercourse which is located downslope but greater than 50m from the area. The Exposure would therefore be rated as 'low'. The combination of the 'likely' peat slide Hazard with the 'low' environmental Exposure would give a Hazard Ranking of 'Low' as shown by the ratings in brackets.
Proposed Construction / Contractors Compound (inclusive of temporary access tracks)	1	3	2	3	Negligible	<p>Highest peat slide Hazard within 50m of proposed construction / contractors' compound is 'negligible'.</p> <p>The worst-case infrastructure Exposure relates to the proposed new substation, which is downslope of the proposed construction / contractor's compound. Therefore, the infrastructure Exposure has been rated as 'high'.</p> <p>No environmentally significant designation recorded within or in close vicinity to the proposed construction / contractors' compound and no watercourse recorded within 50m. Watercourse and South Restoration Area 2 located downslope of proposed construction / contractors' compound. Therefore, an environmental exposure of 'low' is considered suitable.</p>

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

Area	Assessed Hazard (Worst Case)	Assessed Infrastructure Exposure	Assessed Environmental Exposure	Worst-Case Hazard Ranking	Worst-Case Hazard Ranking	Comment
West Restoration Area	2 (3)	2 (1)	2 (1)	4 (3)	Negligible	<p>Highest peat slide Hazard within 50m of proposed West Restoration Area is 'likely'. However, much of the 'likely' peat slide Hazard will be removed as part of the construction process due to the peat being stripped from the footprint of the access tracks and substation and the 'likely' peat slide Hazard underlying the restoration area being made stable/mitigated against as part of the geotechnical design of the restoration area undertaken during the detailed design process post-consent. The 'likely' peat slide Hazards between the access track and restoration area, are contained by the access track (where peat has been stripped below) and the restoration area (which will be designed to be stable) meaning these are unlikely to affect any receptor in a significant manner and as such have been discounted from the assessment. This would leave the only 'likely' peat slide Hazard which is considered as part of the assessment to the west of the restoration area. Ouwith the 'likely' peat slide the predominant peat slide Hazard within 50m of the restoration area is 'unlikely'.</p> <p>Although the proposed substation is immediately adjacent to the restoration, it is upslope, and any peat landslide is not anticipated to affect it. As such, the worst-case infrastructure ranking is considered to be the proposed access track surrounding the restoration area. Therefore, an environmental exposure of 'low' considered suitable. The access track would not interact with the 'likely' peat slide Hazard due to the peat being stripped as part of the construction, therefore removing the hazard, or the 'likely' peat slide Hazard being made stable through the geotechnical design of the restoration area. As such, the worst-case Infrastructure would interact with the 'unlikely' peat slide Hazard. The 'likely' peat slide Hazard considered as part of the assessment is not upslope within 500m of an infrastructure receptor and as such the</p>

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

Area	Assessed Hazard (Worst Case)	Assessed Infrastructure Exposure	Assessed Environmental Exposure	Worst-Case Hazard Ranking	Worst-Case Hazard Ranking	Comment
						<p>Infrastructure Exposure rating interacting with this peat slide Hazard is considered to be the lowest of 'very low'. This assessment is shown in the rating in brackets.</p> <p>No environmentally significant designation recorded within or in close vicinity to the restoration area and no watercourse recorded within 50m. A watercourse is located downslope of the proposed restoration area, and the restoration area is considered an environmental receptor itself. Therefore, an environmental exposure of 'low' is considered suitable. The 'likely' peat slide Hazard would not interact with the restoration area as this is located upslope and no watercourse or environmental designation is located within 500m downslope. As such, the environmental Exposure interacting with the 'likely' peat slide Hazard has been assessed at its lowest of 'very low'. This assessment is shown in the rating in brackets.</p>
South Restoration Area 1 and associated Earth Mounding	3 (2)	2	2 (3)	6	Low	<p>Highest peat slide Hazard within 50m of the area is 'likely', although the majority is 'unlikely'.</p> <p>The worst-case infrastructure Exposure relates to the proposed access track and SUDS Basin, which is downslope of the proposed area to its west. Therefore, the infrastructure Exposure has been rated as 'low'.</p> <p>No environmentally significant designation recorded within or in close vicinity to the proposed area. A watercourse is present underlying and to the south of the area. An area of 'likely' peat slide hazard is present within 50m of the watercourse; however, the 'likely' hazard is underlying the earth mound and so would likely be removed as part of the construction works as the peat would be stripped from its footprint. The watercourse at this location is also underlying the earth mound and so is</p>

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

Area	Assessed Hazard (Worst Case)	Assessed Infrastructure Exposure	Assessed Environmental Exposure	Worst-Case Hazard Ranking	Worst-Case Hazard Ranking	Comment
						likely to be diverted or buried. The 'likely' peat slide hazard is therefore not considered to interact with the worst-case Environmental Exposure of the watercourse ('high'). An 'unlikely' peat slide hazard would interact with the watercourse as noted in the numbers in the brackets. Outwith the watercourse, the environmental Exposure would relate to the peat restoration area itself which has an exposure ranking of 'low' and would interact with the areas of 'likely' peat slide hazard.

## 7 Mitigation Measures

### 7.1 General

Construction activities (e.g. excavation, drainage, etc.) are known to have a potential destabilising effect on peat deposits. The design of the Project should consider the weak and susceptible nature of peat.

Although no historic peat instability has been noted within the Site, appropriate good practice and, where required, mitigation measures should be used to minimise the destabilising effects on the peat and its habitat.

As part of the Project, Construction and Environment Management Plans (CEMPs) should be prepared for each of the Proposed Developments, incorporating good practice measures for the construction of electricity generating schemes in peatland environments. These documents will continue to be updated through pre-construction and construction in accordance with good practice guidance, of which a non-exhaustive list is provided in **Section 2.3**.

It should be noted that further Ground Investigation (GI) will be carried out prior to construction of the Project to inform the detailed design to design maturity. The GI information will also be used to update the PLHRA, following the Scottish Government Guidance<sup>5 15</sup>.

### 7.2 Mitigation Measures

Mitigation measures and good practice procedures are ultimately the responsibility of the Principal Contractor. During the construction phase, the following list may be considered but not limited to:

- Maintaining and updating a Geotechnical Risk Register throughout the works;
- Provision of a Geotechnical specialist on-site during the construction phase to undertake advance inspection, carry out regular monitoring and provide advice when required;
- Supervision of construction work by suitably qualified and experienced personnel;
- Identification of areas of deep peat, physical demarcation of such areas and instruction to site personnel to avoid these areas or minimise activities in these locations, where practical;
- Identification of approved areas for stockpiling of any excavated rock or soils including peat;
- Side-casting of material during construction only in appropriate areas identified following risk assessment and agreed with all relevant parties (Environmental Clerk of Works / Geotechnical Clerk of Works, SEPA, NatureScot etc.);
- Avoid placing excavated material or other forms of loading on breaks of slope or other potentially unstable slopes;
- Any excavations in peat should be risk assessed, and measures adopted to minimise the risk of failure within excavation side slopes and surrounding materials;
- Excavation on side slopes within peat should be as shallow an angle as possible and care should be taken to stabilise sides;
- Upslope drainage ditches should be included on all earthworks which are constructed through side-long ground;
- The camber of the access track should be such as to encourage surface water drainage to the upslope drainage ditch;
- The construction plant should minimise the extent and duration of open excavations and bare ground;

TEM-NET-ENV-XXX	<b>Preliminary Peat Landslide Hazard and Risk Assessment</b>	<b>Applies to</b>
		Transmission ✓

- Earthmoving activities should be restricted during and immediately after heavy and prolonged rainfall events;
- Establish / re-establish vegetation as soon as possible to improve slope stability and provide sediment transport control;
- Design and construction of a suitable drainage system for tracks and hardstanding's that does not significantly affect the hydrological regime of the peat and would require minimal maintenance;
- Include measures to ensure drainage systems (including existing) are well maintained, including identification of sensitive drainage areas;
- Prevent artificial drainage from concentrated flows onto slopes or into excavations;
- Where deep peat excavations require dewatering, discharges of the pumped water will require to be controlled in a manner which does not adversely affect habitats on-site (due to potential silt content etc.) and does not lead to the creation of saturated, and hence very soft, areas of peat;
- Design of appropriate sediment control measures including the use of silt traps / barriers where necessary and cut-off ditches in particular at appropriate locations along site tracks and earthworks;
- Identification of drainage areas and areas of run-off which could potentially be affected by the development and appropriate stand-off distances established;
- Monitoring of slope and peat stability both in the vicinity and down slope of infrastructure (both existing and proposed) during construction by suitably experienced and qualified personnel;
- Appropriate track construction methods to take cognisance of local topography, peat thickness and peat features (such as peat pipes, slumps, hags, etc.);
- Development of working methodologies that ensure that any exposed peat is protected to limit the potential for degradation, erosion or failure of the accumulation;
- Where excavated tracks are constructed, the peat and any soft soils should be removed and replaced with granular material placed in layers and compacted;
- Where floating tracks are constructed, a suitable geogrid and separator geotextile (where required) should be laid over the existing ground surface with graded stone (nominally 75mm down) placed over this in layers and compacted. However, a geotextile specialist should be sought regarding this;
- Any floating track design should take into account the properties of the peat soils at the Site;
- Construction staff should be made aware of peat slide indicators and emergency procedures; and
- Emergency procedures should include steps to be taken on detection of an incipient peat slide or of the event occurring.

Many of the measures provided above serve both to mitigate and reduce the likelihood of a peat slide occurring, as well as being good construction practice.

In line with the Peat Landslide Hazard and Risk Assessments, Best Practice Guide for Proposed Electricity Generation Developments<sup>37</sup>, discussion of mitigation measures relevant to each potential peat landslide hazard identified is required.

<sup>37</sup> Scottish Government (2017). *Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments*, Prepared for Energy Consents Unit Scottish Government, Second Edition, April 2017.

TEM-NET-ENV-XXX	<b>Preliminary Peat Landslide Hazard and Risk Assessment</b>	<b>Applies to</b>
		Transmission ✓

A final PLHRA will be required for the Project at design maturity post-consent, which includes the findings of further intrusive works to characterise the peat further, which targets more sensitive areas and that provides peat data (e.g. extents & depths throughout the Site). Preliminary mitigation measures are recommended as follows:

- Infrastructure with a 'Negligible' Hazard Ranking – ground conditions in these areas may be considered acceptable provided that all infrastructure and access roads are constructed in line with good practice guidelines which will be set out in the CMS / CEMP. However, even in negligible areas, additional intrusive works should be undertaken to assist in the overall characterisation of the peat, as well as for monitoring for signs of potential instability.
- Infrastructure with a 'Low' Hazard Ranking, will require additional peat thickness and characteristic information by intrusive investigation and engineering measures may be required and should be considered during the ground investigation, detailed design and construction to minimise risks of triggering a peat landslide in the short term (during construction) or long term (during operation and decommissioning) such as:
  - Installation of drainage - Installation of targeted drainage would aim to isolate the areas of peat from upslope surface water. Specific consideration should be given to those areas identified with 'likely' peat slide hazard. If applicable, re-routing surface (flushes/gullies) and subsurface (pipes) drainage around critical areas will also help control surface water. Drainage measures need to be carefully planned to minimise any negative impacts.
  - Monitoring of water levels within existing watercourses and groundwater levels throughout the Site during construction.
  - Monitoring of slope and peat stability both in the vicinity and down slope of proposed infrastructure and restoration areas during construction and at regular intervals post construction, especially after extreme rainfall or snow events, by suitably experienced and qualified personnel.

It is considered that such engineering measures would only be used in localised areas where a particular hazard could not be avoided or reduced, and which could not be dealt with adequately by other measures (such as engineered out during the detailed design process). A more detailed peat stability assessment and quantitative PLHRA is required (post consent) following further ground investigation and detailed design to design maturity.

Construction Management – as part of the final CEMP will include but are not limited to:

- Specific work method statements to monitor compliance of activities in susceptible areas.
- Reviewing the weather forecast to prevent working in areas of peat during or immediately following heavy rainfall.
- Construction plant should be operated from the areas already constructed where practicable. Should there be no alternative to plant accessing areas of peat, low ground pressure equipment should be used.
- Spoil disposal areas (both peat and mineral soils) should be located where the risk of erosion, mass movement and water quality deterioration are minimal.
- Continual monitoring of groundwater and ground movement should be maintained.
- Drainage Measures – the installation of drainage measures such as soakaways and gullies (surface water) and pipes (subsurface water) can be used to re-route upslope surface water and groundwater around potential critical areas.
- Localised Slope Re-profiling – this measure would only be recommended where environmental costs have been outweighed by the reduction in the Hazard Ranking.



TEM-NET-ENV-XXX	<b>Preliminary Peat Landslide Hazard and Risk Assessment</b>	<b>Applies to</b>
		Transmission ✓

As noted, peat reuse and restoration areas are proposed as part of the works, and these have been indicatively described as part of this PLHRA, although not assessed. Although the peat reuse and restoration areas may increase the risk of peat instability in those areas, design and construction techniques to mitigate against the instability of the areas for reuse or restoration will be developed as part of the detailed design.

### 7.3 Potential Peat Slide Indicators

During the site works (i.e. GI works or Construction works), site staff should be made aware of the slope failure indicators, how to recognise them and the importance and mechanism for reporting these. They should also receive training and instruction in emergency procedures in the event of a peat slide. This will minimise the impact should a peat slide occur.

There are a number of recognised indicators for slope failures, and these can also indicate the potential of a peat slide event. The factors below are particularly applicable to low velocity events:

- The development of tension cracks across the slope or in semi-circular patterns showing progressive development;
- Boggy ground or new springs appearing at the base of slopes;
- Sudden reactivation / drying up of spring lines, drainage channels or streams;
- Creep and bulging of ground;
- Displacement and leaning of trees, fence posts, dykes, etc.; and
- Breaking of underground services.

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

## 8 Conclusions and Recommendations

### 8.1 Conclusions

The general approach to the infrastructure design has been to design the Project to avoid areas of deep peat deposits (i.e. >1.0m thickness) wherever possible.

As indicated in **Figure 9, Appendix A - Figures** the peat slide assessed Hazard for the Site is generally assessed to be either 'Negligible' or 'Unlikely'. However, some of the infrastructure components and environmental receptors for the Project are located in or within 50m of an area with a peat slide Hazard of 'Likely'.

From the qualitative assessment (**Table 6-12**) of the construction components within the Site, the proposed infrastructure was assessed with 22% being classed with a Hazard Ranking of 'Negligible' and 78% with a Hazard Ranking of 'Low'.

All of the proposed infrastructure is located in areas assessed as having a Hazard Ranking of 'Low' or 'Negligible', meaning that the project can proceed as long as further investigation and design to refine the assessment and mitigate the hazard is undertaken. It should be noted that even after this preliminary PLHRA, the Hazard Ranking is considered to be relatively conservative given the approach undertaken. As such, it is considered that following a quantitative assessment, which incorporates further detailed GI data and further details on the design and construction, the Hazard Rankings will reduce.

As components were assessed with a 'Low', AECOM have outlined mitigation measures (**Section 7.2**) that could be implemented to reduce the Hazard and Exposure. The decision on whether further analysis is undertaken and/or the selection and details on the mitigation measures used shall be determined by the Principal Contractor of the Project. A further update to the PLHRA shall be carried out for the Project by the Principal Contractor, using additional information collected during the additional ground investigation, post consent, and considering further details on the design of the scheme after this reaches design maturity. As part of the update to the PLHRA, it is considered that the Hazard Ranking at several locations will be reduced following the provision of further information and a more detailed qualitative assessment.

As highlighted the Project will include the reuse and restoration of peat in some form as part of the works. The extent of reuse /restoration has been indicatively described and shown, although this is still in the design and development stage and as such has not been assessed. It is acknowledged that this reuse/restoration of the peat may increase the peat instability risk on the Site, however, as part of the development and detailed design of these areas, the Designer will ensure and prove stability whether that be through engineered solutions within the areas or through the implementation of mitigation measures. As such, this should reduce the likelihood of a peat slide as a result of the reuse/restoration and/or reduce its exposure to acceptable levels, if not prevented all together. The final PLHRA shall consider the effect that the reuse and restoration areas have on the peat stability within the Site and present the detailed design of these areas as relates to the peat stability and how instability has been prevented, reduced or mitigated, if not proven to be stable.

The Principal Contractor will be required to produce a Construction and Environment Management Plan (CEMP) for the construction of the Project. This should include the results of any updated PLHRA, considering the detailed procedures and methods intended to be used by the Principal Contractor to minimise any environmental impact, including the risk of any peat slide events.

TEM-NET-ENV-XXX	<b>Preliminary Peat Landslide Hazard and Risk Assessment</b>	<b>Applies to</b>
		Transmission ✓

## 8.2 Recommendations

Any further ground investigation should specifically target the areas within the Site where no or minimal investigation was previously undertaken (e.g. at the proposed peat restoration areas). Investigation should also be undertaken along the existing access track which is proposed to be upgraded.

The ground investigation shall also allow for the collection of additional information on peat thickness and characteristic properties (including laboratory testing of samples as set out in the Best Practice Guidance<sup>9</sup>), and the installation and monitoring of groundwater wells to estimate groundwater level throughout the Site, so that the Final PLHRA can determine whether the extent of these areas can be reduced and allow for the detailed targeting of any mitigation measure required.

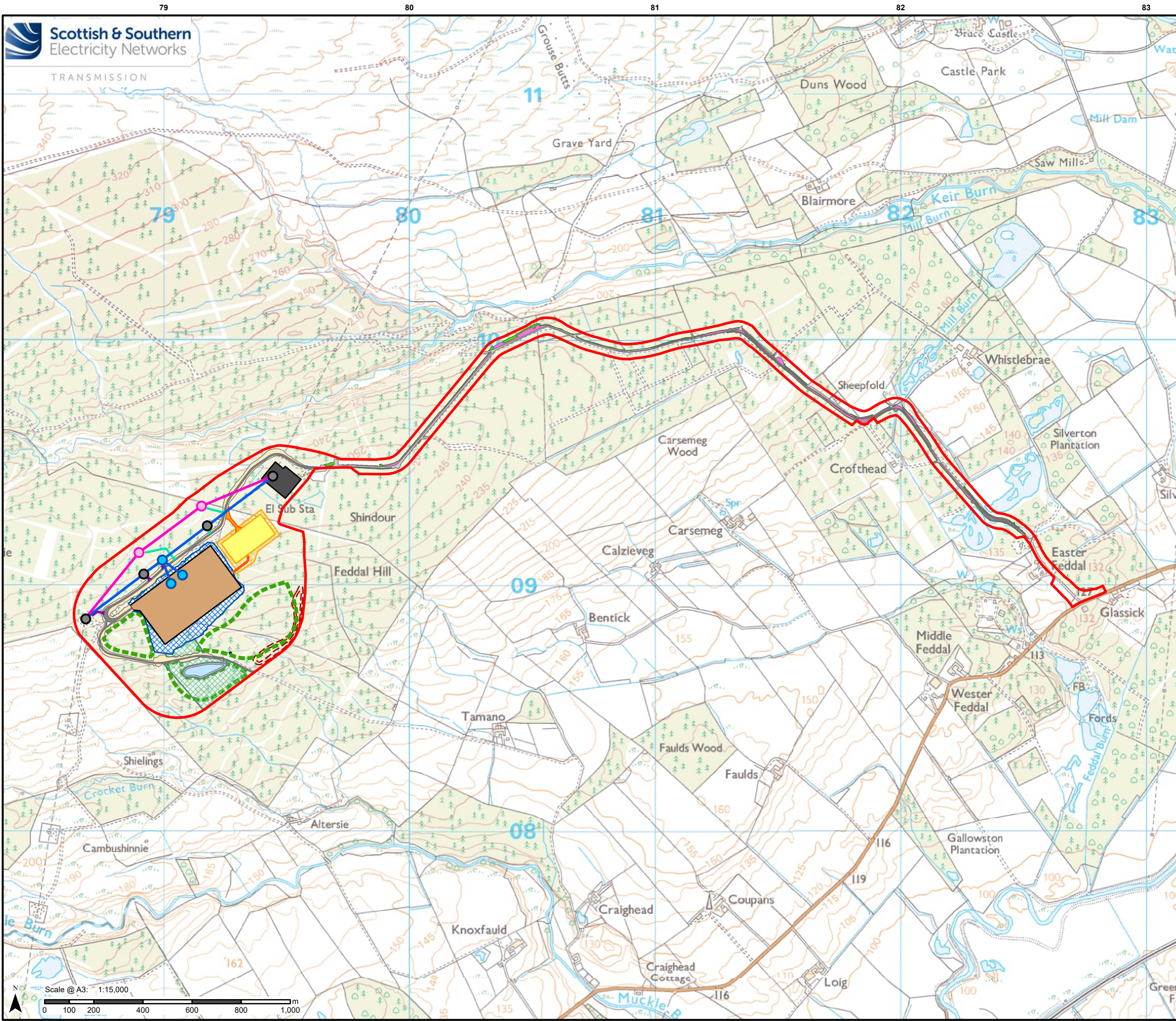
The ground investigation shall also allow and provide further information for the production of a detailed and fully justified quantitative assessment of the peat slide hazard, if considered required.

Following clear-felling of the remaining trees, the peat probing should be completed in these areas to reduce the estimation required, relating to peat depth and extent, as part of the final PLHRA.

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

## Appendix A Figures





### Legend

Proposed Development Site

Existing Substation

#### Substation Layout

Substation Platform

Track Extension and Track Upgrades between Braco West substation and around the proposed Cambushinnie substation

Track Extension and Track Upgrades between Braco West substation and around the proposed Cambushinnie substation - Earthworks

SUDs Basin

SUDs Basin Access Track

Construction Compound Area

Temporary Construction Compound Access

Earthworks for Construction Compound

Earthworks for Proposed Substation Platform

Clearance for Drainage and SUDs Pond

#### Existing Access Track Upgrades – B8033 and Braco West Substation

Existing Road

Proposed Track Widening Extents

Access Track New Ditch Extents

Access Track Temporary Working Area

#### OHL Layout

Existing OHL Structure

Temporary OHL Structure

Permanent OHL Structure

Temporary OHL Section Spans

Permanent OHL Section Spans

Permanent Access Route

Temporary Access Route

#### Landscape Habitat Management Plan

Proposed Earth Mounding to Support Peatland Restoration

Proposed Peatland Restoration Area

Compensatory Open Water Habitat

Contains public sector information licensed under the Open Government Licence v3.0. Reproduced by permission of Ordnance Survey on behalf of HMSO. Crown copyright and database right 2025 all rights reserved. Ordnance Survey Licence number 0100022432. SSSEN Transmission take no responsibility for the release or accuracy of latest version Basemaps from Ordnance Survey

Project No: LT000520

Project: Cambushinnie 400kV Substation

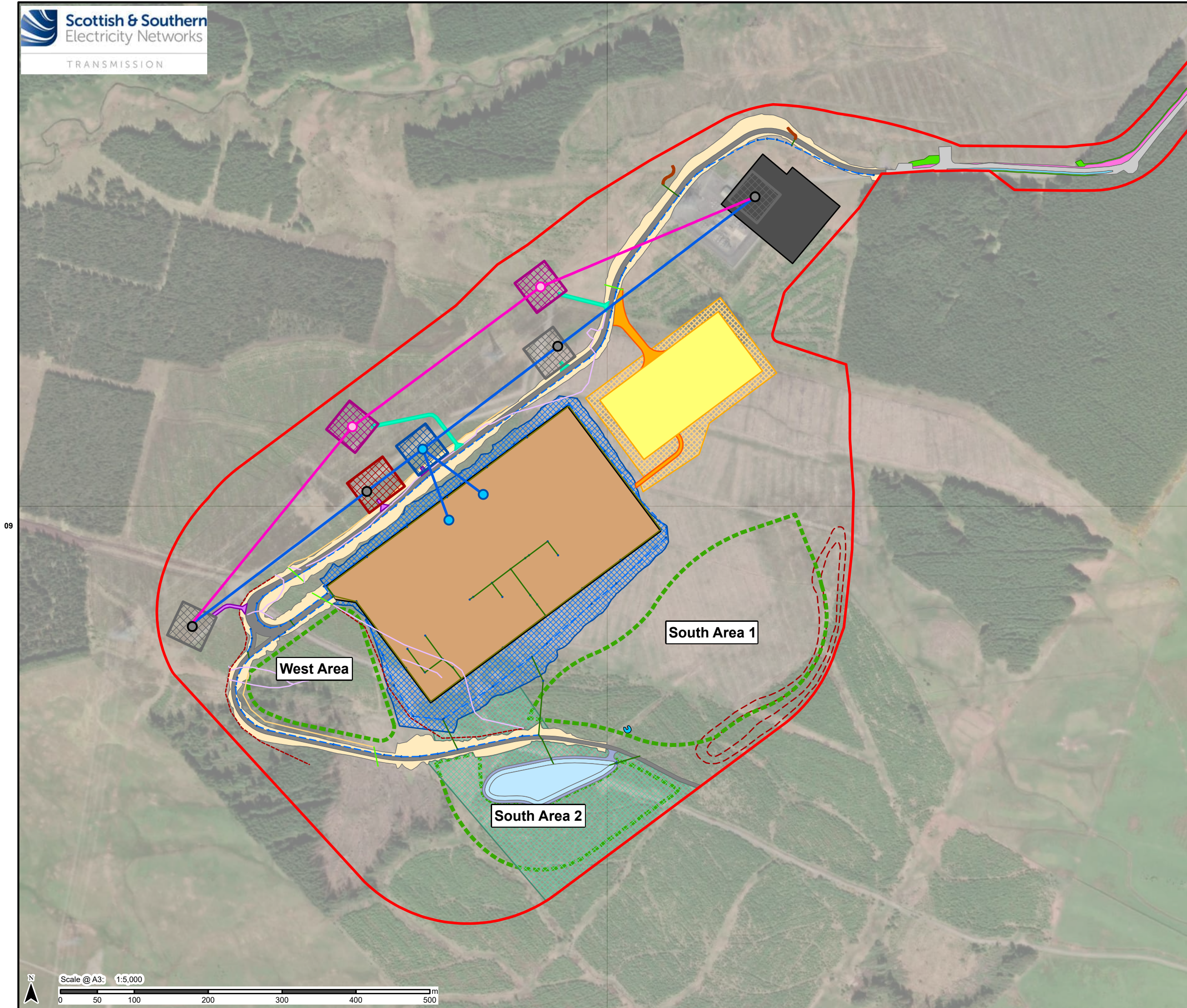
Title: Scheme Location

Drawn by: JBARR

Date: 02/04/2025

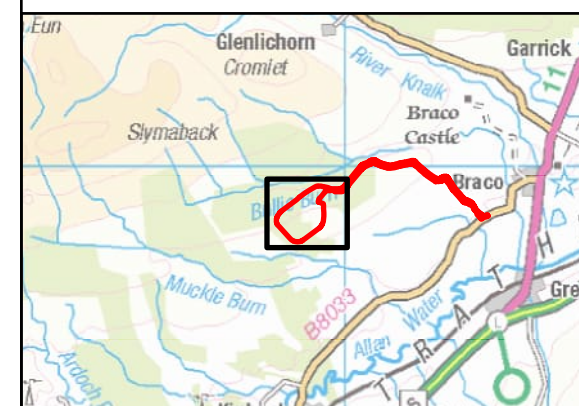
Drawing: Figure 1





## Legend

- |                                                                                                                               |                                                         |
|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| <b>Proposed Development Site</b>                                                                                              | <b>OHL Layout</b>                                       |
| Proposed Development Site                                                                                                     | Existing OHL Structure                                  |
| Existing Substation                                                                                                           | Temporary OHL Structure                                 |
| <b>Substation Layout</b>                                                                                                      | Permanent OHL Structure                                 |
| Substation Platform                                                                                                           | Temporary OHL Section Spans                             |
| Track Extension and Track Upgrades between Braco West substation and around the proposed Cambushinnie substation              | Permanent OHL Section Spans                             |
| Track Extension and Track Upgrades between Braco West substation and around the proposed Cambushinnie substation - Earthworks | Temporary Tower Construction Area                       |
| SUDs Basin                                                                                                                    | Permanent Tower Construction Area                       |
| SUDs Basin Access Track                                                                                                       | Tower Removal Working Area                              |
| Construction Compound Area                                                                                                    | Existing Tower Working Area                             |
| Temporary Construction Compound Access                                                                                        | Permanent Access Route                                  |
| Earthworks for Construction Compound                                                                                          | Temporary Access Route                                  |
| Earthworks for Proposed Substation Platform                                                                                   | <b>Landscape Habitat Management Plan</b>                |
| Clearance for Drainage and SUDs Pond                                                                                          | Proposed Earth Mounding to Support Peatland Restoration |
| <b>Existing Access Track Upgrades - B8033 and Braco West Substation</b>                                                       | Proposed Peatland Restoration Area                      |
| Existing Road                                                                                                                 | Compensatory Open Water Habitat                         |
| Proposed Track Widening Extents                                                                                               |                                                         |
| Access Track New Ditch Extents                                                                                                |                                                         |
| Access Track Temporary Working Area                                                                                           |                                                         |
| <b>Drainage Layout</b>                                                                                                        |                                                         |
| Cut off Drain                                                                                                                 |                                                         |
| Diverted Watercourse                                                                                                          |                                                         |
| Existing Ditch Removed                                                                                                        |                                                         |
| Filter Drain                                                                                                                  |                                                         |
| New Cut off Ditch                                                                                                             |                                                         |
| Proposed culvert                                                                                                              |                                                         |
| Surface Water Manhole                                                                                                         |                                                         |
| Surface Water Pipe                                                                                                            |                                                         |
| Swale                                                                                                                         |                                                         |



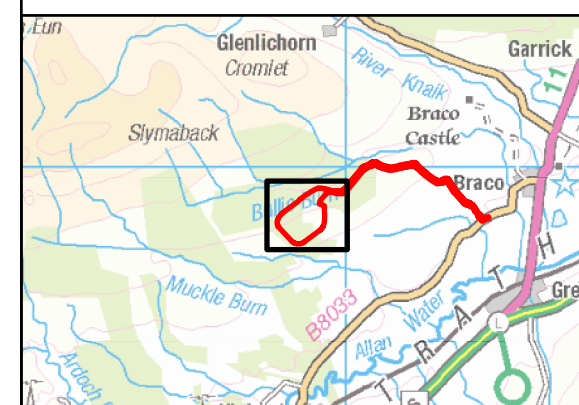
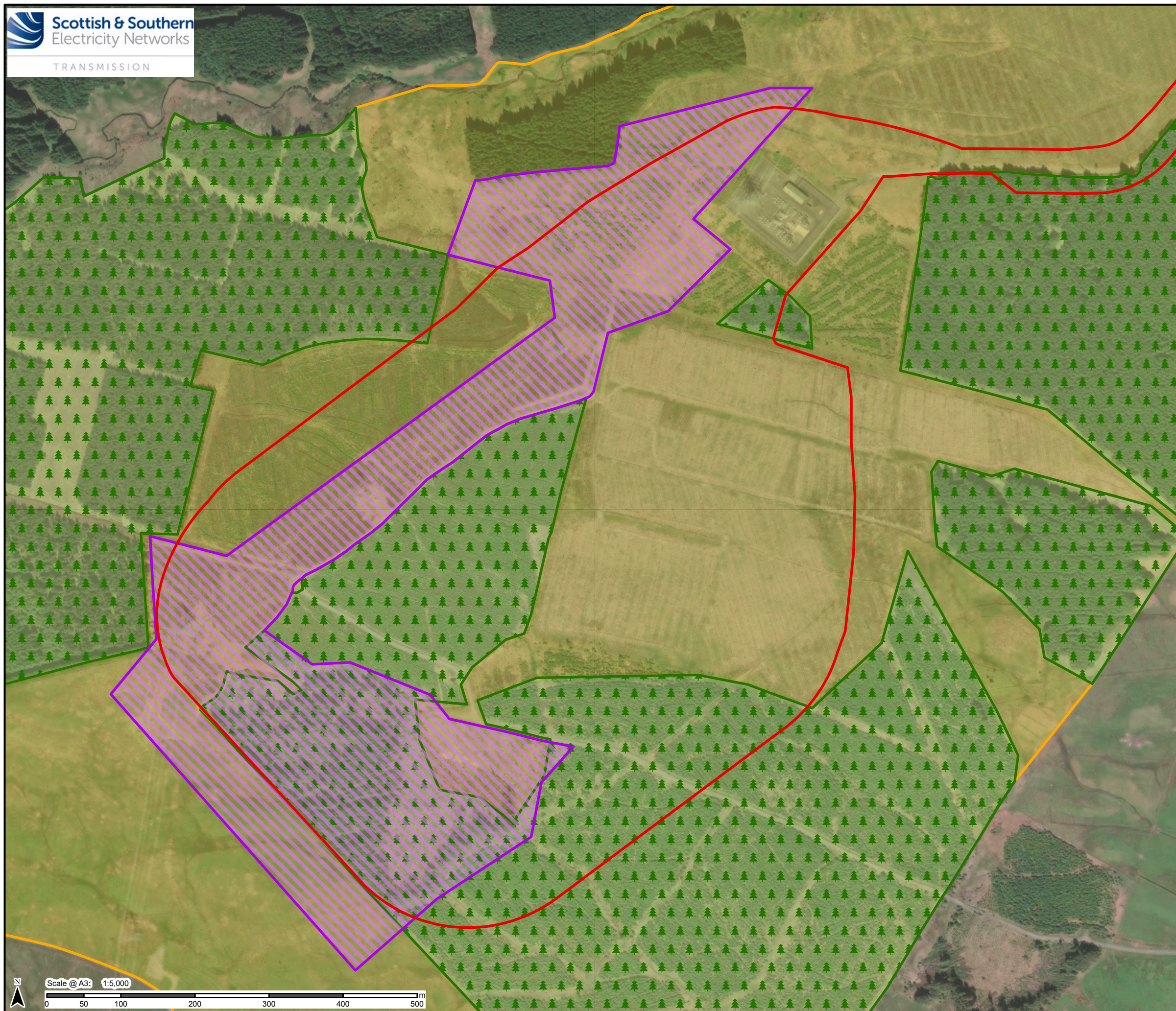
Contains public sector information licensed under the Open Government Licence v3.0. Reproduced by permission of Ordnance Survey on behalf of HMSO. Crown copyright and database right 2025 all rights reserved. Ordnance Survey Licence number 0100022432. **SSEN Transmission take no responsibility for the release or accuracy of latest version Basemaps from Ordnance Survey** Aerial: Maxar, Microsoft

Project No: LT000520	
Project: Cambushinnie 400kV Substation	
Title: Scheme Layout Plan	
Drawn by: JBARR	Date: 02/04/2025
Drawing: Figure 2	



## Legend

-  Proposed Development Site
-  Forestry Present
-  Recently deforested / afforested
-  Boggy or saturated ground



Contains public sector information licensed under the Open Government Licence v3.0.  
Reproduced by permission of Ordnance Survey on behalf of HMSO. Crown copyright and  
database right 2025 all rights reserved. Ordnance Survey Licence number 0100022432.  
**SSEN Transmission take no responsibility for the release or accuracy of latest  
version Basemaps from Ordnance Survey Aerial Mapping - Maxar, Microsoft**

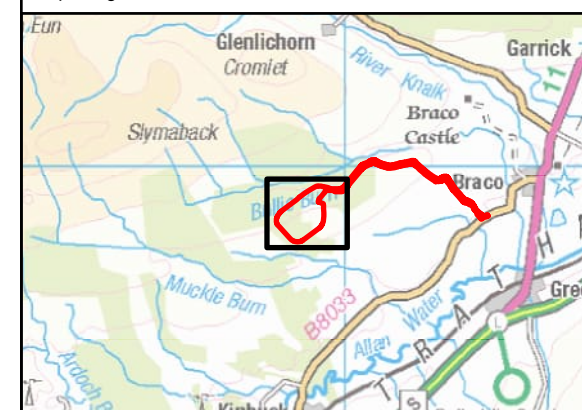
Project No: LT000520	
Project: Cambushinnie 400kV Substation	
Title: Site Walkover Features	
Drawn by: JBARR	Date: 27/05/2025
Drawing: Figure 3	



## Legend

- |                                                                                                                               |                                                         |
|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| Proposed Development Site                                                                                                     | Proposed Earth Mounding to Support Peatland Restoration |
| Existing Substation                                                                                                           | Proposed Peatland Restoration Area                      |
| <b>Substation Layout</b>                                                                                                      |                                                         |
| Substation Platform                                                                                                           | Compensatory Open Water Habitat                         |
| Track Extension and Track Upgrades between Braco West substation and around the proposed Cambushinnie substation              | <b>Slope (Degrees) - OS Terrain 5</b>                   |
| Track Extension and Track Upgrades between Braco West substation and around the proposed Cambushinnie substation - Earthworks | 0 - 2.00                                                |
| SUDs Basin                                                                                                                    | 2.01 - 5.00                                             |
| SUDs Basin Access Track                                                                                                       | 5.01 - 10.00                                            |
| Construction Compound Area                                                                                                    | 10.01 - 15.00                                           |
| Temporary Construction Compound Access                                                                                        | 15.01 - 20.00                                           |
| Earthworks for Construction Compound                                                                                          | 20+                                                     |
| Earthworks for Proposed Substation Platform                                                                                   | Contours (5m Intervals)                                 |
| Clearance for Drainage and SUDs Pond                                                                                          |                                                         |
| <b>OHL Layout</b>                                                                                                             |                                                         |
| Existing OHL Structure                                                                                                        | Temporary OHL Structure                                 |
| Permanent OHL Structure                                                                                                       | Temporary OHL Section Spans                             |
| Permanent OHL Section Spans                                                                                                   | Permanent OHL Section Spans                             |
| Temporary Tower Construction Area                                                                                             | Permanent Tower Construction Area                       |
| Tower Removal Working Area                                                                                                    | Existing Tower Working Area                             |
| Permanent Access Route                                                                                                        | Temporary Access Route                                  |

**NOTE:**  
Slope Angle and Contours derived from OS Terrain 5 dataset

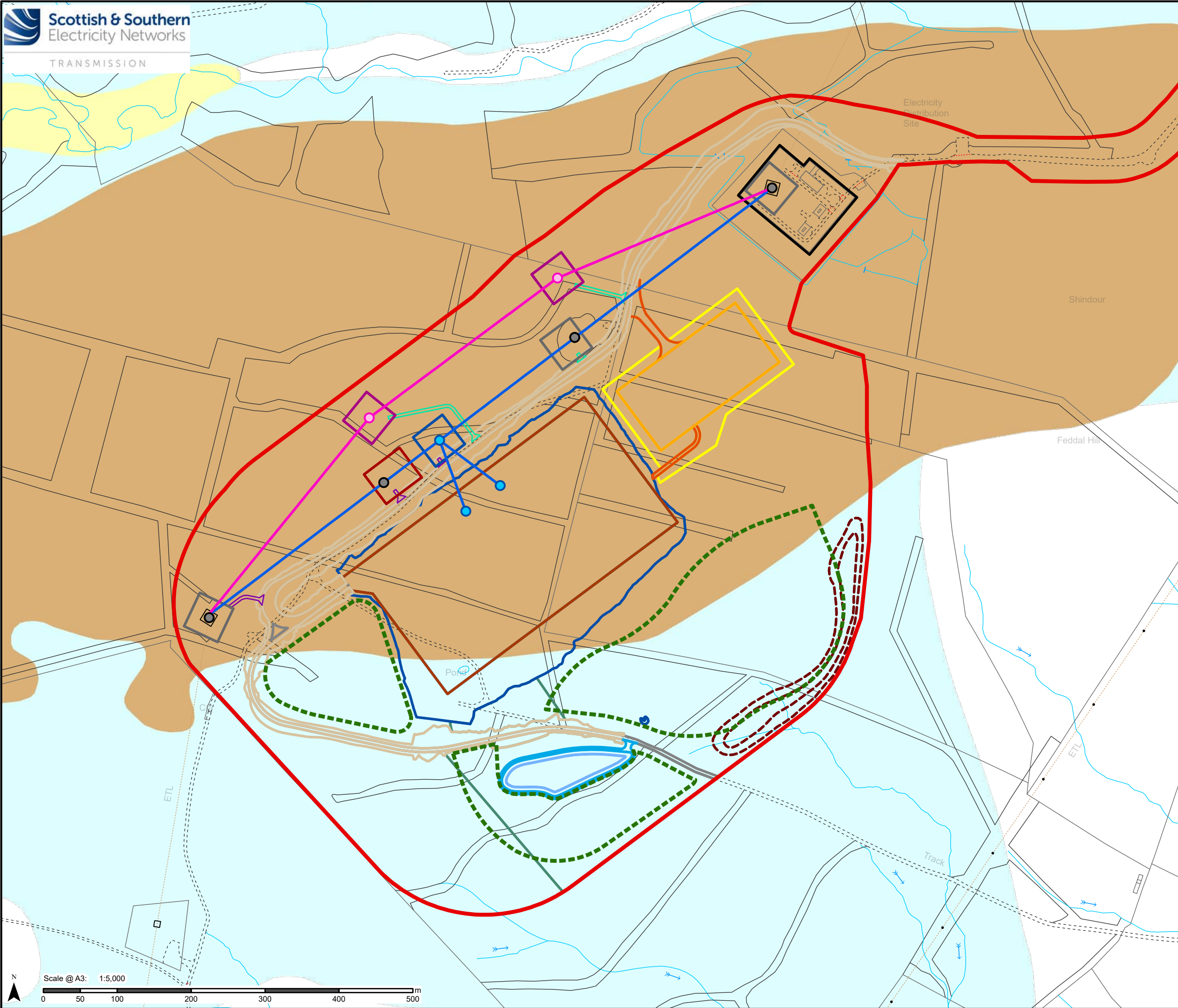


Contains public sector information licensed under the Open Government Licence v3.0. Reproduced by permission of Ordnance Survey on behalf of HMSO. Crown copyright and database right 2025 all rights reserved. Ordnance Survey Licence number 0100022432. **SSEN Transmission take no responsibility for the release or accuracy of latest version Basemaps from Ordnance Survey Aerial Mapping -**

Project No: LT000520	
Project: Cambushinnie 400kV Substation	
Title: Topography	
Drawn by: JBARR	Date: 02/04/2025
Drawing: Figure 4	







Legend

- Proposed Development Site
- Existing Substation
- Substation Layout
  - Substation Platform
  - Track Extension and Track Upgrades between Braco West substation and around the proposed Cambushinnie substation
  - Track Extension and Track Upgrades between Braco West substation and around the proposed Cambushinnie substation - Earthworks
  - SUDs Basin
  - SUDs Basin Access Track
  - Construction Compound Area
  - Temporary Construction Compound Access
  - Earthworks for Construction Compound
  - Earthworks for Proposed Substation Platform
  - Clearance for Drainage and SUDs Pond
- OHL Layout
  - Existing OHL Structure
  - Temporary OHL Structure
  - Permanent OHL Structure
  - Temporary OHL Section Spans
  - Permanent OHL Section Spans
  - Temporary Tower Construction Area
  - Permanent Tower Construction Area
  - Tower Removal Working Area
  - Existing Tower Working Area
  - Permanent Access Route
  - Temporary Access Route
- Landscape Habitat Management Plan
  - Proposed Earth Mounding to Support Peatland Restoration
  - Proposed Peatland Restoration Area
  - Compensatory Open Water Habitat
- Superficial Geology - BGS 50k
  - Peat
  - Till Devensian - Diamicton
  - Alluvium - Clay, Silt, Sand and Gravel

**NOTE:**  
Contains public sector information licensed under the Open Government Licence v3.0. Contains British Geological Survey materials @UKRI 2024



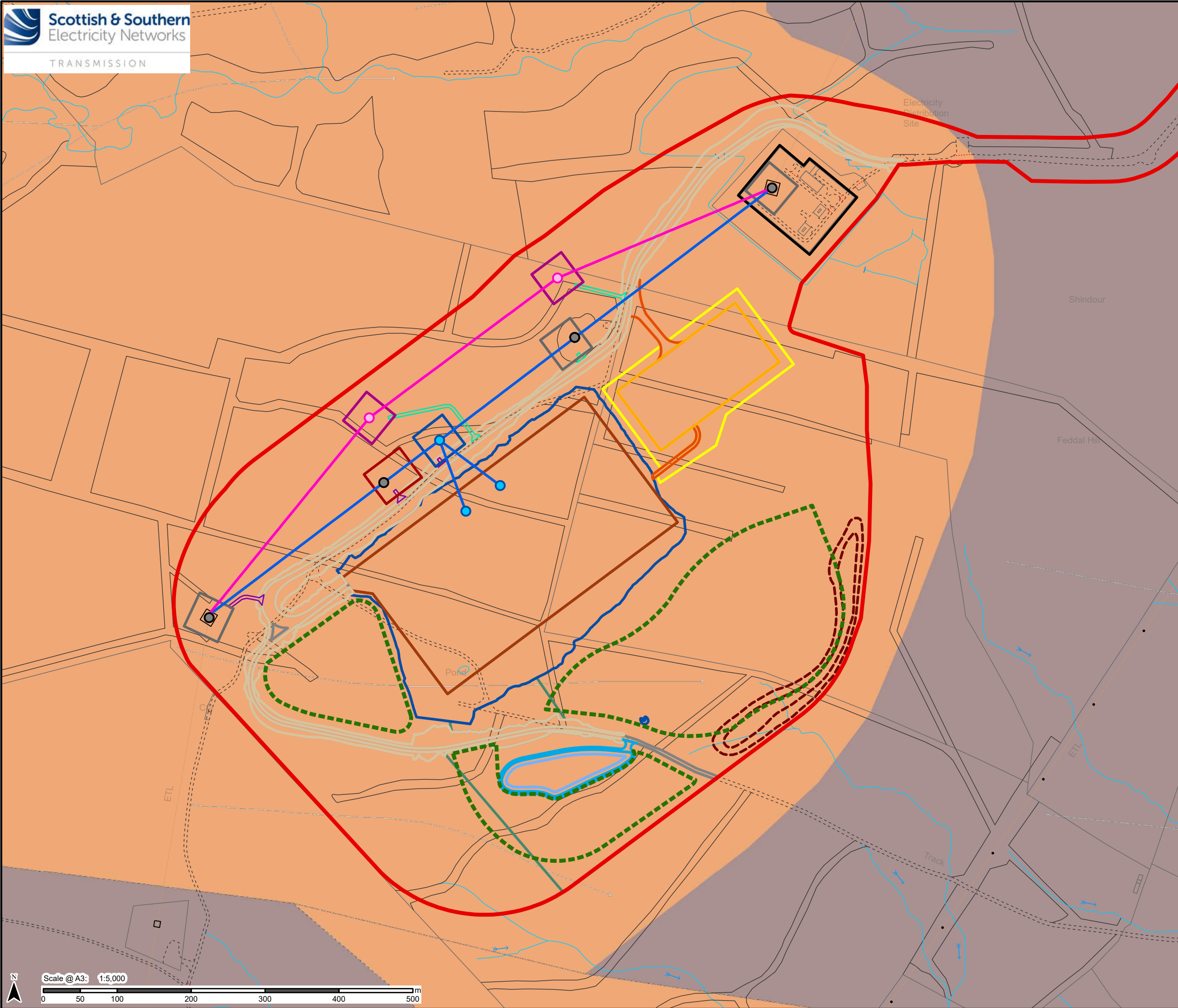
Contains public sector information licensed under the Open Government Licence v3.0. Reproduced by permission of Ordnance Survey on behalf of HMSO. Crown copyright and database right 2025 all rights reserved. Ordnance Survey Licence number 0100022432. **SSEN Transmission take no responsibility for the release or accuracy of latest version Basemaps from Ordnance Survey**

Project No: LT000520  
Project: Cambushinnie 400kV Substation

Title:  
Superficial Geology

Drawn by: JBARR Date: 02/04/2025

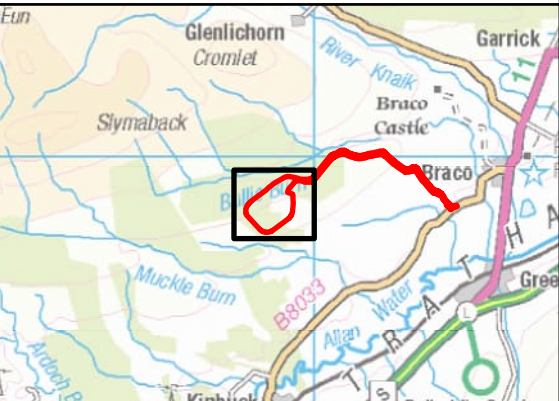
Drawing: Figure 5



Legend

- Proposed Development Site
- Existing Substation
- Substation Layout
  - Substation Platform
  - Track Extension and Track Upgrades between Braco West substation and around the proposed Cambushinnie substation
  - Track Extension and Track Upgrades between Braco West substation and around the proposed Cambushinnie substation - Earthworks
  - SUDs Basin
  - SUDs Basin Access Track
  - Construction Compound Area
  - Temporary Construction Compound Access
  - Earthworks for Construction Compound
  - Earthworks for Proposed Substation Platform
  - Clearance for Drainage and SUDs Pond
- OHL Layout
  - Existing OHL Structure
  - Temporary OHL Structure
  - Permanent OHL Structure
  - Temporary OHL Section Spans
  - Permanent OHL Section Spans
  - Temporary Tower Construction Area
  - Permanent Tower Construction Area
  - Tower Removal Working Area
  - Existing Tower Working Area
  - Permanent Access Route
  - Temporary Access Route
- Landscape Habitat Management Plan
  - Proposed Earth Mounding to Support Peatland Restoration
  - Proposed Peatland Restoration Area
  - Compensatory Open Water Habitat
- Bedrock Geology - BGS 50k
  - Teith Sandstone Formation - Sandstone
  - Cromlix Mudstone Formation - Mudstone and Siltstone
- Linear Features - BGS 50k
  - Fault, Inferred, displacement unknown
  - Glacial meltwater channel centre line, undifferentiated

**NOTE:**  
Contains public sector information licensed under the Open Government Licence v3.0. Contains British Geological Survey materials @UKRI 2024



Contains public sector information licensed under the Open Government Licence v3.0. Reproduced by permission of Ordnance Survey on behalf of HMSO. Crown copyright and database right 2025 all rights reserved. Ordnance Survey Licence number 0100022432. **SSEN Transmission take no responsibility for the release or accuracy of latest version Basemaps from Ordnance Survey**

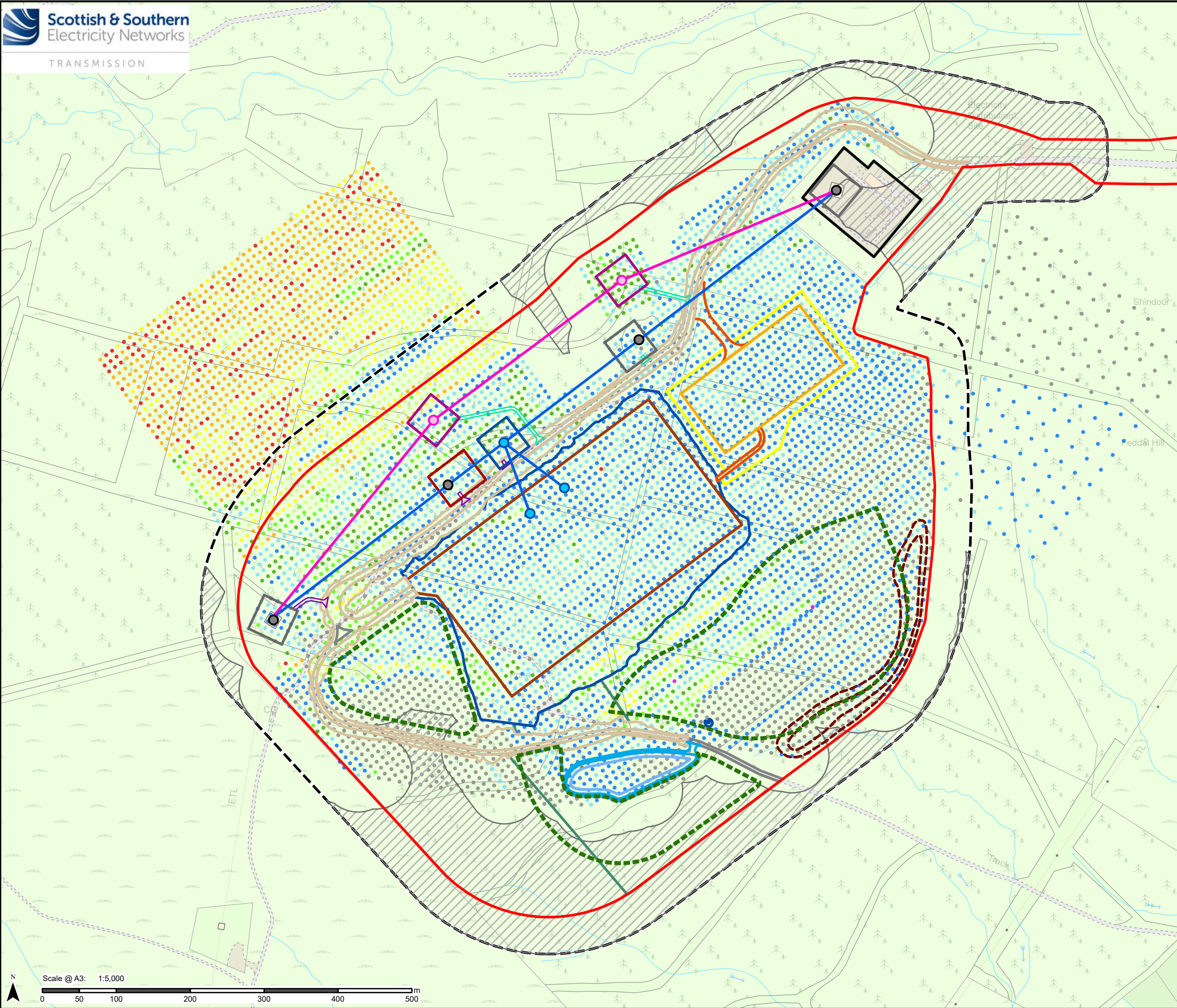
Project No: LT000520  
Project: Cambushinnie 400kV Substation

Title:  
Bedrock Geology

Drawn by: JBARR Date: 02/04/2025

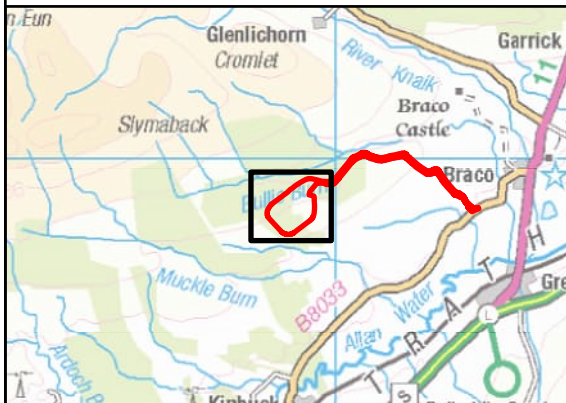
Drawing: Figure 6





Legend

- Proposed Development Site
- 50m Buffer of Substation Development Site
- Existing Substation
- Substation Layout
  - Substation Platform
  - Track Extension and Track Upgrades between Braco West substation and around the proposed Cambushinnie substation
  - Track Extension and Track Upgrades between Braco West substation and around the proposed Cambushinnie substation - Earthworks
  - SUDs Basin
  - SUDs Basin Access Track
  - Construction Compound Area
  - Temporary Construction Compound Access
  - Earthworks for Construction Compound
  - Earthworks for Proposed Substation Platform
  - Clearance for Drainage and SUDs Pond
- OHL Layout
  - Existing OHL Structure
  - Temporary OHL Structure
  - Permanent OHL Structure
  - Temporary OHL Section Spans
  - Permanent OHL Section Spans
  - Temporary Tower Construction Area
  - Permanent Tower Construction Area
  - Tower Removal Working Area
  - Existing Tower Working Area
  - Permanent Access Route
- Landscape Habitat Management Plan
  - Proposed Earth Mounding to Support Peatland Restoration
  - Proposed Peatland Restoration Area
  - Compensatory Open Water Habitat
- Peat Probe Depth (m)
  - 0.00 - 0.50
  - 0.50 - 1.00
  - 1.00 - 1.50
  - 1.50 - 2.00
  - 2.00 - 2.50
  - 2.50 - 3.00
  - 3.00 - 3.50
  - 3.50 - 4.00
  - 4.00 - 5.00
  - 5.00 - 7.00
  - Peat probe not undertaken
  - No Peat Probe Depth Record within 50m of Survey Probes



Contains public sector information licensed under the Open Government Licence v3.0. Reproduced by permission of Ordnance Survey on behalf of HMSO. Crown copyright and database right 2025 all rights reserved. Ordnance Survey Licence number 0100022432. SSSEN Transmission take no responsibility for the release or accuracy of latest version Basemaps from Ordnance Survey

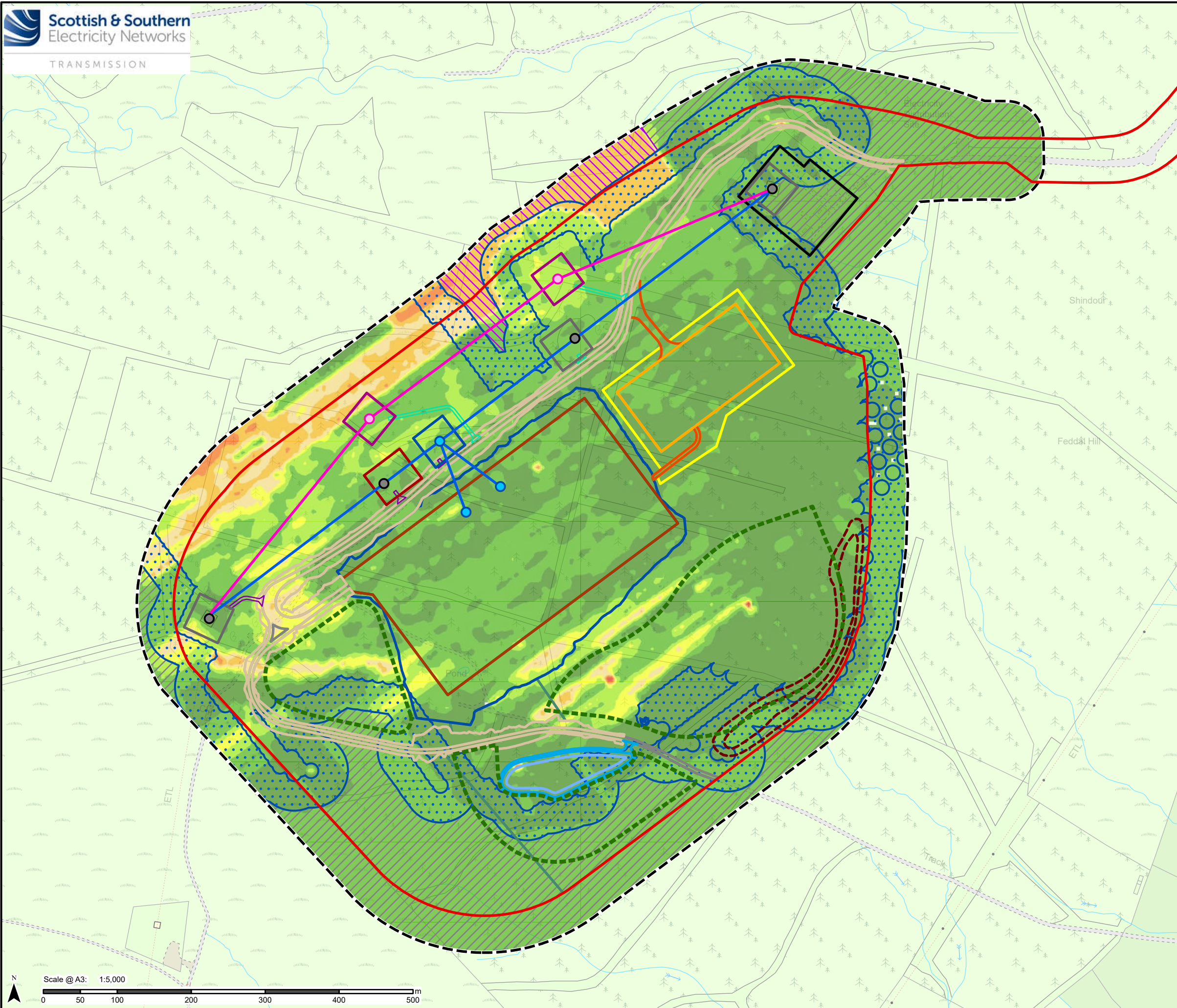
Project No: LT000520  
Project: Cambushinnie 400kV Substation

Title:  
Peat Probe Locations and Depths

Drawn by: JBARR Date: 02/04/2025

Drawing: Figure 7

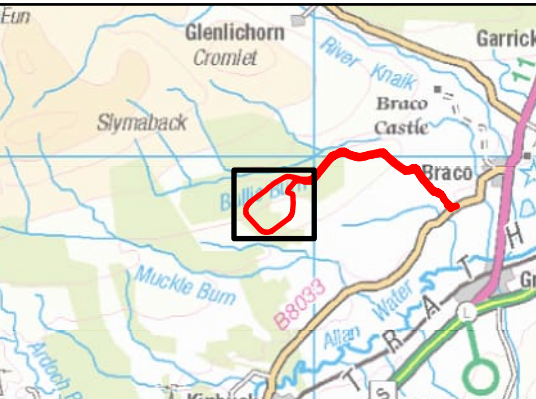




Legend

- Proposed Development Site**
- Proposed Development Site
  - 50m Buffer of Substation Development Site
  - Existing Substation
- Substation Layout**
- Substation Platform
  - Track Extension and Track Upgrades between Braco West substation and around the proposed Cambushinnie substation
  - Track Extension and Track Upgrades between Braco West substation and around the proposed Cambushinnie substation - Earthworks
  - SUDs Basin
  - SUDs Basin Access Track
  - Construction Compound Area
  - Temporary Construction Compound Access
  - Earthworks for Construction Compound
  - Earthworks for Proposed Substation Platform
  - Clearance for Drainage and SUDs Pond
- OHL Layout**
- Existing OHL Structure
  - Temporary OHL Structure
  - Permanent OHL Structure
  - Temporary OHL Section Spans
  - Permanent OHL Section Spans
  - Temporary Tower Construction Area
  - Permanent Tower Construction Area
  - Tower Removal Working Area
  - Existing Tower Working Area
  - Permanent Access Route
  - Temporary Access Route
- Landscape Habitat Management Plan**
- Proposed Earth Mounding to Support Peatland Restoration
  - Proposed Peatland Restoration Area
  - Compensatory Open Water Habitat
- Peat Depth Interpolation (m)**
- 0.00 - 0.50
  - 0.51 - 1.00
  - 1.01 - 1.50
  - 1.51 - 2.00
  - 2.00 - 2.50
  - 2.50 - 3.00
  - 3.00 - 4.00
  - 4.00 - 5.00
  - 5.01 +
- Area of no peat probing data available within 50m - Peat depths assumed**
- 1m
  - 3m

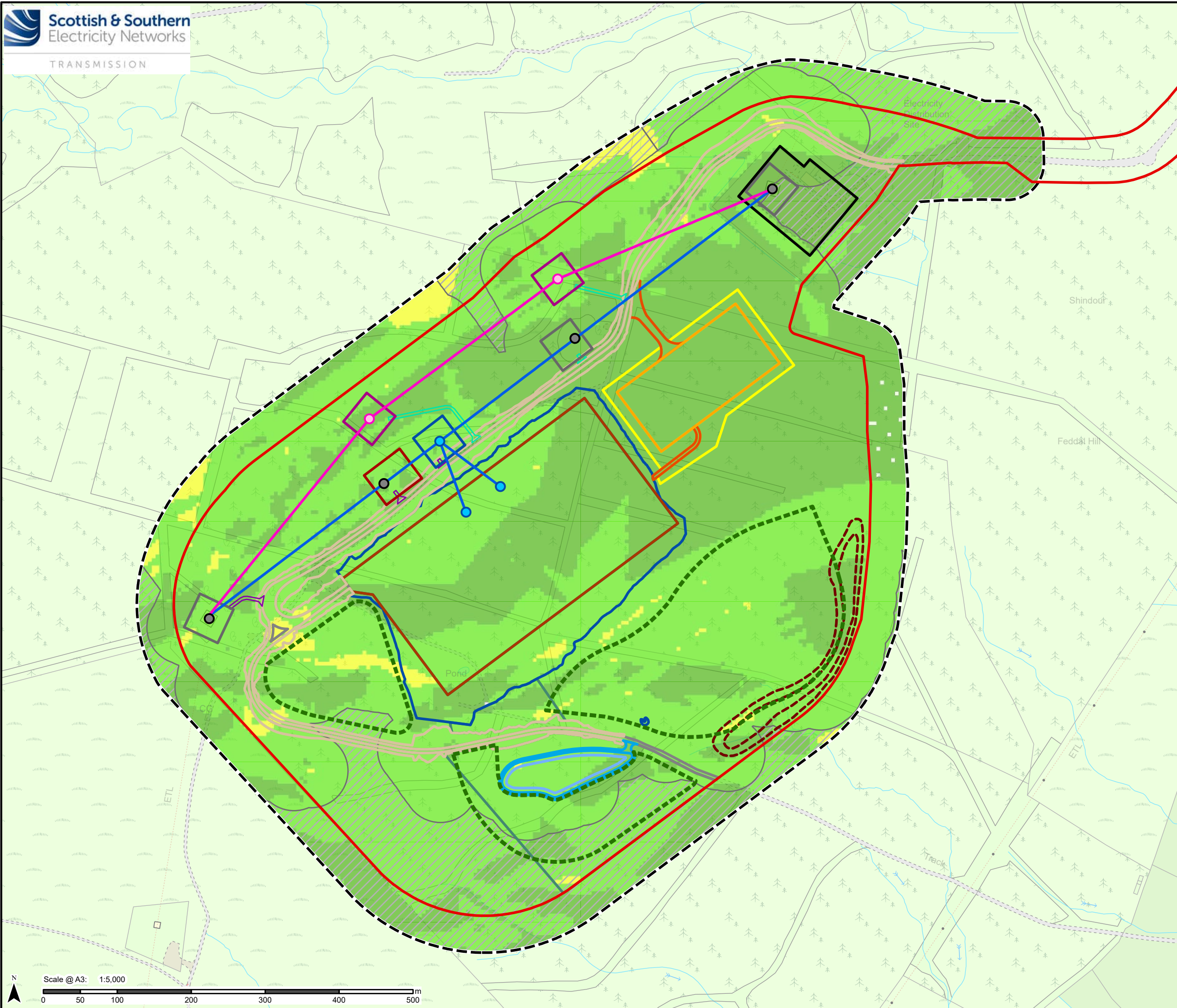
**NOTE:**  
Peat depths are based on an interpolated peat surface, based on individual peat probe results taken across the site (Figure 7). The results are indicative only and should not be relied upon for detailed design or construction. Peat Interpolation method used: Inverse Distance Weighting (IDW).



Contains public sector information licensed under the Open Government Licence v3.0.  
Reproduced by permission of Ordnance Survey on behalf of HMSO. Crown copyright and  
database right 2025 all rights reserved. Ordnance Survey Licence number 0100022432.  
**SSEN Transmission take no responsibility for the release or accuracy of latest  
version Basemaps from Ordnance Survey**

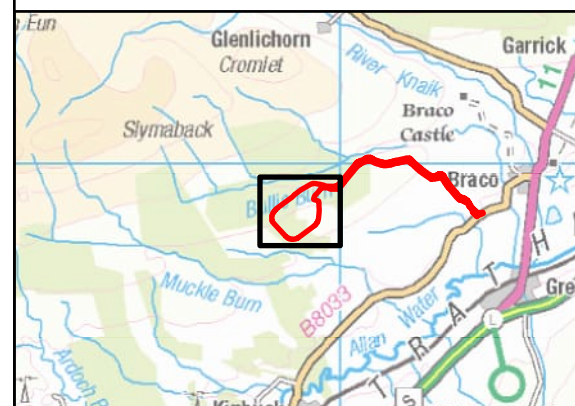
Project No: LT000520  
Project: Cambushinnie 400kV Substation  
Title: Peat Depth Interpolation Plan  
Drawn by: JBARR Date: 02/04/2025  
Drawing: Figure 8





### Legend

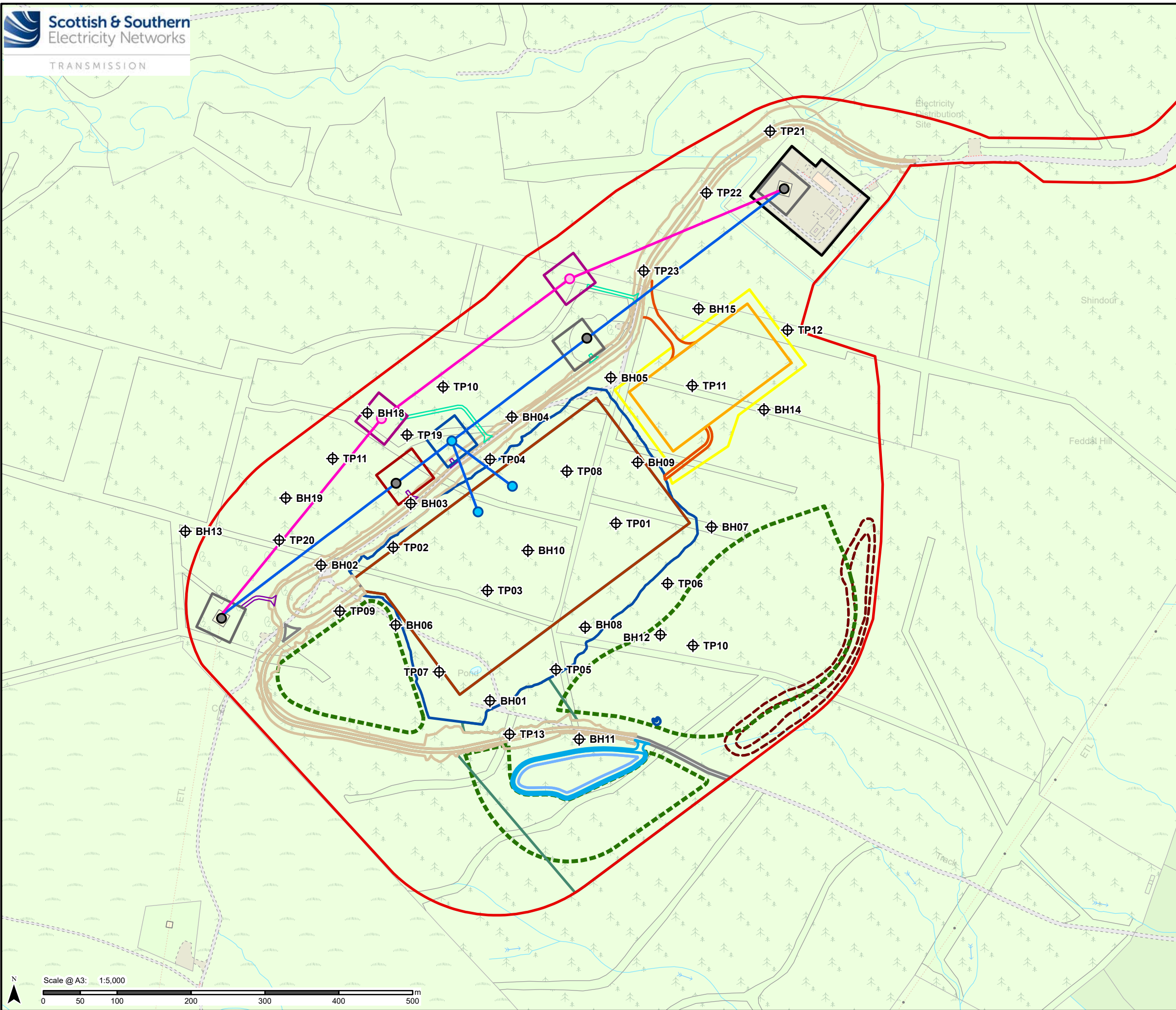
- 50m Study Area
- Proposed Development Site
- Existing Substation
- Substation Layout**
  - Substation Platform
  - Track Extension and Track Upgrades between Braco West substation and around the proposed Cambushinnie substation
  - Track Extension and Track Upgrades between Braco West substation and around the proposed Cambushinnie substation - Earthworks
  - SUDs Basin
  - SUDs Basin Access Track
  - Construction Compound Area
  - Temporary Construction Compound Access
  - Earthworks for Construction Compound
  - Earthworks for Proposed Substation Platform
  - Clearance for Drainage and SUDs Pond
- OHL Layout**
  - Existing OHL Structure
  - Temporary OHL Structure
  - Permanent OHL Structure
  - Temporary OHL Section Spans
  - Permanent OHL Section Spans
  - Temporary Tower Construction Area
  - Permanent Tower Construction Area
  - Tower Removal Working Area
  - Existing Tower Working Area
  - Permanent Access Route
  - Temporary Access Route
- Landscape Habitat Management Plan**
  - Proposed Earth Mounding to Support Peatland Restoration
  - Proposed Peatland Restoration Area
  - Compensatory Open Water Habitat
- Peat Slide Assessed Hazard**
  - 1 - Negligible
  - 2 - Unlikely
  - 3 - Likely
  - 4 - Probable
  - 5 - Almost certain
  - Area of No Peat Probing Data Available within 50m - Peat depths assumed



Contains public sector information licensed under the Open Government Licence v3.0.  
Reproduced by permission of Ordnance Survey on behalf of HMSO. Crown copyright and  
database right 2025 all rights reserved. Ordnance Survey Licence number 0100022432.  
**SSEN Transmission take no responsibility for the release or accuracy of latest  
version Basemaps from Ordnance Survey**

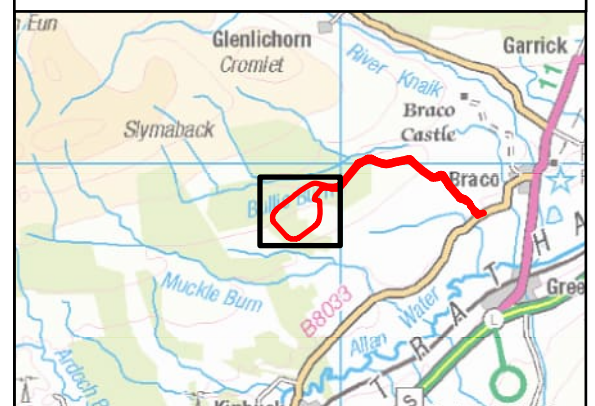
Project No: LT000520	
Project: Cambushinnie 400kV Substation	
Title: Peat Slide Assessed Hazard	
Drawn by: JBARR	Date: 02/04/2025
Drawing: Figure 9	





## Legend

- IGNE Ground Investigation Locations
- Proposed Development Site
- Existing Substation
- Substation Layout**
  - Substation Platform
  - Track Extension and Track Upgrades between Braco West substation and around the proposed Cambushinnie substation
  - Track Extension and Track Upgrades between Braco West substation and around the proposed Cambushinnie substation - Earthworks
  - SUDs Basin
  - SUDs Basin Access Track
  - Construction Compound Area
  - Temporary Construction Compound Access
  - Earthworks for Construction Compound
  - Earthworks for Proposed Substation Platform
  - Clearance for Drainage and SUDs Pond
- OHL Layout**
  - Existing OHL Structure
  - Temporary OHL Structure
  - Permanent OHL Structure
  - Temporary OHL Section Spans
  - Permanent OHL Section Spans
  - Existing Tower Working Area
  - Tower Removal Working Area
  - Temporary Tower Construction Area
  - Permanent Tower Construction Area
  - Permanent Access Route
  - Temporary Access Route
- Landscape Habitat Management Plan**
  - Proposed Earth Mounding to Support Peatland Restoration
  - Proposed Peatland Restoration Area
  - Compensatory Open Water Habitat



Contains public sector information licensed under the Open Government Licence v3.0.  
Reproduced by permission of Ordnance Survey on behalf of HMSO. Crown copyright and  
database right 2025 all rights reserved. Ordnance Survey Licence number 0100022432.  
**SSEN Transmission take no responsibility for the release or accuracy of latest  
version Basemaps from Ordnance Survey**

Project No: LT000520

Project: Cambushinnie 400kV Substation

Title:  
IGNE Ground Investigation Locations

Drawn by: JBARR

Date: 02/04/2025

Drawing: Figure 10

TEM-NET-ENV-XXX	Preliminary Peat Landslide Hazard and Risk Assessment	Applies to
		Transmission ✓

## Appendix B Peat Investigation Technical Notes

## Technical Note

SSEN Transmission Cambushinnie 400kV Substation Upgrade  
Additional Peat Probe Survey

# SSEN Transmission Cambushinnie 400kV Substation Upgrade

## Additional Peat Probe Survey

Client name		Project name	Project number
Scottish & Southern Electricity Networks (SSEN) Transmission		Cambushinnie 400kV Substation Upgrade	60721943
Prepared by	Checked by	Verified by	Approved by
Sally Bennett	Claire Vallis	David Raeside	
Date: 20.12.2024	Date: 10.01.2025	Date: 17.02.2025	Date:
Document No.	Revision	Date	
-	1	20 <sup>th</sup> March 2025	

## Introduction

Scottish & Southern Electricity Networks (SSEN) Transmission is proposing to upgrade the existing Beauldy-Denny 275 kV circuit to 400 kV to mirror the ratings of the existing 400 kV circuit which runs along the route. SSEN Transmission have therefore proposed to construct a new 400kV substation in the proximity of the existing Braco West Substation. As part of the works a new overhead line link is also required to tie-in the new substation to the existing network and a new underground cable connection is required to tie the existing substation into the new. There is also a requirement for a new access track to lead into the new proposed substation, as well as the potential for upgrading the existing, if this does not meet the requirement for construction and operation of the new proposed substation.

AECOM have been commissioned to undertake the Environmental Appraisal (EA) for the new proposed substation, associated access track and the new overhead line link. Based on information provided by the Client and review of the BGS Geoindex<sup>1</sup>, the site is known to be underlain by peat deposits which must be taken into consideration as part of the EIAR process. An initial phase of peat investigation was undertaken by Igne in late 2023 comprising of a 10m x 10m grid of peat probing covering two potential sites of the proposed substation and proposed overhead line. Since this probing was undertaken, the site of the proposed substation and access track into the new substation has been finalised with the probing undertaken identified as not covering the full footprint of the proposed works. Additional peat probing was conducted by AECOM in March 2024 to cover some of the areas not previously investigated with further probing and coring undertaken in December 2024 to complete the investigation of areas included in the proposed restoration and landscaping.

This technical note provides details of the additional peat probing undertaken by AECOM in December 2024.

## Site Description

The site is located on the eastern slopes of Feddal Hill approximately 4.0km west of Braco within Perth and Kinross. The site is within an area of commercial forestry comprising of mature and semi mature trees as well as areas of felled trees. The existing Braco West Substation (275kV) is present to the northeast with overhead electrical cables from the Beauldy to Denny line leading into the existing substation. The overhead cables intersect the site from the northeast heading in a southwest direction.

<sup>1</sup> BGS (2024) Geoindex Onshore Viewer, available: [GeoIndex - British Geological Survey](#) [accessed December 2024]



# Technical Note

SSEN Transmission Cambushinnie 400kV Substation Upgrade  
Additional Peat Probe Survey

## Site Investigation

### Peat Probing

The additional peat probing was carried out by AECOM during December 2024 and was split into three areas as shown in figure 1 below:

- General site – south eastern area (947 probes),
- Overhead Line (OHL) – 2 no. areas (158 probes),
- Site 1 area (175 probes),

The peat probes across the south eastern area and the OHL were taken on a 10m x 10m grid. The additional probes for the Site 1 area were taken on a 25m x 25m grid. The probing covered areas of the site which were not investigated as part of the initial peat probing by Igne in late 2023 and AECOM in March 2024.

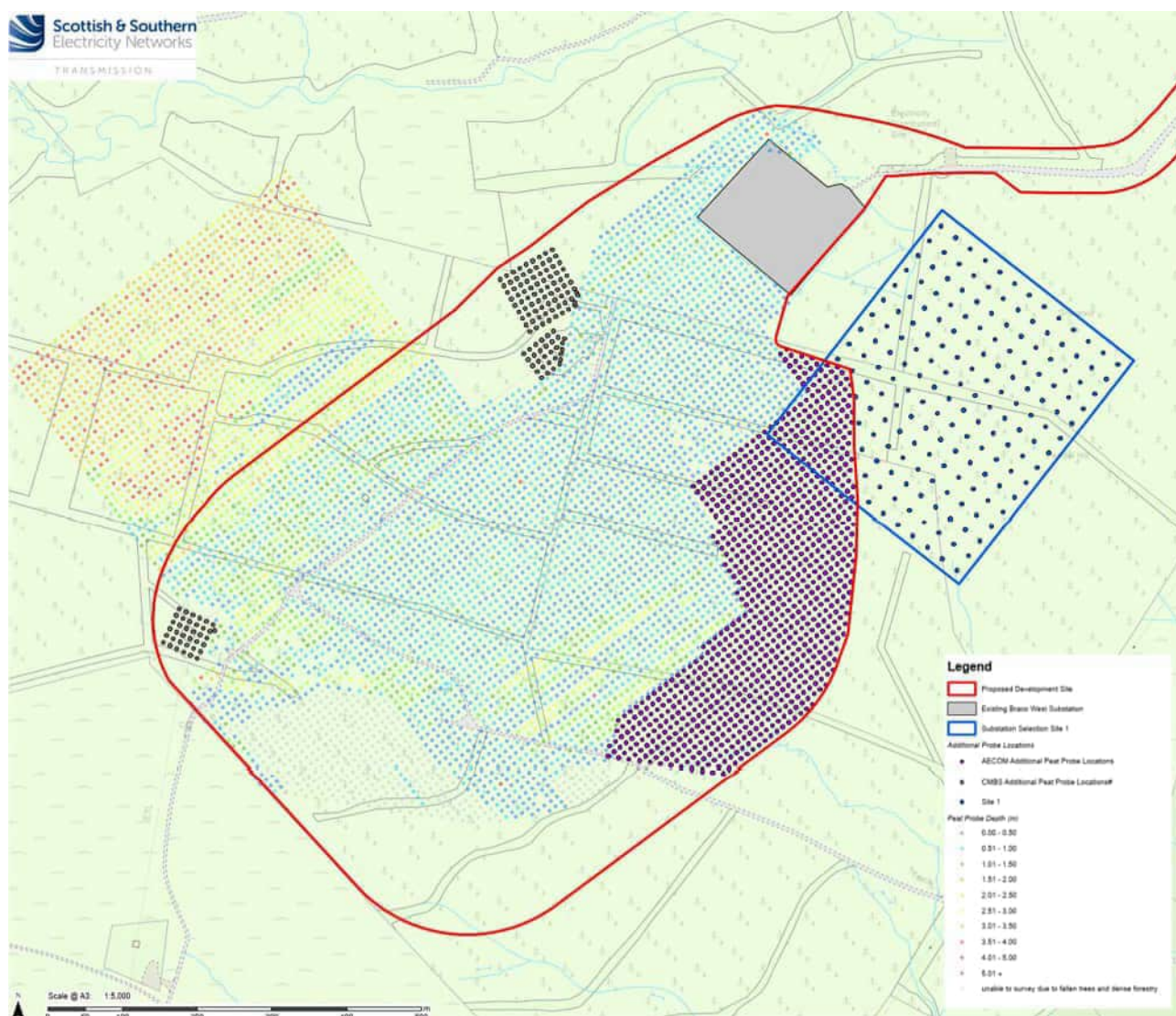


Figure 1: Proposed additional peat probe locations and previous peat probe locations & depths.

## Technical Note

### SSEN Transmission Cambushinnie 400kV Substation Upgrade Additional Peat Probe Survey

The probes used consisted of lightweight non-conductive fibreglass rods and handles which are nominally 1.0m in length with threaded joints allowing extension of the probe as required by the depth of the peat encountered. The probe was manually pushed through the peat at each location until one of the following occurred:

- Refusal of the peat probe;
- Recognisable change in the stiffness in the ground; or,
- Regular granular material could be felt scrapping along the probe.

Due to the nature of peat probing and as no sample is recovered during the advancement of the probe, the peat depth determined is only an estimate based on the judgment of the probe operator. More intrusive investigation techniques, which recover samples, is required to determine the depth of peat more accurately.

### Peat Coring

The initial ground investigation undertaken by Igne did not include sampling or testing of the peat deposits encountered in the exploratory holes. In order to assess the peat further and classify it in terms of the Von Post scale, additional peat cores were taken during the site works using a Russian Corer. The cores were undertaken at 7 locations across the site, adjacent to existing trial pits completed during the original investigation. The co-ordinates and ground level of the core location has been taken from the log of the original trial pit.

The cores were logged/photographed and tub samples taken with laboratory testing scheduled and issued to Terra Tek Ltd.

## Site Investigation Results

### Peat Probing

The drawing within Appendix A shows the locations of all probing completed across the site (i.e. inclusive of original and additional probing), as well as providing details on the depths of peat estimated for each probe location. The drawing also shows where the additional probes were cancelled as access could not be obtained due to either dense mature trees or an underground 33kv electricity cable.

#### AECOM Additional Probes

In total only 449 of the original planned 947 probe holes were completed (47%). Within the area, probed depths were generally shallow throughout, ranging from 0.0m to 1.0m. As a result, the spacing of the probed grid was widened with only every other row of peat probes undertaken. Where a deeper area of peat was found, the grid was tightened again to 10 x 10m grid.

During the site works, an area of dense trees obstructed access within the southern area of the site and it was not possible to safely undertake all of the probe locations.

#### OHL Probes

In total 155 of the original planned 158 probes were completed (98%). Within the area probe depths ranged from 0.0m to 2.4m and was generally relatively shallow across the site with deeper localised areas. The OHL in the north closer to the existing substation generally had deeper peat than the OHL in the south east of the site.

#### Site 1 Probes

In total only 79 of the original planned 175 probes were completed (45%). Within the area probed, depths ranged from 0.0m to 0.8m and therefore the peat was relatively shallow across the site.

During the site works, an area of dense mature trees prevented access and an underground 33kv electricity cable were identified and therefore these areas were avoided and the peat probes were cancelled.

### Peat Coring

Peat cores were undertaken using a Russian Corer adjacent to existing trial pits TP's 01, 03, 04, 09, 10, 11 & 13 which were completed during the original Igne ground investigation. The depth of peat identified in each core is provided in Table 1 along with a description of the peat and its Von Post classification.

# Technical Note

SSEN Transmission Cambushinnie 400kV Substation Upgrade  
Additional Peat Probe Survey

Core / Location	Depth of Peat (m)	Description	Von Post Classification
PC01 (TP11)	GL – 0.37	Soft dark brown to brown fibrous Peat with occasional pieces of wood.	H4/5 B1
PC02 (TP01)	GL – 0.25	Soft dark brown to brown fibrous Peat	H4/5 B2
PC03 (TP10)	GL – 0.4	Soft dark brown fibrous Peat	H4/5 B2
PC04 (TP13)	GL – 0.3	Soft brown fibrous Peat	H4/5 B2
PC05 (TP03)	GL – 0.6	Soft dark brown to brown fibrous to pseudo fibrous Peat	H4/5 B2
PC06 (TP04)	GL – 0.56	Soft dark brown to brown fibrous to pseudo fibrous Peat with occasional pieces of wood	H4/5 – H5/6 B2 – B3
PC07 (TP09)	GL – 1.0	Soft dark brown to brown fibrous to pseudo fibrous Peat	H4/5 – H5/6 B2 – B3

**Table 1: Peat Coring Details**

Logs and Photographs of each core are included in Appendix C.

Samples of peat were sent to Igne's laboratory for moisture content, pH, organic matter content and bulk density testing, the results from which are summarised in Table 2 below, with a copy of their lab report included in Appendix D.

Core/Location	Depth of Peat (m)	Water Content (%)	Bulk Density (Mg/m <sup>3</sup> )	Dry Density (Mg/m <sup>3</sup> )	pH	Organic Matter Content (%)
PC01/TP11	0 – 0.37	568			4.1	63.5
PC02/TP01	0 – 0.25	621			4.3	60.8
PC03/TP10	0 – 0.4	486	1.21	0.21	4.6	59.1
PC04/TP13	0 – 0.3	533			5.0	14.7
PC05/TP03	0 – 0.42	822	1.11	0.12	4.3	67.8
PC05/TP03	0.42 – 0.6	53.6			4.9	9.7
PC06/TP04	0 – 0.43	765	1.09	0.13	4.4	68.5
PC06/TP04	0.43 – 0.56	655			4.4	70.2
PC07/TP09	0 – 0.5	511			4.0	69.5
PC07/TP09	0.5 – 1.0	498	1.16	0.19	4.3	71.7

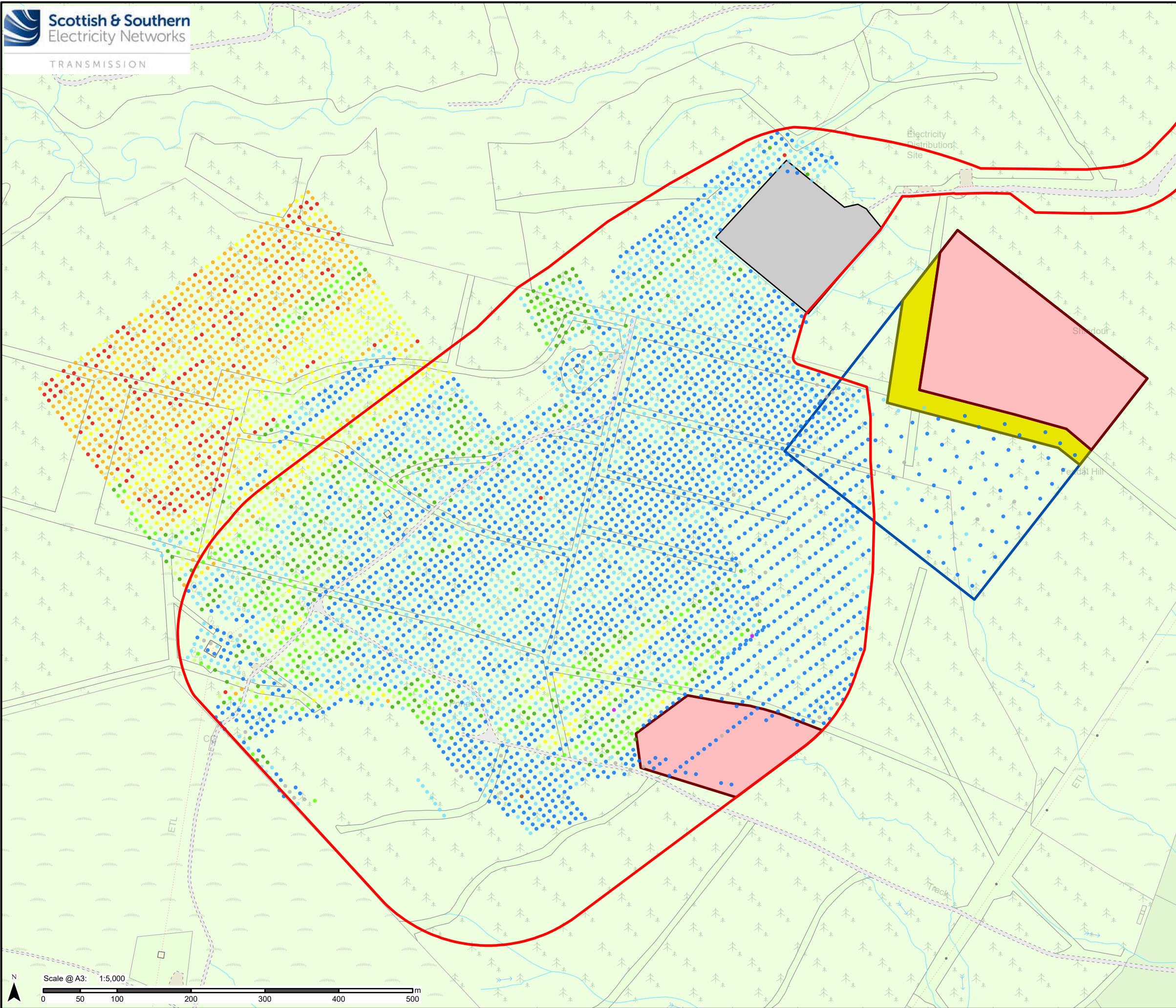
**Table 2: Summary of Lab Test Results**

## Technical Note

SSEN Transmission Cambushinnie 400kV Substation Upgrade  
Additional Peat Probe Survey

# Appendix A – Drawings



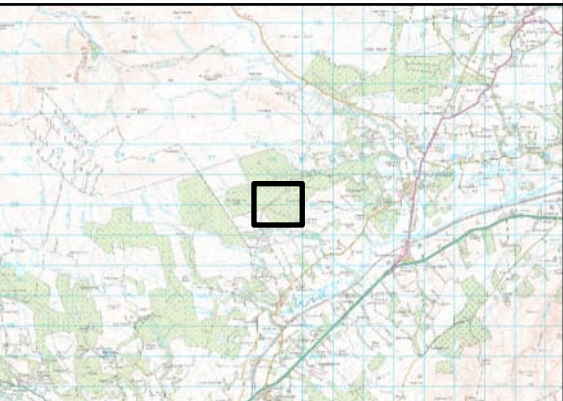


Legend

- Proposed Development Site
- Existing Braco West Substation
- Substation Selection Site 1
- Approximate line of 33kV cable. Based on BB drawing and marker posts viewed on site.
- Dense mature trees, no access available

Peat Probe Depth (m)

- N/A
- 0.00 - 0.50
- 0.50 - 1.00
- 1.00 - 1.50
- 1.50 - 2.00
- 2.00 - 2.50
- 2.50 - 3.00
- 3.00 - 3.50
- 3.50 - 4.00
- 4.00 - 5.00
- 5.00 +



Contains public sector information licensed under the Open Government Licence v3.0.  
Reproduced by permission of Ordnance Survey on behalf of HMSO. Crown copyright and  
database right 2024 all rights reserved. Ordnance Survey Licence number 0100022432.  
**SSEN Transmission take no responsibility for the release or accuracy of latest  
version Basemaps from Ordnance Survey**

Project No: LT000520	
Project: Cambushinnie 400kV Substation	
Title: Peat Probe Locations and Depths December 2024	
Drawn by: JBARR	Date: 17/12/2024
Drawing:	

## Technical Note

SSEN Transmission Cambushinnie 400kV Substation Upgrade  
Additional Peat Probe Survey

# Appendix B – Peat Probe Results

ProbeID	XCoord	YCoord	Results
AECOM_pp_0001	279398	708678	
AECOM_pp_0002	279406	708684	
AECOM_pp_0003	279414	708690	
AECOM_pp_0004	279422	708697	
AECOM_pp_0005	279429	708703	
AECOM_pp_0006	279437	708709	
AECOM_pp_0007	279445	708715	
AECOM_pp_0008	279453	708721	
AECOM_pp_0009	279461	708727	
AECOM_pp_0010	279469	708733	
AECOM_pp_0011	279477	708739	
AECOM_pp_0012	279485	708745	
AECOM_pp_0013	279493	708751	
AECOM_pp_0014	279501	708757	
AECOM_pp_0015	279509	708763	0.1
AECOM_pp_0016	279517	708769	0.2
AECOM_pp_0017	279384	708680	0.45
AECOM_pp_0018	279392	708686	
AECOM_pp_0019	279400	708692	
AECOM_pp_0020	279408	708698	
AECOM_pp_0021	279415	708704	
AECOM_pp_0022	279423	708711	
AECOM_pp_0023	279431	708717	
AECOM_pp_0024	279439	708723	
AECOM_pp_0025	279447	708729	
AECOM_pp_0026	279455	708735	
AECOM_pp_0027	279463	708741	
AECOM_pp_0028	279471	708747	
AECOM_pp_0029	279479	708753	
AECOM_pp_0030	279487	708759	
AECOM_pp_0031	279495	708765	0.1
AECOM_pp_0032	279503	708771	0
AECOM_pp_0033	279511	708777	0.3
AECOM_pp_0034	279519	708783	0.7
AECOM_pp_0035	279527	708789	0
AECOM_pp_0036	279535	708795	0.1
AECOM_pp_0037	279370	708682	0.4
AECOM_pp_0038	279378	708688	
AECOM_pp_0039	279386	708694	
AECOM_pp_0040	279394	708700	
AECOM_pp_0041	279401	708706	
AECOM_pp_0042	279409	708712	
AECOM_pp_0043	279417	708718	
AECOM_pp_0044	279425	708725	
AECOM_pp_0045	279433	708731	
AECOM_pp_0046	279441	708737	
AECOM_pp_0047	279449	708743	

AECOM_pp_0048	279457	708749	
AECOM_pp_0049	279465	708755	
AECOM_pp_0050	279473	708761	0.2
AECOM_pp_0051	279481	708767	0.2
AECOM_pp_0052	279489	708773	0.5
AECOM_pp_0053	279497	708779	0.35
AECOM_pp_0054	279505	708785	0.1
AECOM_pp_0055	279513	708791	0.15
AECOM_pp_0056	279521	708797	0.1
AECOM_pp_0057	279529	708803	0.4
AECOM_pp_0058	279537	708809	0.4
AECOM_pp_0059	279545	708815	0.2
AECOM_pp_0060	279356	708684	
AECOM_pp_0061	279364	708690	
AECOM_pp_0062	279372	708696	
AECOM_pp_0063	279379	708702	
AECOM_pp_0064	279387	708708	
AECOM_pp_0065	279395	708714	
AECOM_pp_0066	279403	708720	
AECOM_pp_0067	279411	708726	
AECOM_pp_0068	279419	708733	
AECOM_pp_0069	279427	708739	
AECOM_pp_0070	279435	708745	
AECOM_pp_0071	279443	708751	
AECOM_pp_0072	279451	708757	
AECOM_pp_0073	279459	708763	
AECOM_pp_0074	279467	708769	0.3
AECOM_pp_0075	279475	708775	0.3
AECOM_pp_0076	279483	708781	0.6
AECOM_pp_0077	279491	708787	0.2
AECOM_pp_0078	279499	708793	0.4
AECOM_pp_0079	279507	708799	0.3
AECOM_pp_0080	279515	708805	0.3
AECOM_pp_0081	279523	708811	0.4
AECOM_pp_0082	279531	708817	0.2
AECOM_pp_0083	279539	708823	0.25
AECOM_pp_0084	279547	708829	0.1
AECOM_pp_0085	279342	708686	
AECOM_pp_0086	279350	708692	
AECOM_pp_0087	279358	708698	
AECOM_pp_0088	279365	708704	
AECOM_pp_0089	279373	708710	
AECOM_pp_0090	279381	708716	
AECOM_pp_0091	279389	708722	
AECOM_pp_0092	279397	708728	
AECOM_pp_0093	279405	708734	
AECOM_pp_0094	279413	708740	
AECOM_pp_0095	279421	708747	



AECOM_pp_0096	279429	708753	
AECOM_pp_0097	279437	708759	
AECOM_pp_0098	279445	708765	
AECOM_pp_0099	279453	708771	
AECOM_pp_0100	279461	708777	
AECOM_pp_0101	279469	708783	
AECOM_pp_0102	279477	708789	
AECOM_pp_0103	279485	708795	
AECOM_pp_0104	279493	708801	
AECOM_pp_0105	279501	708807	
AECOM_pp_0106	279509	708813	
AECOM_pp_0107	279517	708819	
AECOM_pp_0108	279525	708825	
AECOM_pp_0109	279533	708831	
AECOM_pp_0110	279541	708837	
AECOM_pp_0111	279549	708843	
AECOM_pp_0112	279328	708688	
AECOM_pp_0113	279336	708694	0.2
AECOM_pp_0114	279344	708700	
AECOM_pp_0115	279351	708706	
AECOM_pp_0116	279359	708712	
AECOM_pp_0117	279367	708718	
AECOM_pp_0118	279375	708724	
AECOM_pp_0119	279383	708730	
AECOM_pp_0120	279391	708736	
AECOM_pp_0121	279399	708742	
AECOM_pp_0122	279407	708748	
AECOM_pp_0123	279415	708754	
AECOM_pp_0124	279423	708761	
AECOM_pp_0125	279431	708767	0.1
AECOM_pp_0126	279439	708773	0.25
AECOM_pp_0127	279447	708779	0.1
AECOM_pp_0128	279455	708785	0.5
AECOM_pp_0129	279463	708791	0.2
AECOM_pp_0130	279471	708797	0.2
AECOM_pp_0131	279479	708803	0.4
AECOM_pp_0132	279487	708809	0.3
AECOM_pp_0133	279495	708815	0.2
AECOM_pp_0134	279503	708821	0.1
AECOM_pp_0135	279511	708827	0.5
AECOM_pp_0136	279519	708833	0.4
AECOM_pp_0137	279527	708839	0.45
AECOM_pp_0138	279535	708845	0.2
AECOM_pp_0139	279543	708851	0.2
AECOM_pp_0140	279551	708857	0.2
AECOM_pp_0141	279559	708863	0.3
AECOM_pp_0142	279314	708690	
AECOM_pp_0143	279322	708696	0.2

AECOM_pp_0144	279329	708702	
AECOM_pp_0145	279337	708708	
AECOM_pp_0146	279345	708714	
AECOM_pp_0147	279353	708720	
AECOM_pp_0148	279361	708726	
AECOM_pp_0149	279369	708732	
AECOM_pp_0150	279377	708738	
AECOM_pp_0151	279385	708744	
AECOM_pp_0152	279393	708750	
AECOM_pp_0153	279401	708756	
AECOM_pp_0154	279409	708762	
AECOM_pp_0155	279417	708768	
AECOM_pp_0156	279425	708775	
AECOM_pp_0157	279433	708781	
AECOM_pp_0158	279441	708787	
AECOM_pp_0159	279449	708793	
AECOM_pp_0160	279457	708799	
AECOM_pp_0161	279465	708805	
AECOM_pp_0162	279473	708811	
AECOM_pp_0163	279481	708817	
AECOM_pp_0164	279489	708823	
AECOM_pp_0165	279497	708829	
AECOM_pp_0166	279505	708835	
AECOM_pp_0167	279513	708841	
AECOM_pp_0168	279521	708847	
AECOM_pp_0169	279529	708853	
AECOM_pp_0170	279537	708859	
AECOM_pp_0171	279545	708865	
AECOM_pp_0172	279553	708871	
AECOM_pp_0173	279560	708877	
AECOM_pp_0174	279300	708692	0.1
AECOM_pp_0175	279308	708698	0.1
AECOM_pp_0176	279315	708704	0.1
AECOM_pp_0177	279323	708710	0.2
AECOM_pp_0178	279331	708716	0.2
AECOM_pp_0179	279339	708722	0.2
AECOM_pp_0180	279347	708728	0.1
AECOM_pp_0181	279355	708734	0.1
AECOM_pp_0182	279363	708740	0.2
AECOM_pp_0183	279371	708746	0
AECOM_pp_0184	279379	708752	0.1
AECOM_pp_0185	279387	708758	0.1
AECOM_pp_0186	279395	708764	0.1
AECOM_pp_0187	279403	708770	0.2
AECOM_pp_0188	279411	708776	0.1
AECOM_pp_0189	279419	708783	0.1
AECOM_pp_0190	279427	708789	0.25
AECOM_pp_0191	279435	708795	0.3

AECOM_pp_0192	279443	708801	0.3
AECOM_pp_0193	279451	708807	0.4
AECOM_pp_0194	279459	708813	0.1
AECOM_pp_0195	279467	708819	0.2
AECOM_pp_0196	279475	708825	0.6
AECOM_pp_0197	279483	708831	0.2
AECOM_pp_0198	279491	708837	0.1
AECOM_pp_0199	279499	708843	0.2
AECOM_pp_0200	279507	708849	0.2
AECOM_pp_0201	279515	708855	0.1
AECOM_pp_0202	279523	708861	0.4
AECOM_pp_0203	279531	708867	0.5
AECOM_pp_0204	279539	708873	0.3
AECOM_pp_0205	279546	708879	0
AECOM_pp_0206	279554	708885	0.4
AECOM_pp_0207	279562	708891	0.2
AECOM_pp_0208	279286	708694	
AECOM_pp_0209	279294	708700	
AECOM_pp_0210	279301	708706	
AECOM_pp_0211	279309	708712	
AECOM_pp_0212	279317	708718	
AECOM_pp_0213	279325	708724	
AECOM_pp_0214	279333	708730	
AECOM_pp_0215	279341	708736	
AECOM_pp_0216	279349	708742	
AECOM_pp_0217	279357	708748	
AECOM_pp_0218	279365	708754	
AECOM_pp_0219	279373	708760	
AECOM_pp_0220	279381	708766	
AECOM_pp_0221	279389	708772	
AECOM_pp_0222	279397	708778	
AECOM_pp_0223	279405	708784	
AECOM_pp_0224	279413	708790	
AECOM_pp_0225	279421	708797	
AECOM_pp_0226	279429	708803	
AECOM_pp_0227	279437	708809	
AECOM_pp_0228	279445	708815	
AECOM_pp_0229	279453	708821	
AECOM_pp_0230	279461	708827	
AECOM_pp_0231	279469	708833	
AECOM_pp_0232	279477	708839	
AECOM_pp_0233	279485	708845	
AECOM_pp_0234	279493	708851	
AECOM_pp_0235	279501	708857	
AECOM_pp_0236	279509	708863	
AECOM_pp_0237	279517	708869	
AECOM_pp_0238	279524	708875	
AECOM_pp_0239	279532	708881	

AECOM_pp_0240	279540	708887	
AECOM_pp_0241	279548	708893	
AECOM_pp_0242	279556	708899	
AECOM_pp_0243	279564	708905	
AECOM_pp_0244	279272	708696	
AECOM_pp_0245	279279	708702	0.3
AECOM_pp_0246	279287	708708	0.2
AECOM_pp_0247	279295	708714	0.4
AECOM_pp_0248	279303	708720	
AECOM_pp_0249	279311	708726	
AECOM_pp_0250	279319	708732	
AECOM_pp_0251	279327	708738	
AECOM_pp_0252	279335	708744	
AECOM_pp_0253	279343	708750	
AECOM_pp_0254	279351	708756	
AECOM_pp_0255	279359	708762	
AECOM_pp_0256	279367	708768	
AECOM_pp_0257	279375	708774	
AECOM_pp_0258	279383	708780	
AECOM_pp_0259	279391	708786	0.2
AECOM_pp_0260	279399	708792	0.2
AECOM_pp_0261	279407	708798	0.2
AECOM_pp_0262	279415	708804	0.25
AECOM_pp_0263	279423	708811	0.2
AECOM_pp_0264	279431	708817	0.2
AECOM_pp_0265	279439	708823	0.6
AECOM_pp_0266	279447	708829	0.1
AECOM_pp_0267	279455	708835	0.1
AECOM_pp_0268	279463	708841	0.6
AECOM_pp_0269	279471	708847	0
AECOM_pp_0270	279479	708853	0.2
AECOM_pp_0271	279487	708859	0.3
AECOM_pp_0272	279495	708865	0.25
AECOM_pp_0273	279503	708871	0.15
AECOM_pp_0274	279510	708877	0.1
AECOM_pp_0275	279518	708883	0.3
AECOM_pp_0276	279526	708889	0.4
AECOM_pp_0277	279534	708895	0.45
AECOM_pp_0278	279542	708901	0.2
AECOM_pp_0279	279550	708907	0.4
AECOM_pp_0280	279558	708913	0.4
AECOM_pp_0281	279566	708919	0.6
AECOM_pp_0282	279258	708698	
AECOM_pp_0283	279265	708704	0
AECOM_pp_0284	279273	708710	0.3
AECOM_pp_0285	279281	708716	0.3
AECOM_pp_0286	279289	708722	
AECOM_pp_0287	279297	708728	

AECOM_pp_0288	279305	708734	
AECOM_pp_0289	279313	708740	
AECOM_pp_0290	279321	708746	
AECOM_pp_0291	279329	708752	
AECOM_pp_0292	279337	708758	
AECOM_pp_0293	279345	708764	
AECOM_pp_0294	279353	708770	
AECOM_pp_0295	279361	708776	
AECOM_pp_0296	279369	708782	
AECOM_pp_0297	279377	708788	
AECOM_pp_0298	279385	708794	
AECOM_pp_0299	279393	708800	
AECOM_pp_0300	279401	708806	
AECOM_pp_0301	279409	708812	
AECOM_pp_0302	279417	708818	
AECOM_pp_0303	279425	708825	
AECOM_pp_0304	279433	708831	
AECOM_pp_0305	279441	708837	
AECOM_pp_0306	279449	708843	
AECOM_pp_0307	279457	708849	
AECOM_pp_0308	279465	708855	
AECOM_pp_0309	279473	708861	
AECOM_pp_0310	279481	708867	
AECOM_pp_0311	279489	708873	
AECOM_pp_0312	279496	708879	
AECOM_pp_0313	279504	708885	
AECOM_pp_0314	279512	708891	
AECOM_pp_0315	279520	708897	
AECOM_pp_0316	279528	708903	
AECOM_pp_0317	279536	708909	
AECOM_pp_0318	279544	708915	
AECOM_pp_0319	279552	708921	
AECOM_pp_0320	279560	708927	
AECOM_pp_0321	279568	708933	
AECOM_pp_0322	279244	708699	
AECOM_pp_0323	279251	708706	0.4
AECOM_pp_0324	279259	708712	0.2
AECOM_pp_0325	279267	708718	
AECOM_pp_0326	279275	708724	
AECOM_pp_0327	279283	708730	
AECOM_pp_0328	279291	708736	
AECOM_pp_0329	279299	708742	
AECOM_pp_0330	279307	708748	
AECOM_pp_0331	279315	708754	
AECOM_pp_0332	279323	708760	
AECOM_pp_0333	279331	708766	
AECOM_pp_0334	279339	708772	
AECOM_pp_0335	279347	708778	

AECOM_pp_0336	279355	708784	
AECOM_pp_0337	279363	708790	
AECOM_pp_0338	279371	708796	0.2
AECOM_pp_0339	279379	708802	0
AECOM_pp_0340	279387	708808	0.2
AECOM_pp_0341	279395	708814	0.4
AECOM_pp_0342	279403	708820	0.4
AECOM_pp_0343	279411	708826	0.15
AECOM_pp_0344	279419	708833	0.3
AECOM_pp_0345	279427	708839	0.55
AECOM_pp_0346	279435	708845	0.4
AECOM_pp_0347	279443	708851	0.3
AECOM_pp_0348	279451	708857	0.6
AECOM_pp_0349	279459	708863	0.2
AECOM_pp_0350	279467	708869	0.4
AECOM_pp_0351	279474	708875	0.2
AECOM_pp_0352	279482	708881	0.25
AECOM_pp_0353	279490	708887	0.1
AECOM_pp_0354	279498	708893	0.6
AECOM_pp_0355	279506	708899	0.4
AECOM_pp_0356	279514	708905	0.6
AECOM_pp_0357	279522	708911	0.3
AECOM_pp_0358	279530	708917	0.2
AECOM_pp_0359	279538	708923	0.4
AECOM_pp_0360	279546	708929	0.2
AECOM_pp_0361	279554	708935	0.1
AECOM_pp_0362	279562	708941	0.55
AECOM_pp_0363	279570	708947	0.7
AECOM_pp_0364	279245	708713	
AECOM_pp_0365	279253	708720	0.3
AECOM_pp_0366	279261	708726	
AECOM_pp_0367	279269	708732	
AECOM_pp_0368	279277	708738	
AECOM_pp_0369	279285	708744	
AECOM_pp_0370	279293	708750	
AECOM_pp_0371	279301	708756	
AECOM_pp_0372	279309	708762	
AECOM_pp_0373	279317	708768	
AECOM_pp_0374	279325	708774	
AECOM_pp_0375	279333	708780	
AECOM_pp_0376	279341	708786	
AECOM_pp_0377	279349	708792	
AECOM_pp_0378	279357	708798	
AECOM_pp_0379	279365	708804	
AECOM_pp_0380	279373	708810	
AECOM_pp_0381	279381	708816	
AECOM_pp_0382	279389	708822	
AECOM_pp_0383	279397	708828	

AECOM_pp_0384	279405	708834	
AECOM_pp_0385	279413	708840	
AECOM_pp_0386	279421	708847	
AECOM_pp_0387	279429	708853	
AECOM_pp_0388	279437	708859	
AECOM_pp_0389	279445	708865	
AECOM_pp_0390	279453	708871	
AECOM_pp_0391	279460	708877	
AECOM_pp_0392	279468	708883	
AECOM_pp_0393	279476	708889	
AECOM_pp_0394	279484	708895	
AECOM_pp_0395	279492	708901	
AECOM_pp_0396	279500	708907	
AECOM_pp_0397	279508	708913	
AECOM_pp_0398	279516	708919	
AECOM_pp_0399	279524	708925	
AECOM_pp_0400	279532	708931	
AECOM_pp_0401	279540	708937	
AECOM_pp_0402	279548	708943	
AECOM_pp_0403	279556	708949	
AECOM_pp_0404	279564	708955	
AECOM_pp_0405	279572	708961	
AECOM_pp_0406	279255	708734	
AECOM_pp_0407	279263	708740	
AECOM_pp_0408	279271	708746	
AECOM_pp_0409	279279	708752	
AECOM_pp_0410	279287	708758	
AECOM_pp_0411	279295	708764	
AECOM_pp_0412	279303	708770	
AECOM_pp_0413	279311	708776	
AECOM_pp_0414	279319	708782	
AECOM_pp_0415	279327	708788	
AECOM_pp_0416	279335	708794	
AECOM_pp_0417	279343	708800	0.2
AECOM_pp_0418	279351	708806	0.3
AECOM_pp_0419	279359	708812	0.2
AECOM_pp_0420	279367	708818	0.1
AECOM_pp_0421	279375	708824	0.4
AECOM_pp_0422	279383	708830	0.1
AECOM_pp_0423	279391	708836	0.2
AECOM_pp_0424	279399	708842	0.3
AECOM_pp_0425	279407	708848	0.1
AECOM_pp_0426	279415	708854	0.1
AECOM_pp_0427	279423	708861	0.1
AECOM_pp_0428	279431	708867	0.2
AECOM_pp_0429	279439	708873	0.1
AECOM_pp_0430	279446	708879	0.1
AECOM_pp_0431	279454	708885	0.45

AECOM_pp_0432	279462	708891	0.4
AECOM_pp_0433	279470	708897	0.1
AECOM_pp_0434	279478	708903	0.2
AECOM_pp_0435	279486	708909	0.3
AECOM_pp_0436	279494	708915	0.2
AECOM_pp_0437	279502	708921	0.2
AECOM_pp_0438	279510	708927	0.3
AECOM_pp_0439	279518	708933	0.2
AECOM_pp_0440	279526	708939	0.65
AECOM_pp_0441	279534	708945	0.3
AECOM_pp_0442	279542	708951	0.35
AECOM_pp_0443	279550	708957	0.7
AECOM_pp_0444	279558	708963	0.7
AECOM_pp_0445	279566	708969	0.9
AECOM_pp_0446	279574	708975	
AECOM_pp_0447	279385	708844	
AECOM_pp_0448	279393	708850	
AECOM_pp_0449	279401	708856	
AECOM_pp_0450	279409	708862	
AECOM_pp_0451	279417	708868	
AECOM_pp_0452	279424	708875	
AECOM_pp_0453	279432	708881	
AECOM_pp_0454	279440	708887	
AECOM_pp_0455	279448	708893	
AECOM_pp_0456	279456	708899	
AECOM_pp_0457	279464	708905	
AECOM_pp_0458	279472	708911	
AECOM_pp_0459	279480	708917	
AECOM_pp_0460	279488	708923	
AECOM_pp_0461	279496	708929	
AECOM_pp_0462	279504	708935	
AECOM_pp_0463	279512	708941	
AECOM_pp_0464	279520	708947	
AECOM_pp_0465	279528	708953	
AECOM_pp_0466	279536	708959	
AECOM_pp_0467	279544	708965	
AECOM_pp_0468	279552	708971	
AECOM_pp_0469	279560	708977	
AECOM_pp_0470	279568	708983	
AECOM_pp_0471	279371	708846	0.3
AECOM_pp_0472	279379	708852	0.2
AECOM_pp_0473	279387	708858	0.3
AECOM_pp_0474	279395	708864	0.2
AECOM_pp_0475	279403	708870	0.1
AECOM_pp_0476	279410	708876	0.4
AECOM_pp_0477	279418	708883	0.2
AECOM_pp_0478	279426	708889	0.1
AECOM_pp_0479	279434	708895	0.45



AECOM_pp_0480	279442	708901	0.3
AECOM_pp_0481	279450	708907	0.2
AECOM_pp_0482	279458	708913	0.1
AECOM_pp_0483	279466	708919	0.1
AECOM_pp_0484	279474	708925	0.2
AECOM_pp_0485	279482	708931	0.2
AECOM_pp_0486	279490	708937	0.1
AECOM_pp_0487	279498	708943	0.1
AECOM_pp_0488	279506	708949	0.1
AECOM_pp_0489	279514	708955	0.2
AECOM_pp_0490	279522	708961	0.2
AECOM_pp_0491	279530	708967	0.2
AECOM_pp_0492	279538	708973	0.4
AECOM_pp_0493	279546	708979	0.7
AECOM_pp_0494	279554	708985	0.7
AECOM_pp_0495	279562	708991	0.2
AECOM_pp_0496	279570	708997	0.5
AECOM_pp_0497	279428	708903	
AECOM_pp_0498	279436	708909	
AECOM_pp_0499	279444	708915	
AECOM_pp_0500	279452	708921	
AECOM_pp_0501	279460	708927	
AECOM_pp_0502	279468	708933	
AECOM_pp_0503	279476	708939	
AECOM_pp_0504	279484	708945	
AECOM_pp_0505	279492	708951	
AECOM_pp_0506	279500	708957	
AECOM_pp_0507	279508	708963	
AECOM_pp_0508	279516	708969	
AECOM_pp_0509	279524	708975	
AECOM_pp_0510	279532	708981	
AECOM_pp_0511	279540	708987	
AECOM_pp_0512	279548	708993	
AECOM_pp_0513	279556	708999	
AECOM_pp_0514	279564	709005	
AECOM_pp_0515	279572	709011	
AECOM_pp_0516	279422	708911	0.1
AECOM_pp_0517	279430	708917	0.5
AECOM_pp_0518	279438	708923	0.2
AECOM_pp_0519	279446	708929	0.3
AECOM_pp_0520	279454	708935	0.6
AECOM_pp_0521	279462	708941	0.3
AECOM_pp_0522	279470	708947	0.1
AECOM_pp_0523	279478	708953	0.35
AECOM_pp_0524	279486	708959	0.3
AECOM_pp_0525	279494	708965	0.5
AECOM_pp_0526	279502	708971	0.35
AECOM_pp_0527	279510	708977	0.35

AECOM_pp_0528	279518	708983	0.3
AECOM_pp_0529	279526	708989	0.4
AECOM_pp_0530	279534	708995	0.8
AECOM_pp_0531	279542	709001	0.4
AECOM_pp_0532	279550	709007	0.4
AECOM_pp_0533	279558	709013	0.65
AECOM_pp_0534	279566	709019	
AECOM_pp_0535	279574	709025	
AECOM_pp_0536	279416	708918	
AECOM_pp_0537	279424	708925	
AECOM_pp_0538	279432	708931	
AECOM_pp_0539	279440	708937	
AECOM_pp_0540	279448	708943	
AECOM_pp_0541	279456	708949	
AECOM_pp_0542	279464	708955	
AECOM_pp_0543	279472	708961	
AECOM_pp_0544	279480	708967	
AECOM_pp_0545	279488	708973	
AECOM_pp_0546	279496	708979	
AECOM_pp_0547	279504	708985	
AECOM_pp_0548	279512	708991	
AECOM_pp_0549	279520	708997	
AECOM_pp_0550	279528	709003	
AECOM_pp_0551	279536	709009	
AECOM_pp_0552	279544	709015	
AECOM_pp_0553	279552	709021	
AECOM_pp_0554	279560	709027	
AECOM_pp_0555	279568	709033	
AECOM_pp_0556	279576	709039	
AECOM_pp_0557	279418	708933	0.2
AECOM_pp_0558	279426	708939	0.1
AECOM_pp_0559	279434	708945	0.2
AECOM_pp_0560	279442	708951	0.4
AECOM_pp_0561	279450	708957	0.5
AECOM_pp_0562	279458	708963	0.8
AECOM_pp_0563	279466	708969	0.6
AECOM_pp_0564	279474	708975	0.4
AECOM_pp_0565	279482	708981	0.6
AECOM_pp_0566	279490	708987	0.25
AECOM_pp_0567	279498	708993	0.5
AECOM_pp_0568	279506	708999	0.5
AECOM_pp_0569	279514	709005	0.2
AECOM_pp_0570	279522	709011	0.3
AECOM_pp_0571	279530	709017	0.3
AECOM_pp_0572	279538	709023	0.9
AECOM_pp_0573	279546	709029	0.7
AECOM_pp_0574	279554	709035	0.3
AECOM_pp_0575	279562	709041	

AECOM_pp_0576	279569	709047	
AECOM_pp_0577	279412	708940	
AECOM_pp_0578	279420	708947	
AECOM_pp_0579	279428	708953	
AECOM_pp_0580	279436	708959	
AECOM_pp_0581	279444	708965	
AECOM_pp_0582	279452	708971	
AECOM_pp_0583	279460	708977	
AECOM_pp_0584	279468	708983	
AECOM_pp_0585	279476	708989	
AECOM_pp_0586	279484	708995	
AECOM_pp_0587	279492	709001	
AECOM_pp_0588	279500	709007	
AECOM_pp_0589	279508	709013	
AECOM_pp_0590	279516	709019	
AECOM_pp_0591	279524	709025	0.35
AECOM_pp_0592	279532	709031	0.2
AECOM_pp_0593	279540	709037	0.25
AECOM_pp_0594	279548	709043	0.2
AECOM_pp_0595	279555	709049	0.3
AECOM_pp_0596	279563	709055	0.7
AECOM_pp_0597	279571	709061	0.1
AECOM_pp_0598	279406	708948	0.5
AECOM_pp_0599	279414	708954	0.1
AECOM_pp_0600	279422	708961	0.1
AECOM_pp_0601	279430	708967	0
AECOM_pp_0602	279438	708973	0.3
AECOM_pp_0603	279446	708979	0.1
AECOM_pp_0604	279454	708985	0.1
AECOM_pp_0605	279462	708991	0.1
AECOM_pp_0606	279470	708997	0.2
AECOM_pp_0607	279478	709003	0
AECOM_pp_0608	279486	709009	0.3
AECOM_pp_0609	279494	709015	0.2
AECOM_pp_0610	279502	709021	0.2
AECOM_pp_0611	279510	709027	0.3
AECOM_pp_0612	279518	709033	0.3
AECOM_pp_0613	279526	709039	0.5
AECOM_pp_0614	279534	709045	0.6
AECOM_pp_0615	279541	709051	0.1
AECOM_pp_0616	279549	709057	0.2
AECOM_pp_0617	279557	709063	0.6
AECOM_pp_0618	279565	709069	0.2
AECOM_pp_0619	279400	708956	
AECOM_pp_0620	279408	708962	
AECOM_pp_0621	279416	708968	
AECOM_pp_0622	279424	708975	
AECOM_pp_0623	279432	708981	

AECOM_pp_0624	279440	708987	
AECOM_pp_0625	279448	708993	
AECOM_pp_0626	279456	708999	
AECOM_pp_0627	279464	709005	
AECOM_pp_0628	279472	709011	
AECOM_pp_0629	279480	709017	
AECOM_pp_0630	279488	709023	
AECOM_pp_0631	279496	709029	
AECOM_pp_0632	279504	709035	
AECOM_pp_0633	279512	709041	
AECOM_pp_0634	279519	709047	
AECOM_pp_0635	279527	709053	
AECOM_pp_0636	279535	709059	
AECOM_pp_0637	279543	709065	
AECOM_pp_0638	279551	709071	
AECOM_pp_0639	279559	709077	
AECOM_pp_0640	279567	709083	
AECOM_pp_0641	279402	708970	0.55
AECOM_pp_0642	279410	708976	0.3
AECOM_pp_0643	279418	708983	0.1
AECOM_pp_0644	279426	708989	0.15
AECOM_pp_0645	279434	708995	0.1
AECOM_pp_0646	279442	709001	0.1
AECOM_pp_0647	279450	709007	0.5
AECOM_pp_0648	279458	709013	0.1
AECOM_pp_0649	279466	709019	0.3
AECOM_pp_0650	279474	709025	0.2
AECOM_pp_0651	279482	709031	0.1
AECOM_pp_0652	279490	709037	0
AECOM_pp_0653	279498	709043	0.55
AECOM_pp_0654	279505	709049	0.25
AECOM_pp_0655	279513	709055	0.2
AECOM_pp_0656	279521	709061	0.45
AECOM_pp_0657	279529	709067	0.1
AECOM_pp_0658	279537	709073	0.4
AECOM_pp_0659	279545	709079	0.45
AECOM_pp_0660	279553	709085	0.2
AECOM_pp_0661	279561	709091	0.4
AECOM_pp_0662	279569	709097	0.3
AECOM_pp_0663	279396	708978	
AECOM_pp_0664	279404	708984	
AECOM_pp_0665	279412	708990	
AECOM_pp_0666	279420	708997	
AECOM_pp_0667	279428	709003	
AECOM_pp_0668	279436	709009	
AECOM_pp_0669	279444	709015	
AECOM_pp_0670	279452	709021	
AECOM_pp_0671	279460	709027	

AECOM_pp_0672	279468	709033	
AECOM_pp_0673	279476	709039	
AECOM_pp_0674	279484	709045	
AECOM_pp_0675	279491	709051	
AECOM_pp_0676	279499	709057	
AECOM_pp_0677	279507	709063	
AECOM_pp_0678	279515	709069	
AECOM_pp_0679	279523	709075	
AECOM_pp_0680	279531	709081	
AECOM_pp_0681	279539	709087	
AECOM_pp_0682	279547	709093	
AECOM_pp_0683	279555	709099	
AECOM_pp_0684	279563	709105	
AECOM_pp_0685	279390	708986	0.1
AECOM_pp_0686	279398	708992	0.1
AECOM_pp_0687	279406	708998	0.1
AECOM_pp_0688	279414	709004	0.1
AECOM_pp_0689	279422	709011	0.2
AECOM_pp_0690	279430	709017	0.2
AECOM_pp_0691	279438	709023	0.3
AECOM_pp_0692	279446	709029	0.1
AECOM_pp_0693	279454	709035	0.1
AECOM_pp_0694	279462	709041	0.1
AECOM_pp_0695	279469	709047	0.25
AECOM_pp_0696	279477	709053	0.3
AECOM_pp_0697	279485	709059	0.1
AECOM_pp_0698	279493	709065	0
AECOM_pp_0699	279501	709071	0.4
AECOM_pp_0700	279509	709077	0.5
AECOM_pp_0701	279517	709083	0.4
AECOM_pp_0702	279525	709089	0.1
AECOM_pp_0703	279533	709095	0.4
AECOM_pp_0704	279541	709101	0.2
AECOM_pp_0705	279549	709107	0.1
AECOM_pp_0706	279557	709113	0.2
AECOM_pp_0707	279565	709119	0.4
AECOM_pp_0708	279384	708994	
AECOM_pp_0709	279392	709000	
AECOM_pp_0710	279400	709006	
AECOM_pp_0711	279408	709012	
AECOM_pp_0712	279416	709018	
AECOM_pp_0713	279424	709025	
AECOM_pp_0714	279432	709031	
AECOM_pp_0715	279440	709037	
AECOM_pp_0716	279448	709043	
AECOM_pp_0717	279455	709049	
AECOM_pp_0718	279463	709055	
AECOM_pp_0719	279471	709061	

AECOM_pp_0720	279479	709067	
AECOM_pp_0721	279487	709073	
AECOM_pp_0722	279495	709079	
AECOM_pp_0723	279503	709085	
AECOM_pp_0724	279511	709091	
AECOM_pp_0725	279519	709097	
AECOM_pp_0726	279527	709103	
AECOM_pp_0727	279535	709109	
AECOM_pp_0728	279543	709115	
AECOM_pp_0729	279551	709121	
AECOM_pp_0730	279559	709127	
AECOM_pp_0731	279567	709133	
AECOM_pp_0732	279394	709014	0.5
AECOM_pp_0733	279402	709020	0.1
AECOM_pp_0734	279410	709026	0.2
AECOM_pp_0735	279418	709032	0.25
AECOM_pp_0736	279426	709039	0.2
AECOM_pp_0737	279434	709045	0.2
AECOM_pp_0738	279441	709051	0.1
AECOM_pp_0739	279449	709057	0.1
AECOM_pp_0740	279457	709063	0.1
AECOM_pp_0741	279465	709069	0.4
AECOM_pp_0742	279473	709075	0.1
AECOM_pp_0743	279481	709081	0.3
AECOM_pp_0744	279489	709087	0.3
AECOM_pp_0745	279497	709093	0
AECOM_pp_0746	279505	709099	0.2
AECOM_pp_0747	279513	709105	0.3
AECOM_pp_0748	279521	709111	0.45
AECOM_pp_0749	279529	709117	0.2
AECOM_pp_0750	279537	709123	0.35
AECOM_pp_0751	279545	709129	0.5
AECOM_pp_0752	279553	709135	0.5
AECOM_pp_0753	279561	709141	0.1
AECOM_pp_0754	279569	709147	0.1
AECOM_pp_0755	279388	709022	
AECOM_pp_0756	279396	709028	
AECOM_pp_0757	279404	709034	
AECOM_pp_0758	279412	709040	
AECOM_pp_0759	279419	709047	
AECOM_pp_0760	279427	709053	
AECOM_pp_0761	279435	709059	
AECOM_pp_0762	279443	709065	
AECOM_pp_0763	279451	709071	
AECOM_pp_0764	279459	709077	
AECOM_pp_0765	279467	709083	
AECOM_pp_0766	279475	709089	
AECOM_pp_0767	279483	709095	

AECOM_pp_0768	279491	709101	
AECOM_pp_0769	279499	709107	
AECOM_pp_0770	279507	709113	
AECOM_pp_0771	279515	709119	
AECOM_pp_0772	279523	709125	
AECOM_pp_0773	279531	709131	
AECOM_pp_0774	279539	709137	
AECOM_pp_0775	279547	709143	
AECOM_pp_0776	279555	709149	
AECOM_pp_0777	279563	709155	
AECOM_pp_0778	279571	709161	
AECOM_pp_0779	279382	709030	0.1
AECOM_pp_0780	279390	709036	0.3
AECOM_pp_0781	279398	709042	0.3
AECOM_pp_0782	279405	709048	0.4
AECOM_pp_0783	279413	709054	0.1
AECOM_pp_0784	279421	709061	0.1
AECOM_pp_0785	279429	709067	0.3
AECOM_pp_0786	279437	709073	0.3
AECOM_pp_0787	279445	709079	0.25
AECOM_pp_0788	279453	709085	0.2
AECOM_pp_0789	279461	709091	0.1
AECOM_pp_0790	279469	709097	0.3
AECOM_pp_0791	279477	709103	0.3
AECOM_pp_0792	279485	709109	0
AECOM_pp_0793	279493	709115	0.65
AECOM_pp_0794	279501	709121	0.2
AECOM_pp_0795	279509	709127	0.1
AECOM_pp_0796	279517	709133	0.1
AECOM_pp_0797	279525	709139	0.1
AECOM_pp_0798	279533	709145	0.1
AECOM_pp_0799	279541	709151	0.4
AECOM_pp_0800	279549	709157	0.1
AECOM_pp_0801	279557	709163	0.1
AECOM_pp_0802	279565	709169	0.2
AECOM_pp_0803	279376	709038	
AECOM_pp_0804	279384	709044	
AECOM_pp_0805	279391	709050	
AECOM_pp_0806	279399	709056	
AECOM_pp_0807	279407	709062	
AECOM_pp_0808	279415	709068	
AECOM_pp_0809	279423	709075	
AECOM_pp_0810	279431	709081	
AECOM_pp_0811	279439	709087	
AECOM_pp_0812	279447	709093	
AECOM_pp_0813	279455	709099	
AECOM_pp_0814	279463	709105	
AECOM_pp_0815	279471	709111	

AECOM_pp_0816	279479	709117	
AECOM_pp_0817	279487	709123	
AECOM_pp_0818	279495	709129	
AECOM_pp_0819	279503	709135	
AECOM_pp_0820	279511	709141	
AECOM_pp_0821	279519	709147	
AECOM_pp_0822	279527	709153	
AECOM_pp_0823	279535	709159	
AECOM_pp_0824	279543	709165	
AECOM_pp_0825	279551	709171	
AECOM_pp_0826	279559	709177	
AECOM_pp_0827	279567	709183	
AECOM_pp_0828	279370	709046	0.35
AECOM_pp_0829	279377	709052	0.2
AECOM_pp_0830	279385	709058	0.2
AECOM_pp_0831	279393	709064	0.8
AECOM_pp_0832	279401	709070	0.2
AECOM_pp_0833	279409	709076	0.25
AECOM_pp_0834	279417	709082	0.4
AECOM_pp_0835	279425	709089	0.1
AECOM_pp_0836	279433	709095	0.3
AECOM_pp_0837	279441	709101	0.1
AECOM_pp_0838	279449	709107	0.3
AECOM_pp_0839	279457	709113	0.1
AECOM_pp_0840	279465	709119	0.1
AECOM_pp_0841	279473	709125	0.2
AECOM_pp_0842	279481	709131	0.1
AECOM_pp_0843	279489	709137	0.1
AECOM_pp_0844	279497	709143	0.1
AECOM_pp_0845	279505	709149	0.5
AECOM_pp_0846	279513	709155	0.5
AECOM_pp_0847	279521	709161	0.2
AECOM_pp_0848	279529	709167	0.1
AECOM_pp_0849	279537	709173	0.1
AECOM_pp_0850	279545	709179	0.4
AECOM_pp_0851	279553	709185	0.4
AECOM_pp_0852	279561	709191	
AECOM_pp_0853	279569	709197	
AECOM_pp_0854	279363	709054	0.4
AECOM_pp_0855	279371	709060	0.1
AECOM_pp_0856	279379	709066	0.5
AECOM_pp_0857	279387	709072	0
AECOM_pp_0858	279395	709078	0.3
AECOM_pp_0859	279403	709084	0.4
AECOM_pp_0860	279411	709090	0.3
AECOM_pp_0861	279419	709097	0.4
AECOM_pp_0862	279427	709103	0.3
AECOM_pp_0863	279435	709109	0.45



AECOM_pp_0864	279443	709115	0.4
AECOM_pp_0865	279451	709121	0.1
AECOM_pp_0866	279459	709127	0.2
AECOM_pp_0867	279467	709133	0.1
AECOM_pp_0868	279475	709139	0.45
AECOM_pp_0869	279483	709145	0.1
AECOM_pp_0870	279491	709151	0.35
AECOM_pp_0871	279499	709157	0.2
AECOM_pp_0872	279507	709163	0.1
AECOM_pp_0873	279515	709169	0.45
AECOM_pp_0874	279523	709175	0.5
AECOM_pp_0875	279531	709181	0.1
AECOM_pp_0876	279539	709187	0.4
AECOM_pp_0877	279547	709193	0.7
AECOM_pp_0878	279555	709199	0.7
AECOM_pp_0879	279563	709205	0.6
AECOM_pp_0880	279357	709062	0.25
AECOM_pp_0881	279365	709068	0.3
AECOM_pp_0882	279373	709074	0.1
AECOM_pp_0883	279381	709080	0.3
AECOM_pp_0884	279389	709086	0.1
AECOM_pp_0885	279397	709092	0.55
AECOM_pp_0886	279405	709098	0.15
AECOM_pp_0887	279413	709104	0.4
AECOM_pp_0888	279421	709111	1
AECOM_pp_0889	279429	709117	0.2
AECOM_pp_0890	279437	709123	0.1
AECOM_pp_0891	279445	709129	0.4
AECOM_pp_0892	279453	709135	0.1
AECOM_pp_0893	279461	709141	0.3
AECOM_pp_0894	279469	709147	0.25
AECOM_pp_0895	279477	709153	0.3
AECOM_pp_0896	279485	709159	0.2
AECOM_pp_0897	279493	709165	0.2
AECOM_pp_0898	279501	709171	0.2
AECOM_pp_0899	279509	709177	0.6
AECOM_pp_0900	279517	709183	0.3
AECOM_pp_0901	279525	709189	0.1
AECOM_pp_0902	279533	709195	0.3
AECOM_pp_0903	279541	709201	0.4
AECOM_pp_0904	279549	709207	0.2
AECOM_pp_0905	279557	709213	0.5
AECOM_pp_0906	279511	709191	0.15
AECOM_pp_0907	279519	709197	0.2
AECOM_pp_0908	279527	709203	0.4
AECOM_pp_0909	279535	709209	0.3
AECOM_pp_0910	279543	709215	0.55
AECOM_pp_0911	279550	709221	

AECOM_pp_0912	279505	709199	0.1
AECOM_pp_0913	279513	709205	0
AECOM_pp_0914	279521	709211	0
AECOM_pp_0915	279529	709217	0.1
AECOM_pp_0916	279536	709223	
AECOM_pp_0917	279499	709207	0.4
AECOM_pp_0918	279507	709213	0.1
AECOM_pp_0919	279515	709219	0.1
AECOM_pp_0920	279522	709225	0.6
AECOM_pp_0921	279493	709215	0.1
AECOM_pp_0922	279500	709221	0
AECOM_pp_0923	279508	709227	0.2
AECOM_pp_0924	279516	709233	
AECOM_pp_0925	279486	709223	
AECOM_pp_0926	279494	709229	0.2
AECOM_pp_0927	279502	709235	0.1
AECOM_pp_0928	279480	709231	
AECOM_pp_0929	279488	709237	0.2
AECOM_pp_0930	279474	709239	0.3
AECOM_pp_0931	279482	709245	
AECOM_pp_0932	279337	708808	
AECOM_pp_0933	279305	708784	
AECOM_pp_0934	279289	708772	
AECOM_pp_0935	279313	708790	
AECOM_pp_0936	279369	708832	
AECOM_pp_0937	279321	708796	
AECOM_pp_0938	279353	708820	
AECOM_pp_0939	279345	708814	
AECOM_pp_0940	279329	708802	
AECOM_pp_0941	279273	708760	
AECOM_pp_0942	279361	708826	
AECOM_pp_0943	279377	708838	
AECOM_pp_0944	279257	708748	
AECOM_pp_0945	279297	708778	
AECOM_pp_0946	279265	708754	
AECOM_pp_0947	279281	708766	
OHL_0121	279173	709288	1
OHL_0001	279169	709297	1.1
OHL_0002	279164	709306	1
OHL_0003	279159	709314	1.2
OHL_0004	279154	709323	1.3
OHL_0005	279149	709332	1.3
OHL_0006	279144	709341	1.6
OHL_0007	279139	709349	1.5
OHL_0008	279134	709358	0.5
OHL_0009	279165	709283	0.9
OHL_0010	279160	709292	1.1
OHL_0011	279155	709301	1.1

OHL_0012	279150	709310	1.1
OHL_0013	279145	709318	1.3
OHL_0014	279140	709327	1.4
OHL_0015	279135	709336	1.1
OHL_0016	279130	709344	1.65
OHL_0017	279125	709353	1.6
OHL_0018	279139	709269	0.8
OHL_0019	279134	709277	2
OHL_0020	279129	709286	0.9
OHL_0021	279124	709295	1.2
OHL_0022	279119	709303	1.1
OHL_0023	279114	709312	0.75
OHL_0024	279109	709321	1.3
OHL_0025	279104	709329	0.8
OHL_0026	279099	709338	0.8
OHL_0027	279147	709274	1.2
OHL_0028	279142	709282	1
OHL_0029	279138	709291	0.95
OHL_0030	279133	709300	0.9
OHL_0031	279128	709308	1.2
OHL_0032	279123	709317	1.4
OHL_0033	279118	709326	1.7
OHL_0034	279113	709334	1.4
OHL_0035	279108	709343	1.4
OHL_0036	279156	709279	1.2
OHL_0037	279151	709287	1.1
OHL_0038	279146	709296	1.1
OHL_0039	279141	709305	1.1
OHL_0040	279136	709313	1.6
OHL_0041	279131	709322	1.5
OHL_0042	279126	709331	1.6
OHL_0043	279121	709339	1.5
OHL_0044	279116	709348	1.4
OHL_0045	279165	709283	0.9
OHL_0046	279160	709292	1.1
OHL_0047	279155	709301	1.1
OHL_0048	279150	709310	1.1
OHL_0049	279145	709318	1.3
OHL_0050	279140	709327	1.4
OHL_0051	279135	709336	1.1
OHL_0052	279130	709344	1.65
OHL_0053	279125	709353	1.6
OHL_0054	279182	709293	1.1
OHL_0055	279177	709302	1
OHL_0056	279172	709311	1
OHL_0057	279167	709319	1.4
OHL_0058	279162	709328	1.4
OHL_0059	279157	709337	1.3

OHL_0060	279152	709345	1
OHL_0061	279148	709354	1
OHL_0062	279143	709363	1.5
OHL_0063	279191	709298	1.2
OHL_0064	279186	709307	1.2
OHL_0065	279181	709316	0.7
OHL_0066	279176	709324	1.2
OHL_0067	279171	709333	1.1
OHL_0068	279166	709342	1
OHL_0069	279161	709350	0.7
OHL_0070	279156	709359	1.2
OHL_0071	279151	709368	1.2
OHL_0072	279200	709303	0.8
OHL_0073	279195	709312	0.9
OHL_0074	279190	709321	1.2
OHL_0075	279185	709329	1.1
OHL_0076	279180	709338	1.1
OHL_0077	279175	709347	0.9
OHL_0078	279170	709355	0.85
OHL_0079	279165	709364	1.1
OHL_0080	279160	709373	1.2
OHL_0081	279203	709317	0.8
OHL_0082	279198	709326	1
OHL_0083	279193	709334	1
OHL_0084	279188	709343	0.9
OHL_0085	279183	709352	0.6
OHL_0086	279179	709360	0.4
OHL_0087	279174	709369	1.1
OHL_0088	279169	709378	1.1
OHL_0089	279154	709207	0
OHL_0090	279148	709215	0.7
OHL_0091	279142	709223	0.55
OHL_0092	279137	709231	0.7
OHL_0093	279131	709239	0.5
OHL_0094	279162	709213	0.55
OHL_0095	279156	709221	0.75
OHL_0096	279151	709229	0.4
OHL_0097	279145	709237	0.75
OHL_0098	279139	709245	0.7
OHL_0099	279170	709219	0.45
OHL_0100	279165	709227	0.65
OHL_0101	279159	709235	0.5
OHL_0102	279153	709243	0.5
OHL_0103	279147	709251	0.8
OHL_0104	279179	709225	0.6
OHL_0105	279173	709233	1
OHL_0106	279167	709241	0.7
OHL_0107	279161	709249	0.35

OHL_0108	279155	709257	1
OHL_0109	279181	709239	0.85
OHL_0110	279175	709247	0.4
OHL_0111	279169	709255	0.4
OHL_0112	279163	709263	0.8
OHL_0113	279183	709253	0
OHL_0114	279177	709261	0.45
OHL_0115	279171	709269	0.9
OHL_0116	279201	709321	
OHL_0117	279199	709307	
OHL_0118	279185	709259	0.4
OHL_0119	279182	709245	1
OHL_0120	279180	709231	
OHL_0122	278648	708852	0.8
OHL_0123	278694	708831	1
OHL_0124	278685	708835	1.25
OHL_0125	278676	708839	1.9
OHL_0126	278666	708844	2
OHL_0127	278657	708848	2.4
OHL_0128	278653	708861	0.85
OHL_0129	278698	708840	0.6
OHL_0130	278689	708844	0.75
OHL_0131	278680	708848	1
OHL_0132	278671	708853	1
OHL_0133	278662	708857	2
OHL_0134	278657	708870	0.85
OHL_0135	278702	708849	0.1
OHL_0136	278693	708853	0.1
OHL_0137	278684	708857	0.1
OHL_0138	278675	708862	0.3
OHL_0139	278666	708866	0.8
OHL_0140	278661	708879	0.2
OHL_0141	278706	708858	0.5
OHL_0142	278697	708862	0.1
OHL_0143	278688	708867	0.7
OHL_0144	278679	708871	0
OHL_0145	278670	708875	0
OHL_0146	278666	708889	0.65
OHL_0147	278711	708867	0.55
OHL_0148	278702	708871	0.45
OHL_0149	278693	708876	0.3
OHL_0150	278684	708880	0.7
OHL_0151	278675	708884	0.7
OHL_0152	278670	708898	0.8
OHL_0153	278715	708876	0.8
OHL_0154	278706	708880	0.1
OHL_0155	278697	708885	0.1
OHL_0156	278688	708889	0.5

OHL_0157	278679	708893	0.2
OHL_0158	278717	708868	0.4
S_001	279710	708949	0.4
S_002	279726	708968	0.1
S_003	279741	708988	0.3
S_004	279756	709008	0.1
S_005	279772	709028	0.1
S_006	279787	709047	0.2
S_007	279802	709067	0.1
S_008	279818	709087	0.1
S_009	279833	709106	0.2
S_010	279849	709126	0.2
S_011	279864	709146	
S_012	279879	709166	
S_013	279895	709185	
S_014	279910	709205	
S_015	279925	709225	
S_016	279690	708964	0.5
S_017	279706	708984	0.8
S_018	279721	709004	0.5
S_019	279737	709023	0.35
S_020	279752	709043	0.1
S_021	279767	709063	0
S_022	279783	709082	0.2
S_023	279798	709102	0.1
S_024	279813	709122	0.2
S_025	279829	709142	0.3
S_026	279844	709161	
S_027	279860	709181	
S_028	279875	709201	
S_029	279890	709220	
S_030	279906	709240	
S_031	279671	708980	0.1
S_032	279686	708999	0.2
S_033	279702	709019	0.8
S_034	279717	709039	0
S_035	279732	709058	0
S_036	279748	709078	0.1
S_037	279763	709098	0.4
S_038	279778	709118	0.3
S_039	279794	709137	0.1
S_040	279809	709157	0.1
S_041	279825	709177	
S_042	279840	709196	
S_043	279855	709216	
S_044	279871	709236	
S_045	279886	709256	
S_046	279651	708995	0.4

S_047	279666	709015	0.8
S_048	279682	709034	0.4
S_049	279697	709054	0.1
S_050	279713	709074	0.1
S_051	279728	709093	0.4
S_052	279743	709113	0.4
S_053	279759	709133	0.2
S_054	279774	709153	0.5
S_055	279789	709172	
S_056	279805	709192	
S_057	279820	709212	
S_058	279836	709231	
S_059	279851	709251	
S_060	279866	709271	
S_061	279631	709010	0.6
S_062	279647	709030	0.3
S_063	279662	709050	0.3
S_064	279677	709069	0.2
S_065	279693	709089	0.25
S_066	279708	709109	0.1
S_067	279724	709129	0.1
S_068	279739	709148	0.1
S_069	279754	709168	0.2
S_070	279770	709188	
S_071	279785	709207	
S_072	279800	709227	
S_073	279816	709247	
S_074	279831	709267	
S_075	279847	709286	
S_076	279612	709026	
S_077	279627	709045	
S_078	279642	709065	0.5
S_079	279658	709085	0.1
S_080	279673	709105	0.2
S_081	279689	709124	0.3
S_082	279704	709144	0.4
S_083	279719	709164	0.3
S_084	279735	709183	
S_085	279750	709203	
S_086	279765	709223	
S_087	279781	709243	
S_088	279796	709262	
S_089	279812	709282	
S_090	279827	709302	
S_091	279592	709041	0.6
S_092	279607	709061	0.8
S_093	279623	709080	0.6
S_094	279638	709100	0.1

S_095	279653	709120	0.1
S_096	279669	709140	0.5
S_097	279684	709159	0.4
S_098	279700	709179	0.2
S_099	279715	709199	
S_100	279730	709218	
S_101	279746	709238	
S_102	279761	709258	
S_103	279776	709278	
S_104	279792	709297	
S_105	279807	709317	
S_106	279588	709076	0.4
S_107	279603	709096	0.35
S_108	279618	709116	0
S_109	279634	709135	0.6
S_110	279649	709155	0.3
S_111	279664	709175	0.25
S_112	279680	709194	
S_113	279695	709214	
S_114	279711	709234	
S_115	279726	709254	
S_116	279741	709273	
S_117	279757	709293	
S_118	279772	709313	
S_119	279787	709332	
S_120	279583	709111	0.1
S_121	279599	709131	0.1
S_122	279614	709151	0.5
S_123	279629	709170	0.4
S_124	279645	709190	0.6
S_125	279660	709210	
S_126	279676	709229	
S_127	279691	709249	
S_128	279706	709269	
S_129	279722	709289	
S_130	279737	709308	
S_131	279752	709328	
S_132	279768	709348	
S_133	279579	709146	0.5
S_134	279594	709166	0.4
S_135	279610	709186	0.6
S_136	279625	709205	
S_137	279640	709225	
S_138	279656	709245	
S_139	279671	709265	
S_140	279687	709284	
S_141	279702	709304	
S_142	279717	709324	



S_143	279733	709343	
S_144	279748	709363	
S_145	279575	709181	0.8
S_146	279590	709201	0.6
S_147	279605	709221	
S_148	279621	709241	
S_149	279636	709260	
S_150	279651	709280	
S_151	279667	709300	
S_152	279682	709319	
S_153	279698	709339	
S_154	279713	709359	
S_155	279728	709379	
S_156	279570	709216	0.6
S_157	279586	709236	
S_158	279601	709256	
S_159	279616	709276	
S_160	279632	709295	
S_161	279647	709315	
S_162	279663	709335	
S_163	279678	709354	
S_164	279693	709374	
S_165	279709	709394	
S_166	279551	709232	
S_167	279566	709252	
S_168	279581	709271	
S_169	279597	709291	
S_170	279612	709311	
S_171	279627	709330	
S_172	279643	709350	
S_173	279658	709370	
S_174	279674	709390	
S_175	279689	709409	

## Technical Note

SSEN Transmission Cambushinnie 400kV Substation Upgrade  
Additional Peat Probe Survey

# **Appendix C – Peat Core Logs & Photographs**

## APPENDIX C – Peat Core Logs and Photographs

### Peat Core 1 (PC01) at Trial Pit 11



### Peat Core 2 (PC02) at Trial Pit 1





Peat Core 3 (PC03) at Trial Pit 10

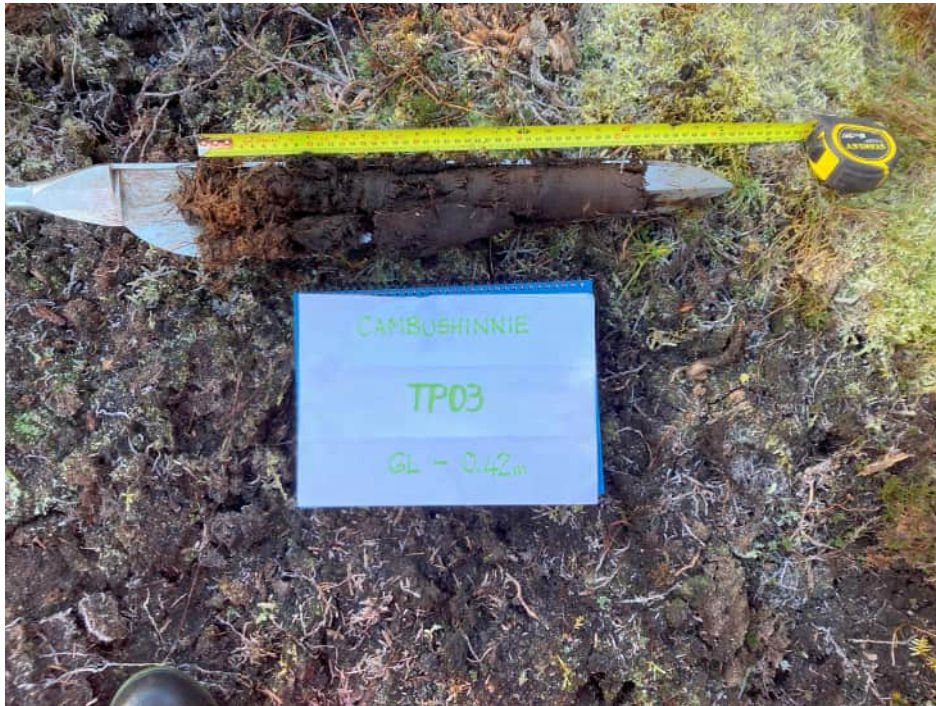


Peat Core 4 (PC04) at Trial Pit 13



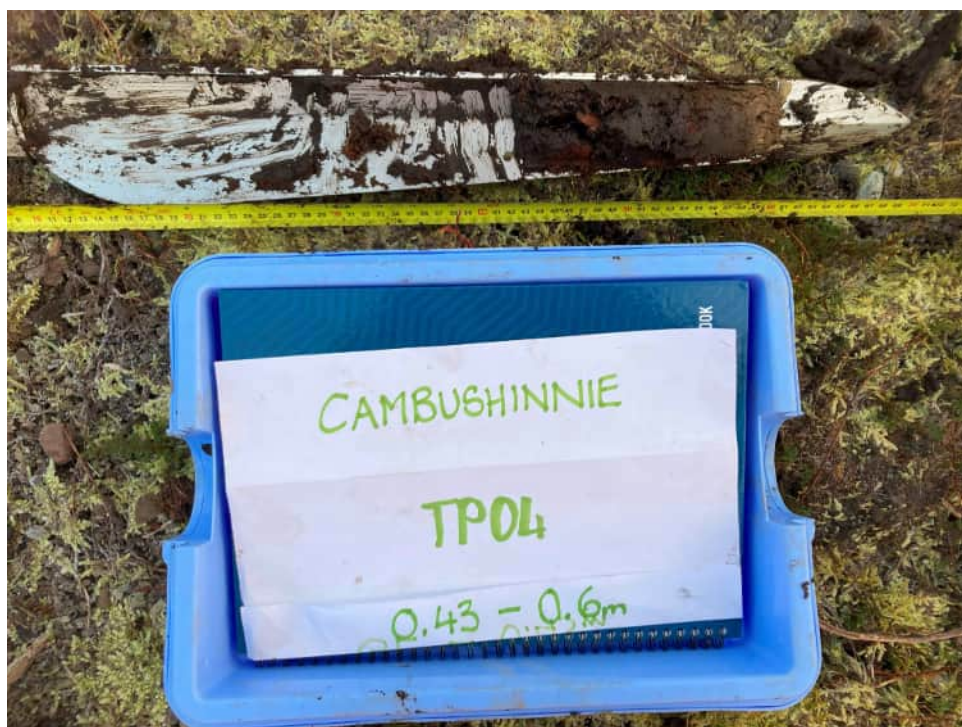


Peat Core 5 (PC05) at Trial Pit 3



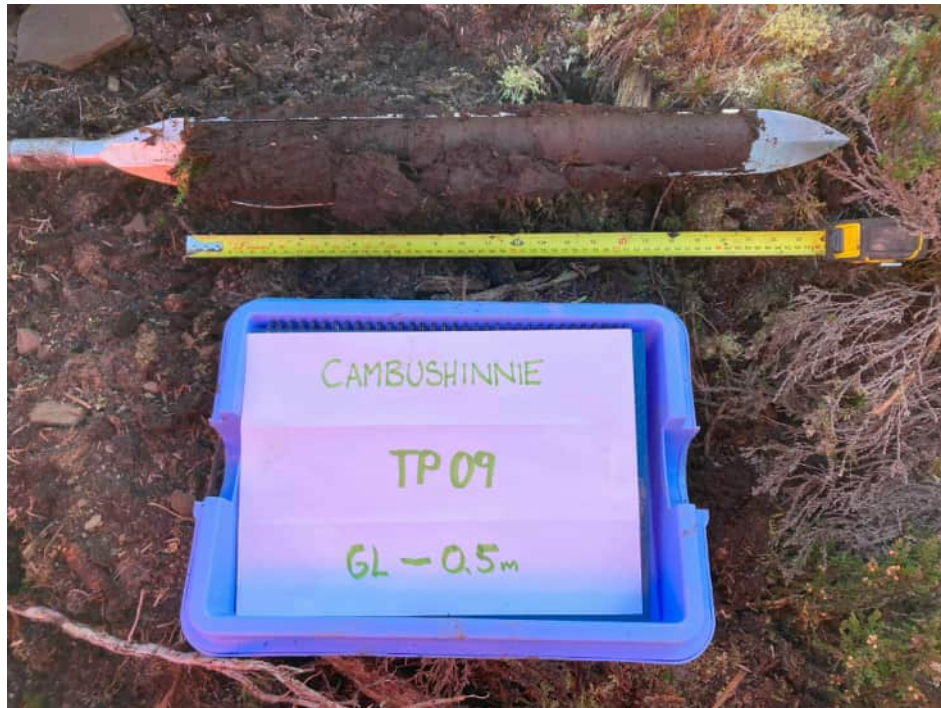


Peat Core 6 (PC06) at Trial Pit 4





Peat Core 7 (PC07) at Trial Pit 09



## Technical Note

SSEN Transmission Cambushinnie 400kV Substation Upgrade  
Additional Peat Probe Survey

# Appendix D – Peat Lab Test Results

AECOM


For the attention of David Raeside

Report No: A15474-1

Issue No: 01

Date of issue: 20/03/2025

### LABORATORY TEST REPORT

Project Name		<b>CAMBUSHINNIE SUB STATION</b>	
Project Number	<b>A15474-1</b>	Date samples received	21/02/2025
Your Ref	A15474-1	Date written instructions received	21/02/2025
Purchase Order	60721943	Date testing commenced	08/03/2025
<b>Please find enclosed the results as summarised below</b>			
Figure / Table	Test Quantity	Description	ISO 17025 Accredited
App A	10	Determination of Water Content	Yes
	4	Bulk Density	Yes
	10	Chemical Analysis	Yes s/c
	~	Notes on Laboratory Procedures - Soil	N/A
Remarks: Complete		Key to symbols used in this report S/C : Testing was sub-contracted	
Issued by: S McDonagh Laboratory Coordinator		 20/03/2025	
Approved Signatories: C Donnelly - Lab Manager, C Loudon - Field Services Manager, S McDonagh - Laboratory Coordinator, S Gilchrist - Quality Supervisor, A Lavery - Concrete and Asphalt Supervisor, J Simpson - Field Testing Training Manager, D Whyte - Senior Lab Technician			
<p>Unless we are notified to the contrary, any remaining samples will be disposed of, 4 weeks after the date this report was issued</p> <p>Results contained in this report are provisional unless signed by an approved signatory</p> <p>This report should not be reproduced without written approval from Terra Tek Limited (Trading as igne)</p> <p>The enclosed results remain the property of Terra Tek Limited (Trading as igne) and we reserve the right to withdraw our report if we have not received cleared funds in accordance with our standard terms and conditions</p> <p>Only those results indicated in this report are UKAS accredited and any opinions or interpretations expressed are outside the scope of UKAS accreditation.</p> <p>Feedback on this report may be left:</p> <p><a href="https://forms.office.com/pages/responsepage.aspx?id=CwCZTiwYeUGWZfIDBJbk1g0fy8UwdJQhLtt3HBD1SytUMzNYWTdFVVPmWjdHREcwQUq1MDJLM09OTI4u&amp;wdLOR">https://forms.office.com/pages/responsepage.aspx?id=CwCZTiwYeUGWZfIDBJbk1g0fy8UwdJQhLtt3HBD1SytUMzNYWTdFVVPmWjdHREcwQUq1MDJLM09OTI4u&amp;wdLOR</a></p>			



6 Belgrave Street, Bellshill Industrial Estate, Bellshill, North Lanarkshire, ML4 3NP

Tel: +44 (0)1236 747 949



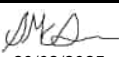
bellshill.testing@igne.com




www.igne.com

Terra Tek Ltd is registered in Scotland. SC121594

Offices in Aston Clinton, Barnsley, Bellshill, Daventry

Head Office: Whistleberry Road, Hamilton, Glasgow, Scotland, ML3 0HP

				Site CAMBUSHINNIE SUB STATION		Contract No <b>A15474-1</b>	
				Client SSEN			
				Engineer AECOM			
Sample Identification							
Exploratory Hole	Depth m	Sample Ref	Sample Type				
PC01 / TP11	0.00-0.37		D	2041278	Brown fibrous Peat		568
PC02 / TP01	0.00-0.25		D	2041279	Brown fibrous Peat		621
PC03 / TP10	0.00-0.40		D	2041280	Brown fibrous Peat		486
PC04 / TP13	0.00-0.30		D	2041281	Brown fibrous Peat		533
PC05 / TP03	0.00-0.42		D1	2041282	Brown fibrous Peat		822
PC05 / TP03	0.42-0.60		D2	2041283	Brown gravelly very silty SAND with organic matter. Gravel is fine to medium		53.6
PC06 / TP04	0.00-0.43		D1	2041284	Brown fibrous Peat		765
PC06 / TP04	0.43-0.56		D2	2041285	Brown fibrous Peat		655
PC07 / TP09	0.00-0.50		D1	2041286	Brown fibrous Peat		511
PC07 / TP09	0.50-1.00		D2	2041287	Brown fibrous Peat		498
Notes							
Originator		Checked & Approved		<b>Determination of the Water Content</b> BS EN ISO 17892-1:2014			
SM		 20/03/2025					
						Sheet 1 of 1	

				Site CAMBUSHINNIE SUB STATION		Contract No <b>A15474-1</b>			
				Client SSEN					
				Engineer AECOM					
Sample Identification					Lab Sample ID	Non Engineering Description	Bulk Density  Mg/m³	Dry Density  Mg/m³	Water Content  %
Hole ID	Depth  m	Sample Ref	Sample Type						
PC03 / TP10	0.00-0.40		D	2041280	Brown fibrous Peat	1.21	0.21	486	
PC05 / TP03	0.00-0.42		D1	2041282	Brown fibrous Peat	1.11	0.12	822	
PC06 / TP04	0.00-0.43		D1	2041284	Brown fibrous Peat	1.09	0.13	765	
PC07 / TP09	0.50-1.00		D2	2041287	Brown fibrous Peat	1.16	0.19	498	
Notes									
Originator	Checked & Approved		<b>BULK DENSITY</b> BS EN ISO 17892-2 Determination of bulk density Linear measurement method				  Sheet 1 of 1		
SM	 20/03/2025								

**Project Number: 25031439****Client:** Terra Tek Ltd T/A Igne**Date Issued:** 20/03/2025**Project Name:** A15474-1 - Cambushinnie Sub Station 1**Samples Analysed**

<b><u>Text ID</u></b>	<b><u>Sample Reference</u></b>	<b><u>Sampling Date</u></b>	<b><u>Sample Type</u></b>	<b><u>Sample Description</u></b>
25031439-001	PC01/TP11-0-D-0.00-0.37		SOLID	Peat Sample
25031439-002	PC02/TP01-0-D-0.00-0.25		SOLID	Peat Sample
25031439-003	PC03/TP10-0-D-0.00-0.40		SOLID	Peat Sample
25031439-004	PC04/TP13-0-D-0.00-0.30		SOLID	Peat Sample
25031439-005	PC05/TP03-0-D-0.00-0.42		SOLID	Peat Sample
25031439-006	PC05/TP03-0-D-0.42-0.60		SOLID	Clay Sample
25031439-007	PC06/TP04-0-D-0.00-0.43		SOLID	Peat Sample
25031439-008	PC06/TP04-0-D-0.43-0.56		SOLID	Peat Sample
25031439-009	PC07/TP09-0-D-0.00-0.50		SOLID	Peat Sample
25031439-010	PC07/TP09-0-D-0.50-1.00		SOLID	Peat Sample



**Analysis Results**

SOCOTEC Sample ID:				25031439-001	25031439-002	25031439-003	25031439-004	25031439-005
Sampling Date:								
Customer ID:				PC01/TP11-0-D-0.00	PC02/TP01-0-D-0.0	PC03/TP10-0-D-0.0	PC04/TP13-0-D-0.0	PC05/TP03-0-D-0.0
Method Code				MDL	Accred.			
Analysis								
CLANDPREP	Total Moisture at 35°C	0.1 %	N	74.3	77.5	79.9	48.4	79.8
	Major Constituents	-	N	PEAT	PEAT	PEAT	PEAT	PEAT
	Minor Constituents	-	N	None	None	None	None	None
	Miscellaneous Constituents	-	N	Organic Matter	Organic Matter	Organic Matter	Organic Matter	Organic Matter
	Colour of Material	-	N	Brown	Brown	Brown	Brown	Brown
PHSOIL	pH (2.5:1 extraction)	1 pH units	U	4.1*	4.3*	4.6*	5.0*	4.3*
ORGMAT	Organic Matter	0.2 % m/m	N	63.5	60.8	59.1	14.7	67.8

**Analysis Results**

SOCOTEC Sample ID:				25031439-006	25031439-007	25031439-008	25031439-009	25031439-010
Sampling Date:								
Customer ID:				PC05/TP03-0-D-0.4	PC06/TP04-0-D-0.0	PC06/TP04-0-D-0.4	PC07/TP09-0-D-0.0	PC07/TP09-0-D-0.5
Method Code				Analysis	MDL	Accred.		
CLANDPREP	Total Moisture at 35°C			0.1 %	N			
	Major Constituents			-	N	33.4	82.3	85.7
	Minor Constituents			-	N	CLAY	PEAT	PEAT
	Miscellaneous Constituents			-	N	Silt	None	None
	Colour of Material			-	N	Organic Matter	Organic Matter	Organic Matter
PHSOIL	pH (2.5:1 extraction)			1 pH units	U	Brown	Brown	Brown
ORGMAT	Organic Matter			0.2 % m/m	N	4.9	4.4*	4.4*
						9.7	68.5	70.2
							69.5	71.7



**Project Number: 25031439**

**Client:** Terra Tek Ltd T/A Igne

**Date Issued:** 20/03/2025

**Project Name:** A15474-1 - Cambushinnie Sub Station 1

**Deviating Sample Report**

<u>Sample Reference</u>	<u>Text ID</u>	<u>Method Code</u>	Incorrect Container	Incorrect Label	Headspace	Incorrect/No Preservative	No Sampling Date	Holding Time
PC01/TP11-0-D-0.00-0.37	25031439-001	CLANDPREP					✓	✓
PC01/TP11-0-D-0.00-0.37	25031439-001	ORGMAT					✓	✓
PC01/TP11-0-D-0.00-0.37	25031439-001	PHSOIL					✓	✓
PC02/TP01-0-D-0.00-0.25	25031439-002	CLANDPREP					✓	✓
PC02/TP01-0-D-0.00-0.25	25031439-002	ORGMAT					✓	✓
PC02/TP01-0-D-0.00-0.25	25031439-002	PHSOIL					✓	✓
PC03/TP10-0-D-0.00-0.40	25031439-003	CLANDPREP					✓	✓
PC03/TP10-0-D-0.00-0.40	25031439-003	ORGMAT					✓	✓
PC03/TP10-0-D-0.00-0.40	25031439-003	PHSOIL					✓	✓
PC04/TP13-0-D-0.00-0.30	25031439-004	CLANDPREP					✓	✓
PC04/TP13-0-D-0.00-0.30	25031439-004	ORGMAT					✓	✓
PC04/TP13-0-D-0.00-0.30	25031439-004	PHSOIL					✓	✓
PC05/TP03-0-D-0.00-0.42	25031439-005	CLANDPREP					✓	✓
PC05/TP03-0-D-0.00-0.42	25031439-005	ORGMAT					✓	✓
PC05/TP03-0-D-0.00-0.42	25031439-005	PHSOIL					✓	✓
PC05/TP03-0-D-0.42-0.60	25031439-006	CLANDPREP					✓	✓
PC05/TP03-0-D-0.42-0.60	25031439-006	ORGMAT					✓	✓
PC05/TP03-0-D-0.42-0.60	25031439-006	PHSOIL					✓	✓
PC06/TP04-0-D-0.00-0.43	25031439-007	CLANDPREP					✓	✓
PC06/TP04-0-D-0.00-0.43	25031439-007	ORGMAT					✓	✓
PC06/TP04-0-D-0.00-0.43	25031439-007	PHSOIL					✓	✓
PC06/TP04-0-D-0.43-0.56	25031439-008	CLANDPREP					✓	✓
PC06/TP04-0-D-0.43-0.56	25031439-008	ORGMAT					✓	✓
PC06/TP04-0-D-0.43-0.56	25031439-008	PHSOIL					✓	✓
PC07/TP09-0-D-0.00-0.50	25031439-009	CLANDPREP					✓	✓
PC07/TP09-0-D-0.00-0.50	25031439-009	ORGMAT					✓	✓
PC07/TP09-0-D-0.00-0.50	25031439-009	PHSOIL					✓	✓
PC07/TP09-0-D-0.50-1.00	25031439-010	CLANDPREP					✓	✓
PC07/TP09-0-D-0.50-1.00	25031439-010	ORGMAT					✓	✓
PC07/TP09-0-D-0.50-1.00	25031439-010	PHSOIL					✓	✓

**Analysis Method**

**Method Code**

CLANDPREP  
CLANDPREP

**Method Description**

Moisture Content @ 35°C  
Solid Material Description

**Analysis Method**

As Received  
As Received



**Project Number:** 25031439

**Client:** Terra Tek Ltd T/A Igne

**Date Issued:** 20/03/2025

**Project Name:** A15474-1 - Cambushinnie Sub Station 1

ORGMAT  
PHSOIL

Organic Matter Content by Colorimetry  
pH (2.5:1)

Air Dried & Ground  
As Received

### Result Report Notes

Letters alongside results signify that the result has associated report notes.  
The report notes are as follows:

<u>Letter</u>	<u>Note</u>
A	Due to the matrix of the sample the laboratory has had to deviate from our standard protocols to be able to process the sample and provide a result. Where applicable the accreditation has been removed and this should be taken into consideration when utilising the data.
B	The QC associated with this result has not wholly met the QMS requirements, the accreditation has therefore been removed. However, the Laboratory has confidence in the performance of the method as a whole and that the integrity of the data has not been significantly compromised.
C	Due to matrix interference, the internal standard and/or surrogate has not met the QMS requirements. This should be taken into consideration when utilising the data.
D	A non-standard volume or mass has been used for this test which has resulted in a raised detection limit.
E	Due to the parameter value being beyond our calibration range (and following the maximum size of dilution allowed, where applicable), the result cannot be quantified and as such the result will appear as a greater than symbol (>) with the accreditation removed. This data should be used for indicative purposes only.
F	Based on the sample history, appearance and smell a dilution was applied prior to testing. Unfortunately, the result is either above (>) or below (<) our calibration range. Results above our calibration range have accreditation removed. The data should be used for indicative purposes only.
G	The day 5 oxygen reading was below the capability of the instrument to detect, and therefore the calculated BOD has been reported unaccredited for guidance purposes only.

### HWOL Acronym Key

<u>Acronym</u>	<u>Description</u>
HS	Headspace Analysis
EH	Extractable Hydrocarbons - i.e everything extracted by the solvent(s)
CU	Clean up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
+	Operator to indicate cumulative e.g. EH_CU+HS_1D_Total



**Project Number:** 25031439

**Client:** Terra Tek Ltd T/A Igne

**Date Issued:** 20/03/2025

**Project Name:** A15474-1 - Cambushinnie Sub Station 1

#### Additional Information

This report refers to samples as received. SOCOTEC UK Ltd takes no responsibility for accuracy or competence of sampling by others.

Results within this report relate only to the samples tested.

The accreditation codes are as follows:

U = UKAS accredited analysis  
M = MCERT accredited analysis  
N = Unaccredited analysis

Any accreditation marked with ^ signify results are reported on a dry weight basis of 105 ° c.

All Air Dried and Ground Samples (ADG) are oven dried at less than 35 ° c.

This report shall not be reproduced except in full, without written approval of the laboratory.

Opinions and interpretations given are outside the scope of our UKAS accreditation.

Any results marked with \* are not covered by our scope of UKAS accreditation. If applicable, further report notes have been added.

Any solid samples where the Major Constituents are not one of the following (Sand, Silt, Clay, Made Ground) are not one of our accredited matrix types.

Any samples marked with a tick in the deviant table is deviant for the specific reason.

Any samples reported as IS, NA, ND mean the following:

IS = Insufficient Sample to complete analysis  
NA = Sample is not amenable for the required analysis  
ND = Results cannot be determined

Items listed with a 'SUB' method code prefix have been carried out by another SOCOTEC department or by an external subcontracted laboratory. Further information is available upon request.

Our deviating sample report does not include deviancy information for Subcontracted analysis. Please see the report from the subcontracted lab for information regarding any deviancies for this analysis.

Summaries of analysis methods are available upon request.

### **End of Certificate of Analysis**

## AIRDRIE LABORATORY NOTES ON LABORATORY PROCEDURES

Samples of various soil types taken during the ground investigation are examined in the laboratory and assessments of their characteristics are used to supplement field observations and laboratory test results.

Preparation and testing is carried out to the requirements of British, European and International Test Standards where applicable, or otherwise in accordance with good practice. All other tests reported or opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.

Test Title/Method		Test Standard/Clause
<b>Soils</b>	Determination of water content - oven drying method (U)	BS 1377-2:2022 cl. 4.2 (BS EN ISO 17892-1:2014+A1:2022 cl. 5)
	Determination of water content - oven drying method (U)	BS 1377-2:1990 cl. 3.2 (W)
	Determination of liquid limit by cone penetrometer method (U)	BS 1377-2:2022 cl. 5.2 (BS EN ISO 17892-12:2018+A2:2022 cl. 5.3)
	Determination of liquid limit by cone penetrometer method (U)	BS 1377-2:1990 cl. 4.3 (W)
	Determination of plastic limit and plasticity index (U)	BS 1377-2:2022 cl. 6 (BS EN ISO 17892-12:2018+A2:2022 cl. 5.5)
	Determination of plastic limit and plasticity index (U)	BS 1377-2:1990 cl. 5.3 (W)
	Determination of density - linear measurement (U)	BS 1377-2:2022 cl. 8 (BS EN ISO 17892-2:2014 cl. 5.1)
	Determination of density - linear measurement (U)	BS 1377-2:1990 cl. 7.2 (W)
	Determination of particle density by gas jar method (U)	BS 1377-2:2022 cl. 9.2
	Determination of particle density by gas jar method (U)	BS 1377-2:1990 cl. 8.2 (W)
	Determination of particle size distribution - sieving method (U)	BS 1377-2:2022 cl. 10 (BS EN ISO 17892-4:2016)
	Particle size distribution - wet sieving method (U)	BS 1377-2:1990 cl. 9.2 (W)
	Particle size distribution - dry sieving method (U)	BS 1377-2:1990 cl. 9.3 (W)
	Determination of particle size distribution - pipette method (U)	BS 1377-2:2022 cl. 10 (BS EN ISO 17892-4:2016)
	Particle size distribution - pipette method (U)	BS 1377-2:1990 cl. 9.4 (W)
	Dry density/water content relationship - 2.5kg rammer method (U)	BS 1377-2:2022 cl. 11.3/11.4
	Dry density/water content relationship - 2.5kg rammer method (U)	BS 1377-4:1990 cl. 3.3/3.5 (W)
	Dry density/water content relationship - 4.5kg rammer method (U)	BS 1377-2:2022 cl. 11.5/11.6
	Dry density/water content relationship - 4.5kg rammer method (U)	BS 1377-4:1990 cl. 3.4/3.6 (W)
	Dry density/water content relationship - Vibrating hammer (U)	BS 1377-2:2022 cl. 11.7
	Dry density/water content relationship - Vibrating hammer (U)	BS 1377-4:1990 cl. 3.7 (W)
	Determination of max/min dry densities for granular soils	BS 1377-2:2022 cl. 12
	Moisture Condition Value - natural water content (U)	BS 1377-2:2022 cl. 13.4
	Moisture Condition Value - natural water content (U)	BS 1377-4:1990 cl. 5.4 (W)
	Moisture Condition Value - water content relationship (U)	BS 1377-2:2022 cl. 13.5
	Moisture Condition Value - water content relationship (U)	BS 1377-4:1990 cl. 5.5 (W)
	Determination of the California Bearing Ratio (U)	BS 1377-2:2022 cl. 15
	Determination of the California Bearing Ratio (U)	BS 1377-4:1990 cl. 7 (W)
	One-dimensional consolidation properties (U)	BS 1377-2:2022 cl. 16 (BS EN ISO 17892-5:2017 cl. 6)
	One-dimensional consolidation properties (U)	BS 1377-5:1990 cl. 3 (W)
	Determination of shear strength by laboratory vane method	BS 1377-2:2022 cl. 24
	Determination of shear strength - small shear box	BS 1377-2:2022 cl. 25 (BS EN ISO 17892-10:2018 cl. 6)
	Determination of shear strength - small shear box (U)	BS 1377-7:1990 cl. 4 (W)
	Determination of unconfined compressive strength	BS 1377-2:2022 cl. 27 (BS EN ISO 17892-7:2018 cl. 6)
	Unconsolidated undrained triaxial test (U)	BS 1377-2:2022 cl. 28 (BS EN ISO 17892-8:2018 cl. 6)
	Undrained shear strength triaxial test single stage (U)	BS 1377-7:1990 cl. 8 (W)
	Undrained shear strength triaxial test multi-stage (U)	BS 1377-7:1990 cl. 9 (W)
	Reference density and water content - Proctor compaction (U)	BS EN 13286-2:2010
	Reference density and water content - Vibrating hammer (U)	BS EN 13286-4:2021
	Determination of the compressive strength	BS EN 13286-41:2021
	Moisture condition value (U)	BS EN 13286-46:2003
	Determination of California bearing ratio (U)	BS EN 13286-47:2021
	Determination of degree of pulverisation (U)	BS EN 13286-48:2005

(U) Denotes UKAS accreditation held; (W) Denotes test standard/method withdrawn/superseded

### Soil Description

Laboratory soil descriptions (non-engineering) and classifications are generally given in accordance with Section 6 of BS 5930:2015+A1:2020 & Section 6 of BS EN ISO 14688-1:2018

Originator	Approved	<b>LABORATORY MATERIALS TESTING - SOILS</b>	<b>Appendix A</b>
CL	DM		



## Technical Note

SSEN Cambushinnie 400kV Substation Upgrade  
Additional Peat Probe Survey

# SSEN Cambushinnie 400kV Substation

## Technical Note: Additional Peat Probe Survey

Client name		Project name	Project number
Scottish & Southern Electricity Networks (SSEN)		Cambushinnie 400kV Substation	60721943
Prepared by	Checked by	Verified by	Approved by
Daniel Whitley	Sean Taylor	David Raeside	Oli Nofal
Date: 15.03.2024	Date: 26.03.2024	Date: 26.03.2024	Date: 26.03.2024
Document No.	Revision	Date	
-	0	26 <sup>th</sup> March 2024	

## Introduction

Scottish & Southern Electricity Networks (SSEN) is proposing to upgrade the existing Beauly-Denny 275 kV circuit to 400 kV to mirror the ratings of the existing 400 kV circuit which runs along the route. SSEN have therefore proposed to construct a new 400kV substation in the proximity of the existing Braco West Substation. As part of the works a new overhead line link is also required to tie-in the new substation to the existing network and a new underground cable connection is required to tie the existing substation into the new. There is also a requirement for a new access track to lead into the new proposed substation, as well as the potential for upgrading the existing, if this does not meet the requirement for construction and operation of the new proposed substation.

AECOM have been commissioned to undertake the Environmental Impact Assessment Report (EIAR) for the new proposed substation, associated access track and the new overhead line link. Based on information provided by the Client and review of the BGS Geoindex<sup>1</sup>, the site is known to be underlain by peat deposits which must be taken into consideration as part of the EIAR process. An initial phase of peat investigation was undertaken by Igne in late 2023 comprising of a 10m x 10m grid of peat probing covering two potential sites of the proposed substation and proposed overhead line. Since the probing was undertaken, the site of the proposed substation and access track into the new substation has been finalised with the probing undertaken identified as not covering the full footprint of the proposed works. As such, additional peat probing has been proposed by AECOM to cover the areas not previously investigated.

This technical note provides details of the additional peat probing undertaken by AECOM.

## Site Description

The site is located on the eastern slopes of Feddal Hill approximately 4.0km west of Braco within Perth and Kinross. The site is within an area of commercial forestry comprising of mature and semi mature trees as well as areas of felled trees. The existing Braco West Substation (275kV) is present to the northeast with overhead electrical cables from the Beauly to Denny line leading into the existing substation. The overhead cables intersect the site from the northeast heading in a southwest direction.

<sup>1</sup> BGS (2024) Geoindex Onshore Viewer, available: <https://mapapps2.bgs.ac.uk/geoindex/home.html> [accessed March 2024]

# Technical Note

SSEN Cambushinnie 400kV Substation Upgrade  
Additional Peat Probe Survey

## Peat Probing Exercise

The additional peat probing was carried out by AECOM during March 2024 and was proposed to comprise of 847 probes on a 10m x 10m grid covering areas of the proposed works site which were not investigated as part of the initial peat probing by Igne in late 2023. The peat investigation can be split into two key areas: a small area northeast of the proposed substation and southwest of the existing substation covering areas of the proposed Contractors compound and a large area south and southwest of the proposed substation largely covering the proposed new access track and SuDs network. The smaller compound area comprised 178 probe locations whereas the larger area comprised 669 probe locations. See Insert 1 which shows these two areas.



**Insert 1: Peat Probe Locations**

During the site works, two areas were identified where trees were still present within the site. Within these areas it was not possible to safely undertake all of the probe hole locations. The two areas in question both relate to the larger probing area of the site. Figure 1 within Appendix A shows the areas where probes were cancelled and provides photographs of the condition. The first area indicatively shown by the red block in Figure 1, comprised mature trees which were severely windblown and had either collapsed or partially collapsed. This made the area inaccessible to the peat probing team. The second area indicatively shown by the purple block in Figure 1, comprised dense semi-mature trees where access could not be made easily and safely. Probing in these areas was undertaken where access could be made safely, however, 390 probes were cancelled due to the access and safety concerns. A further 15 probe locations were also cancelled due to the presence of overlying rock fill or gravel track. The peat probe result table in Appendix B provides the results of the probing exercise and where not undertaken, provides reasoning for this.

In total 442 out of the 847 (52%) probe hole locations were completed. Within the small area to the northeast of the proposed substation peat depths ranged between 0.1m and 0.85m with an average depth of 0.35m. Within the large area to the southwest of the proposed substation peat depths ranged between 0.1m and 3.7m with an average depth of 0.96m. Typically the peat depths identified as part of the additional probing agree with the probing results from the original probing exercise with the majority of the probes recording depths <1.0m. However, deeper depths were recorded locally, all to the southwest of the proposed substation, ranging from 1.0m to 3.7m.

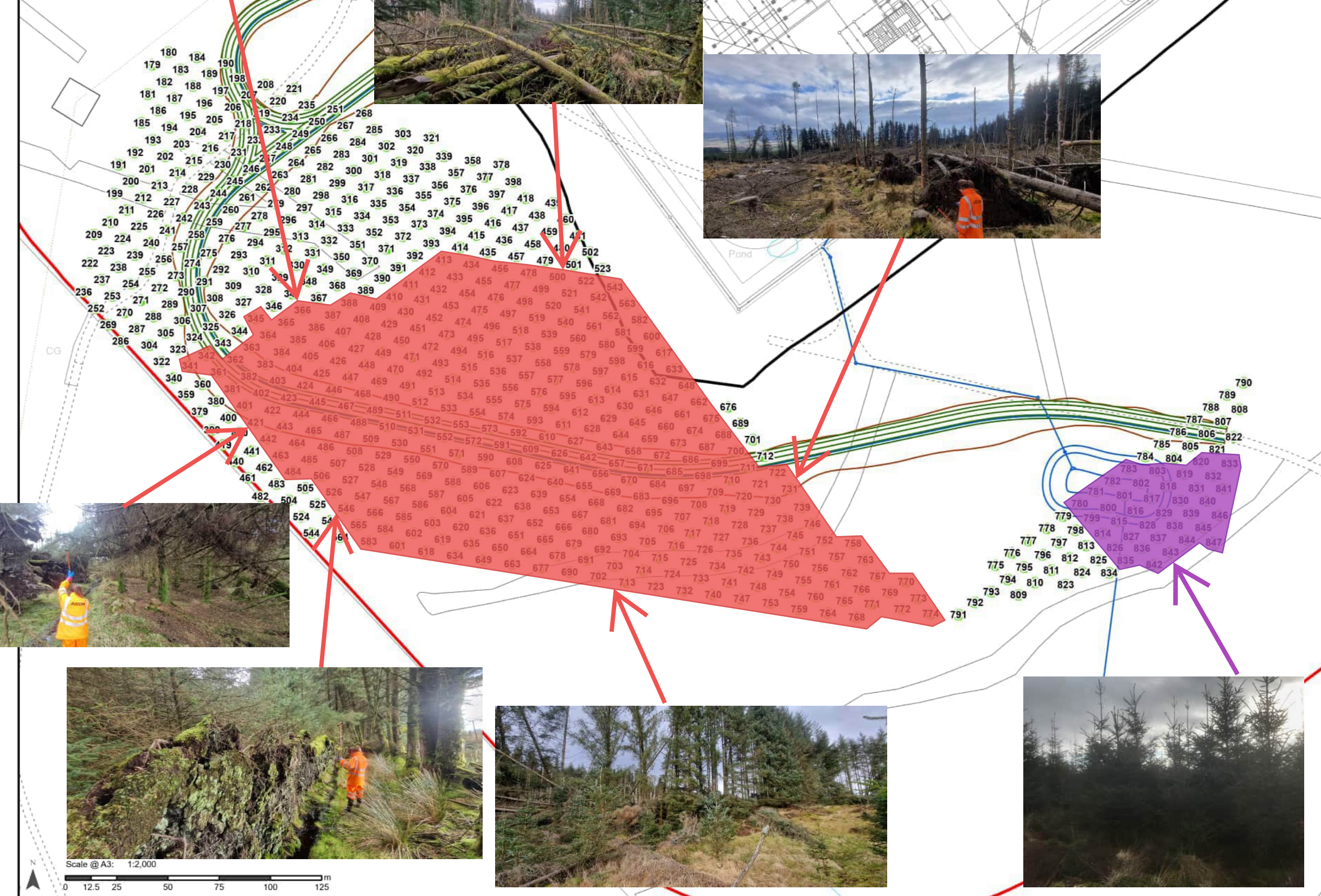
Figure 2 in Appendix A shows the locations of all probing undertaken across the site (i.e. inclusive of original and additional probing), as well as providing details on the depths of peat estimated for each probe location.

## Technical Note

SSEN Cambushinnie 400kV Substation Upgrade  
Additional Peat Probe Survey

# Appendix A – Figures





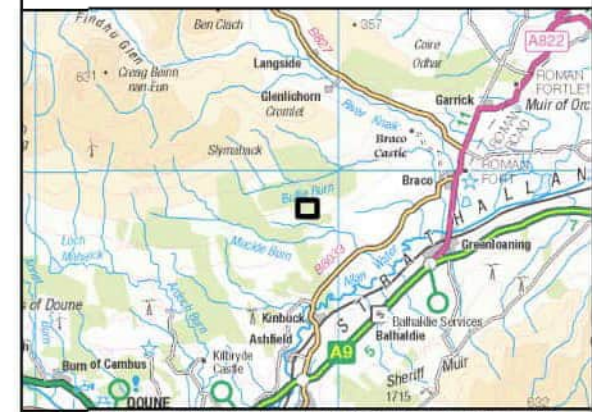
## Legend

### Project Layout

- Red Line Boundary
- Platform Earthworks Extent
- Contractors Compound
- Access Road Earthworks Extent
- Access Road
- Drainage
- Substation Layout

### Peat Probes

- Additional Peat Probe Location



Contains public sector information licensed under the Open Government Licence v3.0. Reproduced by permission of Ordnance Survey on behalf of HMSO. Crown copyright and database right 2024 all rights reserved. Ordnance Survey Licence number 0100022432. SSSEN Transmission take no responsibility for the release or accuracy of latest version Basemaps from Ordnance Survey

Project No: LT000520

Project: Cambushinnie 400kV Substation

Title:  
Peat Probe Locations

Drawn by: JBARR

Date: 27/02/2024

Drawing: Figure 1



## Legend

### Project Layout

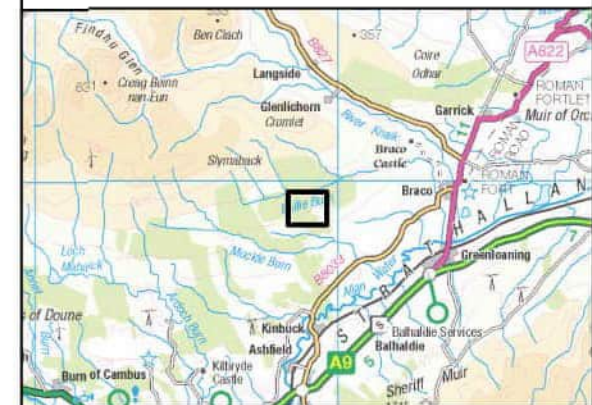
- Red Line Boundary
- Platform Earthworks Extent
- Contractors Compound
- Access Road Earthworks Extent
- Access Road
- Drainage
- Substation Layout

### Peat Probe Depth (m)

- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 2.50
- 2.51 - 3.00
- 3.01 - 3.50
- 3.51 - 4.00
- 4.01 - 5.00
- 5.01 +
- Unable to Survey

09

09



Contains public sector information licensed under the Open Government Licence v3.0.  
Reproduced by permission of Ordnance Survey on behalf of HMSO. Crown copyright and  
database right 2024 all rights reserved. Ordnance Survey Licence number 0100022432.  
SSEN Transmission take no responsibility for the release or accuracy of latest  
version Basemaps from Ordnance Survey

Project No: LT000520

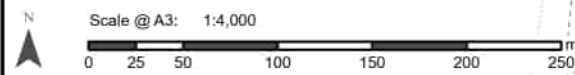
Project: Cambushinnie 400kV Substation

Title:  
Peat Probe Locations and Depths

Drawn by: JBARR

Date: 26/03/2024

Drawing: Figure 2





## Technical Note

SSEN Cambushinnie 400kV Substation Upgrade  
Additional Peat Probe Survey

# **Appendix B – Additional Peat Probe Results**

SSEN Cambushinnie 400kV Substation  
Additional Peat Probe Results

Probe ID	Eastings	Northings	Location	Depth (m bgl)	Comments
PP001	279443	709262	Additional Probe	0.2	
PP002	279451	709268	Additional Probe	0.4	
PP003	279400	709219	Additional Probe	0.65	
PP004	279408	709225	Additional Probe	0.3	
PP005	279416	709230	Additional Probe	0.2	
PP006	279424	709236	Additional Probe	0.25	
PP007	279432	709242	Additional Probe	0.15	
PP008	279440	709248	Additional Probe	0.2	
PP009	279448	709254	Additional Probe	0.2	
PP010	279456	709260	Additional Probe	0.45	
PP011	279358	709175	Additional Probe	0.15	
PP012	279366	709181	Additional Probe	0.1	
PP013	279375	709187	Additional Probe	0.3	
PP014	279383	709193	Additional Probe	0.5	
PP015	279391	709199	Additional Probe	0.25	
PP016	279399	709205	Additional Probe	0.15	
PP017	279407	709211	Additional Probe	0.15	
PP018	279415	709217	Additional Probe	0.2	
PP019	279423	709223	Additional Probe	0.45	
PP020	279431	709229	Additional Probe	0.25	
PP021	279438	709234	Additional Probe	0.21	
PP022	279446	709240	Additional Probe	0.5	
PP023	279454	709246	Additional Probe	0.2	
PP024	279462	709252	Additional Probe	0	
PP025	279331	709144	Additional Probe	0.85	
PP026	279339	709150	Additional Probe	0.4	
PP027	279348	709156	Additional Probe	0.3	
PP028	279356	709162	Additional Probe	0.35	
PP029	279364	709168	Additional Probe	0.2	
PP030	279372	709174	Additional Probe	0	
PP031	279380	709180	Additional Probe	0.4	clean
PP032	279388	709186	Additional Probe	0.15	
PP033	279396	709192	Additional Probe	0.35	
PP034	279404	709198	Additional Probe	0	
PP035	279412	709204	Additional Probe	0.3	
PP036	279420	709210	Additional Probe	0.1	clean
PP037	279428	709216	Additional Probe	0.75	
PP038	279436	709222	Additional Probe	0.4	
PP039	279444	709227	Additional Probe	0.4	
PP040	279452	709233	Additional Probe	0.25	
PP041	279460	709239	Additional Probe	0.3	
PP042	279468	709245	Additional Probe	0.7	clean
PP043	279329	709130	Additional Probe	0.35	
PP044	279337	709136	Additional Probe	0.55	
PP045	279346	709142	Additional Probe	0.35	
PP046	279354	709148	Additional Probe	0.45	
PP047	279362	709154	Additional Probe	0.7	
PP048	279370	709160	Additional Probe	0.5	
PP049	279378	709166	Additional Probe	0.45	
PP050	279386	709172	Additional Probe	0.3	
PP051	279394	709178	Additional Probe	0.2	
PP052	279402	709184	Additional Probe	0.2	
PP053	279410	709190	Additional Probe	0.25	
PP054	279418	709196	Additional Probe	0.35	
PP055	279427	709202	Additional Probe	0.25	
PP056	279435	709208	Additional Probe	0.3	
PP057	279443	709214	Additional Probe	0.25	
PP058	279451	709220	Additional Probe	0.55	
PP059	279459	709226	Additional Probe	0.3	
PP060	279467	709232	Additional Probe	0.4	
PP061	279474	709236	Additional Probe	0.4	
PP062	279335	709122	Additional Probe	0.55	
PP063	279343	709128	Additional Probe	0.3	
PP064	279352	709134	Additional Probe	0.45	
PP065	279360	709140	Additional Probe	0.25	
PP066	279368	709146	Additional Probe	0.65	

SSEN Cambushinnie 400kV Substation  
Additional Peat Probe Results

PP067	279376	709152	Additional Probe	0.45	
PP068	279384	709158	Additional Probe	0.45	
PP069	279392	709164	Additional Probe	0.25	clean
PP070	279400	709170	Additional Probe	0.25	
PP071	279408	709176	Additional Probe	0.35	clean
PP072	279416	709182	Additional Probe	0.25	clean
PP073	279424	709188	Additional Probe	0.4	
PP074	279433	709194	Additional Probe	0.4	
PP075	279441	709200	Additional Probe	0.4	
PP076	279449	709206	Additional Probe	0.35	
PP077	279457	709212	Additional Probe	0.35	
PP078	279465	709218	Additional Probe	0.4	
PP079	279473	709224	Additional Probe	0.4	
PP080	279479	709229	Additional Probe	0.25	
PP081	279341	709114	Additional Probe	0.35	
PP082	279349	709120	Additional Probe	0.55	
PP083	279358	709126	Additional Probe	0.5	
PP084	279366	709132	Additional Probe	0.5	
PP085	279374	709138	Additional Probe	0.45	
PP086	279382	709144	Additional Probe	0.35	
PP087	279390	709150	Additional Probe	0.65	
PP088	279398	709156	Additional Probe	0.4	
PP089	279406	709162	Additional Probe	0.3	
PP090	279414	709168	Additional Probe	0.25	clean
PP091	279422	709174	Additional Probe	0.1	clean
PP092	279430	709180	Additional Probe	0.4	
PP093	279439	709186	Additional Probe	0.35	
PP094	279447	709192	Additional Probe	0.5	
PP095	279455	709198	Additional Probe	0.3	
PP096	279463	709204	Additional Probe	0.7	clean
PP097	279471	709210	Additional Probe	0.35	
PP098	279479	709216	Additional Probe	0.15	
PP099	279485	709220	Additional Probe	0.6	
PP100	279346	709106	Additional Probe	0.4	
PP101	279354	709112	Additional Probe	0.5	
PP102	279363	709118	Additional Probe	0.5	
PP103	279371	709124	Additional Probe	0.45	
PP104	279379	709130	Additional Probe	0.35	
PP105	279387	709136	Additional Probe	0.3	
PP106	279395	709142	Additional Probe	0.5	
PP107	279403	709148	Additional Probe	0.45	
PP108	279411	709154	Additional Probe	0.4	
PP109	279419	709160	Additional Probe	0.5	
PP110	279427	709166	Additional Probe	0.35	
PP111	279435	709172	Additional Probe	0.4	clean
PP112	279444	709178	Additional Probe	0.35	
PP113	279452	709184	Additional Probe	0.45	
PP114	279460	709190	Additional Probe	0.45	
PP115	279468	709196	Additional Probe	0.35	
PP116	279476	709202	Additional Probe	0.45	
PP117	279484	709208	Additional Probe	0.5	
PP118	279491	709213	Additional Probe	0.55	
PP119	279345	709092	Additional Probe	0.45	
PP120	279353	709097	Additional Probe	0.5	
PP121	279361	709103	Additional Probe	0.4	
PP122	279370	709109	Additional Probe	0.7	
PP123	279378	709115	Additional Probe	0.5	
PP124	279386	709121	Additional Probe	0.4	
PP125	279394	709127	Additional Probe	0.4	
PP126	279402	709133	Additional Probe	0.55	
PP127	279410	709139	Additional Probe	0.45	
PP128	279418	709145	Additional Probe	0.25	
PP129	279426	709151	Additional Probe	0.3	
PP130	279434	709157	Additional Probe	0.5	
PP131	279442	709163	Additional Probe	0.3	
PP132	279451	709169	Additional Probe	0.45	
PP133	279459	709175	Additional Probe	0.4	

SSEN Cambushinnie 400kV Substation  
Additional Peat Probe Results

PP134	279467	709181	Additional Probe	0.45	
PP135	279475	709187	Additional Probe	0.4	
PP136	279483	709193	Additional Probe	0.3	
PP137	279491	709199	Additional Probe	0.45	
PP138	279497	709204	Additional Probe	0.55	clean
PP139	279351	709084	Additional Probe	0.25	
PP140	279359	709089	Additional Probe	0.65	
PP141	279367	709095	Additional Probe	0.6	
PP142	279376	709101	Additional Probe	0.25	
PP143	279384	709107	Additional Probe	0.35	
PP144	279392	709113	Additional Probe	0.4	
PP145	279400	709119	Additional Probe	0.35	
PP146	279408	709125	Additional Probe	0.35	
PP147	279416	709131	Additional Probe	0.6	
PP148	279424	709137	Additional Probe	0.48	
PP149	279432	709143	Additional Probe	0.15	clean
PP150	279440	709149	Additional Probe	0.15	clean
PP151	279448	709155	Additional Probe	0.25	clean
PP152	279457	709161	Additional Probe	0.25	
PP153	279465	709167	Additional Probe	0.1	clean
PP154	279473	709173	Additional Probe	0.2	
PP155	279481	709179	Additional Probe	0.25	
PP156	279489	709185	Additional Probe	0.2	
PP157	279497	709191	Additional Probe	0.25	
PP158	279503	709196	Additional Probe	0.15	
PP159	279357	709076	Additional Probe	0.25	
PP160	279364	709081	Additional Probe	0.2	
PP161	279372	709087	Additional Probe	0.55	
PP162	279381	709093	Additional Probe	0.45	
PP163	279389	709099	Additional Probe	0.4	
PP164	279397	709105	Additional Probe	0.4	
PP165	279405	709111	Additional Probe	0.4	
PP166	279413	709117	Additional Probe	0.25	
PP167	279421	709123	Additional Probe	0.2	clean
PP168	279429	709129	Additional Probe	0.15	
PP169	279437	709135	Additional Probe	0.2	
PP170	279445	709141	Additional Probe	0.1	
PP171	279453	709147	Additional Probe	0.25	
PP172	279462	709153	Additional Probe	0.25	
PP173	279470	709159	Additional Probe	0.2	
PP174	279478	709165	Additional Probe	0.2	
PP175	279486	709171	Additional Probe	0.25	
PP176	279494	709177	Additional Probe	0.5	
PP177	279502	709183	Additional Probe	0.15	
PP178	279509	709188	Additional Probe	0.15	
PP179	278719	708882	Additional Probe	0	
PP180	278727	708888	Additional Probe	0.95	
PP181	278717	708868	Additional Probe	0.7	
PP182	278725	708874	Additional Probe	1.1	
PP183	278733	708880	Additional Probe	0.65	
PP184	278741	708886	Additional Probe	0.7	
PP185	278714	708854	Additional Probe	1.1	
PP186	278722	708860	Additional Probe	1.4	
PP187	278730	708866	Additional Probe	1.35	
PP188	278739	708872	Additional Probe	0.1	clean
PP189	278747	708878	Additional Probe	2.1	
PP190	278755	708883	Additional Probe	2.1	
PP191	278703	708833	Additional Probe	0.85	clean
PP192	278711	708839	Additional Probe	0.9	
PP193	278719	708845	Additional Probe	0.4	
PP194	278727	708851	Additional Probe	0.85	
PP195	278736	708857	Additional Probe	1	
PP196	278744	708863	Additional Probe	1.5	
PP197	278752	708869	Additional Probe	1	
PP198	278760	708875	Additional Probe	2.5	
PP199	278701	708819	Additional Probe	1.05	
PP200	278709	708825	Additional Probe	0.55	



SSEN Cambushinnie 400kV Substation  
Additional Peat Probe Results

PP201	278717	708831	Additional Probe	0.55	
PP202	278725	708837	Additional Probe	0	rock fill
PP203	278733	708843	Additional Probe	0.5	
PP204	278741	708849	Additional Probe	1	
PP205	278749	708855	Additional Probe	1.4	
PP206	278758	708861	Additional Probe	1.8	
PP207	278766	708867	Additional Probe	2.3	
PP208	278774	708872	Additional Probe	1.9	
PP209	278691	708799	Additional Probe	2.1	
PP210	278699	708805	Additional Probe	3.7	
PP211	278707	708811	Additional Probe	2.1	
PP212	278715	708817	Additional Probe	2.2	
PP213	278723	708823	Additional Probe	0.3	
PP214	278731	708829	Additional Probe	0	rock fill
PP215	278739	708835	Additional Probe	0	rock fill
PP216	278747	708841	Additional Probe	0	rock fill
PP217	278755	708847	Additional Probe	0	rock fill
PP218	278763	708853	Additional Probe	0	rock fill
PP219	278772	708858	Additional Probe	0	rock fill
PP220	278780	708864	Additional Probe	0	rock fill
PP221	278788	708870	Additional Probe	0	rock fill
PP222	278689	708785	Additional Probe	0.45	
PP223	278697	708791	Additional Probe	1.1	
PP224	278705	708797	Additional Probe	1.75	
PP225	278713	708803	Additional Probe	3.1	
PP226	278721	708809	Additional Probe	3.1	
PP227	278729	708815	Additional Probe	0	rock fill
PP228	278737	708821	Additional Probe	0.55	
PP229	278745	708827	Additional Probe	0.8	
PP230	278753	708833	Additional Probe	2	
PP231	278761	708839	Additional Probe	1.2	
PP232	278769	708845	Additional Probe	2.5	
PP233	278777	708850	Additional Probe	2.1	
PP234	278786	708856	Additional Probe	2	
PP235	278794	708862	Additional Probe	1.9	
PP236	278686	708771	Additional Probe	0.5	
PP237	278695	708777	Additional Probe	0.3	
PP238	278703	708783	Additional Probe	0.5	
PP239	278711	708789	Additional Probe	0.45	
PP240	278719	708795	Additional Probe	1.75	
PP241	278727	708801	Additional Probe	0	rock fill
PP242	278735	708807	Additional Probe	2.2	
PP243	278743	708813	Additional Probe	1.1	
PP244	278751	708819	Additional Probe	0.35	
PP245	278759	708825	Additional Probe	0.8	
PP246	278767	708831	Additional Probe	1.05	
PP247	278775	708836	Additional Probe	1.9	
PP248	278783	708842	Additional Probe	0.95	
PP249	278791	708848	Additional Probe	1.8	
PP250	278799	708854	Additional Probe	1.3	
PP251	278808	708860	Additional Probe	1.95	
PP252	278692	708763	Additional Probe	0.2	clean
PP253	278700	708769	Additional Probe	0	rock fill
PP254	278709	708775	Additional Probe	0.4	
PP255	278717	708781	Additional Probe	0.45	
PP256	278725	708787	Additional Probe	0.6	
PP257	278733	708793	Additional Probe	2.7	
PP258	278741	708799	Additional Probe	2	
PP259	278749	708805	Additional Probe	3	
PP260	278757	708811	Additional Probe	0.7	
PP261	278765	708817	Additional Probe	0.1	clean
PP262	278773	708822	Additional Probe	0.9	
PP263	278781	708828	Additional Probe	1.6	
PP264	278789	708834	Additional Probe	1.95	
PP265	278797	708840	Additional Probe	1.45	
PP266	278805	708846	Additional Probe	1.75	
PP267	278813	708852	Additional Probe	1.5	

SSEN Cambushinnie 400kV Substation  
Additional Peat Probe Results

PP268	278822	708858	Additional Probe	1.85	
PP269	278698	708755	Additional Probe	0.1	clean
PP270	278706	708761	Additional Probe	0	rock fill
PP271	278714	708767	Additional Probe	0.1	clean
PP272	278723	708773	Additional Probe	0.2	clean
PP273	278731	708779	Additional Probe	0.5	clean
PP274	278739	708785	Additional Probe	1	
PP275	278747	708790	Additional Probe	2.2	
PP276	278755	708797	Additional Probe	3	
PP277	278763	708803	Additional Probe	0.2	
PP278	278771	708808	Additional Probe	0.5	
PP279	278779	708814	Additional Probe	0	
PP280	278787	708820	Additional Probe	0.95	
PP281	278795	708826	Additional Probe	1.8	
PP282	278803	708832	Additional Probe	1.5	
PP283	278811	708838	Additional Probe	1	
PP284	278819	708844	Additional Probe	0.9	
PP285	278827	708850	Additional Probe	0.85	
PP286	278704	708747	Additional Probe	0	clean
PP287	278712	708753	Additional Probe	-	fallen trees preventing safe access
PP288	278720	708759	Additional Probe	-	fallen trees preventing safe access
PP289	278728	708765	Additional Probe	0.4	
PP290	278736	708771	Additional Probe	0.25	clean
PP291	278745	708776	Additional Probe	0.1	clean
PP292	278753	708782	Additional Probe	0.2	clean
PP293	278761	708789	Additional Probe	1.95	
PP294	278769	708795	Additional Probe	2.1	
PP295	278777	708800	Additional Probe	0.25	
PP296	278785	708806	Additional Probe	0.4	
PP297	278793	708812	Additional Probe	0.5	
PP298	278801	708818	Additional Probe	0.75	clean - mossy
PP299	278809	708824	Additional Probe	1.2	
PP300	278817	708830	Additional Probe	2	
PP301	278825	708836	Additional Probe	0.7	
PP302	278833	708842	Additional Probe	0.9	
PP303	278841	708848	Additional Probe	1.1	
PP304	278718	708745	Additional Probe	1	
PP305	278726	708751	Additional Probe	0	clean
PP306	278734	708757	Additional Probe	0.45	
PP307	278742	708763	Additional Probe	0.5	
PP308	278750	708768	Additional Probe	0.2	clean
PP309	278759	708774	Additional Probe	0.4	
PP310	278767	708781	Additional Probe	1.1	
PP311	278775	708786	Additional Probe	1.35	
PP312	278783	708792	Additional Probe	2.2	
PP313	278791	708798	Additional Probe	2.1	
PP314	278799	708804	Additional Probe	2.1	
PP315	278807	708810	Additional Probe	0.5	
PP316	278815	708816	Additional Probe	0.25	clean
PP317	278823	708822	Additional Probe	1.1	
PP318	278831	708828	Additional Probe	0.9	
PP319	278839	708834	Additional Probe	1	
PP320	278847	708840	Additional Probe	0.8	
PP321	278855	708846	Additional Probe	0.9	
PP322	278724	708737	Additional Probe	0.4	clean
PP323	278732	708743	Additional Probe	1.5	
PP324	278740	708749	Additional Probe	0.3	
PP325	278748	708754	Additional Probe	0.5	4m N - fallen tree
PP326	278756	708760	Additional Probe	0.5	
PP327	278764	708766	Additional Probe	0.15	clean
PP328	278773	708772	Additional Probe	0.7	
PP329	278781	708778	Additional Probe	0.6	
PP330	278789	708784	Additional Probe	0.85	
PP331	278797	708790	Additional Probe	2.05	
PP332	278805	708796	Additional Probe	2.5	
PP333	278813	708802	Additional Probe	2.3	
PP334	278821	708808	Additional Probe	0.7	

SSEN Cambushinnie 400kV Substation  
Additional Peat Probe Results

PP335	278829	708814	Additional Probe	0.65	
PP336	278837	708820	Additional Probe	0.4	
PP337	278845	708826	Additional Probe	0.55	
PP338	278853	708832	Additional Probe	0.5	
PP339	278861	708837	Additional Probe	1	
PP340	278730	708729	Additional Probe	0.9	8m W
PP341	278738	708735	Additional Probe	-	fallen trees preventing safe access
PP342	278746	708740	Additional Probe	-	fallen trees preventing safe access
PP343	278754	708746	Additional Probe	0.4	5m NW
PP344	278762	708752	Additional Probe	0.4	clean
PP345	278770	708758	Additional Probe	-	fallen trees preventing safe access
PP346	278778	708764	Additional Probe	0.2	clean
PP347	278787	708770	Additional Probe	0.4	
PP348	278795	708776	Additional Probe	0.35	
PP349	278803	708782	Additional Probe	1.6	
PP350	278811	708788	Additional Probe	1.7	
PP351	278819	708794	Additional Probe	2.7	
PP352	278827	708800	Additional Probe	2.65	
PP353	278835	708806	Additional Probe	0.55	
PP354	278843	708812	Additional Probe	0.2	
PP355	278851	708818	Additional Probe	0.15	clean
PP356	278859	708823	Additional Probe	0.9	
PP357	278867	708829	Additional Probe	0.65	
PP358	278875	708835	Additional Probe	0.65	
PP359	278736	708721	Additional Probe	1.8	
PP360	278744	708726	Additional Probe	0.4	
PP361	278752	708732	Additional Probe	-	fallen trees preventing safe access
PP362	278760	708738	Additional Probe	-	fallen trees preventing safe access
PP363	278768	708744	Additional Probe	-	fallen trees preventing safe access
PP364	278776	708750	Additional Probe	-	fallen trees preventing safe access
PP365	278784	708756	Additional Probe	-	fallen trees preventing safe access
PP366	278792	708762	Additional Probe	-	fallen trees preventing safe access
PP367	278800	708768	Additional Probe	0.15	
PP368	278809	708774	Additional Probe	0.4	
PP369	278817	708780	Additional Probe	0.2	
PP370	278825	708786	Additional Probe	1.1	
PP371	278833	708792	Additional Probe	2.5	
PP372	278841	708798	Additional Probe	2.4	
PP373	278849	708804	Additional Probe	2.95	
PP374	278857	708809	Additional Probe	1	
PP375	278865	708815	Additional Probe	0.6	
PP376	278873	708821	Additional Probe	0.5	
PP377	278881	708827	Additional Probe	0.4	clean
PP378	278889	708833	Additional Probe	0.7	
PP379	278742	708713	Additional Probe	1.5	
PP380	278750	708718	Additional Probe	1.2	
PP381	278758	708724	Additional Probe	-	fallen trees preventing safe access
PP382	278766	708730	Additional Probe	-	fallen trees preventing safe access
PP383	278774	708736	Additional Probe	-	fallen trees preventing safe access
PP384	278782	708742	Additional Probe	-	fallen trees preventing safe access
PP385	278790	708748	Additional Probe	-	fallen trees preventing safe access
PP386	278799	708754	Additional Probe	-	fallen trees preventing safe access
PP387	278807	708760	Additional Probe	-	fallen trees preventing safe access
PP388	278815	708766	Additional Probe	-	fallen trees preventing safe access
PP389	278823	708772	Additional Probe	0.4	
PP390	278831	708778	Additional Probe	0.15	clean
PP391	278839	708783	Additional Probe	0.4	clean
PP392	278847	708789	Additional Probe	0.3	5m SE clean
PP393	278855	708795	Additional Probe	0.5	
PP394	278863	708801	Additional Probe	2.6	
PP395	278871	708807	Additional Probe	2.1	
PP396	278879	708813	Additional Probe	1.25	
PP397	278887	708819	Additional Probe	0.8	
PP398	278895	708825	Additional Probe	0.2	Topsoil
PP399	278748	708704	Additional Probe	0.95	
PP400	278756	708710	Additional Probe	1.1	
PP401	278764	708716	Additional Probe	-	fallen trees preventing safe access

SSEN Cambushinnie 400kV Substation  
Additional Peat Probe Results

PP402	278772	708722	Additional Probe	-	fallen trees preventing safe access
PP403	278780	708728	Additional Probe	-	fallen trees preventing safe access
PP404	278788	708734	Additional Probe	-	fallen trees preventing safe access
PP405	278796	708740	Additional Probe	-	fallen trees preventing safe access
PP406	278804	708746	Additional Probe	-	fallen trees preventing safe access
PP407	278812	708752	Additional Probe	-	fallen trees preventing safe access
PP408	278821	708758	Additional Probe	-	fallen trees preventing safe access
PP409	278829	708764	Additional Probe	-	fallen trees preventing safe access
PP410	278837	708769	Additional Probe	-	fallen trees preventing safe access
PP411	278845	708775	Additional Probe	-	fallen trees preventing safe access
PP412	278853	708781	Additional Probe	-	fallen trees preventing safe access
PP413	278861	708787	Additional Probe	-	fallen trees preventing safe access
PP414	278869	708793	Additional Probe	0.3	
PP415	278877	708799	Additional Probe	1.7	
PP416	278885	708805	Additional Probe	2.3	
PP417	278893	708811	Additional Probe	1.9	
PP418	278901	708817	Additional Probe	0.55	
PP419	278754	708697	Additional Probe	0.85	
PP420	278762	708703	Additional Probe	0.8	
PP421	278770	708708	Additional Probe	-	fallen trees preventing safe access
PP422	278778	708714	Additional Probe	-	fallen trees preventing safe access
PP423	278786	708720	Additional Probe	-	fallen trees preventing safe access
PP424	278794	708726	Additional Probe	-	fallen trees preventing safe access
PP425	278802	708732	Additional Probe	-	fallen trees preventing safe access
PP426	278810	708738	Additional Probe	-	fallen trees preventing safe access
PP427	278819	708744	Additional Probe	-	fallen trees preventing safe access
PP428	278827	708750	Additional Probe	-	fallen trees preventing safe access
PP429	278835	708756	Additional Probe	-	fallen trees preventing safe access
PP430	278843	708762	Additional Probe	-	fallen trees preventing safe access
PP431	278851	708768	Additional Probe	-	fallen trees preventing safe access
PP432	278859	708773	Additional Probe	-	fallen trees preventing safe access
PP433	278867	708779	Additional Probe	-	fallen trees preventing safe access
PP434	278875	708785	Additional Probe	-	fallen trees preventing safe access
PP435	278883	708791	Additional Probe	0.2	clean
PP436	278891	708797	Additional Probe	0.55	
PP437	278899	708803	Additional Probe	2.9	
PP438	278907	708809	Additional Probe	1.95	
PP439	278915	708815	Additional Probe	0.4	
PP440	278760	708689	Additional Probe	0.65	
PP441	278768	708694	Additional Probe	0.4	
PP442	278776	708700	Additional Probe	-	fallen trees preventing safe access
PP443	278784	708706	Additional Probe	-	fallen trees preventing safe access
PP444	278792	708712	Additional Probe	-	fallen trees preventing safe access
PP445	278800	708718	Additional Probe	-	fallen trees preventing safe access
PP446	278808	708724	Additional Probe	-	fallen trees preventing safe access
PP447	278816	708730	Additional Probe	-	fallen trees preventing safe access
PP448	278824	708736	Additional Probe	-	fallen trees preventing safe access
PP449	278832	708742	Additional Probe	-	fallen trees preventing safe access
PP450	278841	708748	Additional Probe	-	fallen trees preventing safe access
PP451	278849	708754	Additional Probe	-	fallen trees preventing safe access
PP452	278857	708759	Additional Probe	-	fallen trees preventing safe access
PP453	278865	708765	Additional Probe	-	fallen trees preventing safe access
PP454	278873	708771	Additional Probe	-	fallen trees preventing safe access
PP455	278881	708777	Additional Probe	-	fallen trees preventing safe access
PP456	278889	708783	Additional Probe	-	fallen trees preventing safe access
PP457	278897	708789	Additional Probe	0.4	
PP458	278905	708795	Additional Probe	0.95	
PP459	278913	708801	Additional Probe	3	
PP460	278921	708807	Additional Probe	1.9	
PP461	278766	708681	Additional Probe	0.8	
PP462	278774	708686	Additional Probe	0.1	Topsoil
PP463	278782	708692	Additional Probe	-	fallen trees preventing safe access
PP464	278790	708698	Additional Probe	-	fallen trees preventing safe access
PP465	278798	708704	Additional Probe	-	fallen trees preventing safe access
PP466	278806	708710	Additional Probe	-	fallen trees preventing safe access
PP467	278814	708716	Additional Probe	-	fallen trees preventing safe access
PP468	278822	708722	Additional Probe	-	fallen trees preventing safe access



SSEN Cambushinnie 400kV Substation  
Additional Peat Probe Results

PP469	278830	708728	Additional Probe	-	fallen trees preventing safe access
PP470	278838	708734	Additional Probe	-	fallen trees preventing safe access
PP471	278846	708740	Additional Probe	-	fallen trees preventing safe access
PP472	278855	708745	Additional Probe	-	fallen trees preventing safe access
PP473	278863	708751	Additional Probe	-	fallen trees preventing safe access
PP474	278871	708757	Additional Probe	-	fallen trees preventing safe access
PP475	278879	708763	Additional Probe	-	fallen trees preventing safe access
PP476	278887	708769	Additional Probe	-	fallen trees preventing safe access
PP477	278895	708775	Additional Probe	-	fallen trees preventing safe access
PP478	278903	708781	Additional Probe	-	fallen trees preventing safe access
PP479	278911	708787	Additional Probe	0.8	
PP480	278919	708793	Additional Probe	3.1	
PP481	278927	708799	Additional Probe	2.5	
PP482	278772	708672	Additional Probe	0.35	mud/topsoil
PP483	278780	708678	Additional Probe	0	
PP484	278788	708684	Additional Probe	-	fallen trees preventing safe access
PP485	278796	708690	Additional Probe	-	fallen trees preventing safe access
PP486	278804	708696	Additional Probe	-	fallen trees preventing safe access
PP487	278812	708702	Additional Probe	-	fallen trees preventing safe access
PP488	278820	708708	Additional Probe	-	fallen trees preventing safe access
PP489	278828	708714	Additional Probe	-	fallen trees preventing safe access
PP490	278836	708720	Additional Probe	-	fallen trees preventing safe access
PP491	278844	708726	Additional Probe	-	fallen trees preventing safe access
PP492	278852	708732	Additional Probe	-	fallen trees preventing safe access
PP493	278860	708737	Additional Probe	-	fallen trees preventing safe access
PP494	278869	708743	Additional Probe	-	fallen trees preventing safe access
PP495	278877	708749	Additional Probe	-	fallen trees preventing safe access
PP496	278885	708755	Additional Probe	-	fallen trees preventing safe access
PP497	278893	708761	Additional Probe	-	fallen trees preventing safe access
PP498	278901	708767	Additional Probe	-	fallen trees preventing safe access
PP499	278909	708773	Additional Probe	-	fallen trees preventing safe access
PP500	278917	708779	Additional Probe	-	fallen trees preventing safe access
PP501	278925	708785	Additional Probe	1.1	
PP502	278933	708791	Additional Probe	1.5	
PP503	278778	708664	Additional Probe	0.25	clean
PP504	278786	708670	Additional Probe	0	
PP505	278794	708676	Additional Probe	0.35	clean
PP506	278802	708682	Additional Probe	-	fallen trees preventing safe access
PP507	278810	708688	Additional Probe	-	fallen trees preventing safe access
PP508	278818	708694	Additional Probe	-	fallen trees preventing safe access
PP509	278826	708700	Additional Probe	-	fallen trees preventing safe access
PP510	278834	708706	Additional Probe	-	fallen trees preventing safe access
PP511	278842	708712	Additional Probe	-	fallen trees preventing safe access
PP512	278850	708718	Additional Probe	-	fallen trees preventing safe access
PP513	278858	708723	Additional Probe	-	fallen trees preventing safe access
PP514	278866	708729	Additional Probe	-	fallen trees preventing safe access
PP515	278874	708735	Additional Probe	-	fallen trees preventing safe access
PP516	278882	708741	Additional Probe	-	fallen trees preventing safe access
PP517	278891	708747	Additional Probe	-	fallen trees preventing safe access
PP518	278899	708753	Additional Probe	-	fallen trees preventing safe access
PP519	278907	708759	Additional Probe	-	fallen trees preventing safe access
PP520	278915	708765	Additional Probe	-	fallen trees preventing safe access
PP521	278923	708771	Additional Probe	-	fallen trees preventing safe access
PP522	278931	708777	Additional Probe	-	fallen trees preventing safe access
PP523	278939	708783	Additional Probe	0.8	
PP524	278792	708662	Additional Probe	0	
PP525	278800	708668	Additional Probe	0.1	topsoil
PP526	278808	708674	Additional Probe	-	fallen trees preventing safe access
PP527	278816	708680	Additional Probe	-	fallen trees preventing safe access
PP528	278824	708686	Additional Probe	-	fallen trees preventing safe access
PP529	278832	708692	Additional Probe	-	fallen trees preventing safe access
PP530	278840	708698	Additional Probe	-	fallen trees preventing safe access
PP531	278848	708704	Additional Probe	-	fallen trees preventing safe access
PP532	278856	708709	Additional Probe	-	fallen trees preventing safe access
PP533	278864	708715	Additional Probe	-	fallen trees preventing safe access
PP534	278872	708721	Additional Probe	-	fallen trees preventing safe access
PP535	278880	708727	Additional Probe	-	fallen trees preventing safe access

SSEN Cambushinnie 400kV Substation  
Additional Peat Probe Results

PP536	278888	708733	Additional Probe	-	fallen trees preventing safe access
PP537	278896	708739	Additional Probe	-	fallen trees preventing safe access
PP538	278905	708745	Additional Probe	-	fallen trees preventing safe access
PP539	278913	708751	Additional Probe	-	fallen trees preventing safe access
PP540	278921	708757	Additional Probe	-	fallen trees preventing safe access
PP541	278929	708763	Additional Probe	-	fallen trees preventing safe access
PP542	278937	708769	Additional Probe	-	fallen trees preventing safe access
PP543	278945	708774	Additional Probe	-	fallen trees preventing safe access
PP544	278797	708654	Additional Probe	0.7	topsoil
PP545	278806	708660	Additional Probe	0	
PP546	278814	708666	Additional Probe	-	fallen trees preventing safe access
PP547	278822	708672	Additional Probe	-	fallen trees preventing safe access
PP548	278830	708678	Additional Probe	-	fallen trees preventing safe access
PP549	278838	708684	Additional Probe	-	fallen trees preventing safe access
PP550	278846	708690	Additional Probe	-	fallen trees preventing safe access
PP551	278854	708695	Additional Probe	-	fallen trees preventing safe access
PP552	278862	708701	Additional Probe	-	fallen trees preventing safe access
PP553	278870	708707	Additional Probe	-	fallen trees preventing safe access
PP554	278878	708713	Additional Probe	-	fallen trees preventing safe access
PP555	278886	708719	Additional Probe	-	fallen trees preventing safe access
PP556	278894	708725	Additional Probe	-	fallen trees preventing safe access
PP557	278902	708731	Additional Probe	-	fallen trees preventing safe access
PP558	278910	708737	Additional Probe	-	fallen trees preventing safe access
PP559	278919	708743	Additional Probe	-	fallen trees preventing safe access
PP560	278927	708749	Additional Probe	-	fallen trees preventing safe access
PP561	278935	708755	Additional Probe	-	fallen trees preventing safe access
PP562	278943	708760	Additional Probe	-	fallen trees preventing safe access
PP563	278951	708766	Additional Probe	-	fallen trees preventing safe access
PP564	278811	708652	Additional Probe	-	fallen trees preventing safe access
PP565	278820	708658	Additional Probe	1.95	6m S due to fallen trees
PP566	278828	708664	Additional Probe	-	fallen trees preventing safe access
PP567	278836	708670	Additional Probe	-	fallen trees preventing safe access
PP568	278844	708676	Additional Probe	-	fallen trees preventing safe access
PP569	278852	708682	Additional Probe	-	fallen trees preventing safe access
PP570	278860	708687	Additional Probe	-	fallen trees preventing safe access
PP571	278868	708693	Additional Probe	-	fallen trees preventing safe access
PP572	278876	708699	Additional Probe	-	fallen trees preventing safe access
PP573	278884	708705	Additional Probe	-	fallen trees preventing safe access
PP574	278892	708711	Additional Probe	-	fallen trees preventing safe access
PP575	278900	708717	Additional Probe	-	fallen trees preventing safe access
PP576	278908	708723	Additional Probe	-	fallen trees preventing safe access
PP577	278916	708729	Additional Probe	-	fallen trees preventing safe access
PP578	278924	708735	Additional Probe	-	fallen trees preventing safe access
PP579	278932	708741	Additional Probe	-	fallen trees preventing safe access
PP580	278941	708746	Additional Probe	-	fallen trees preventing safe access
PP581	278949	708752	Additional Probe	-	fallen trees preventing safe access
PP582	278957	708758	Additional Probe	-	fallen trees preventing safe access
PP583	278825	708650	Additional Probe	-	fallen trees preventing safe access
PP584	278833	708656	Additional Probe	-	fallen trees preventing safe access
PP585	278842	708662	Additional Probe	-	fallen trees preventing safe access
PP586	278850	708668	Additional Probe	-	fallen trees preventing safe access
PP587	278858	708673	Additional Probe	-	fallen trees preventing safe access
PP588	278866	708679	Additional Probe	-	fallen trees preventing safe access
PP589	278874	708685	Additional Probe	-	fallen trees preventing safe access
PP590	278882	708691	Additional Probe	-	fallen trees preventing safe access
PP591	278890	708697	Additional Probe	-	fallen trees preventing safe access
PP592	278898	708703	Additional Probe	-	fallen trees preventing safe access
PP593	278906	708709	Additional Probe	-	fallen trees preventing safe access
PP594	278914	708715	Additional Probe	-	fallen trees preventing safe access
PP595	278922	708721	Additional Probe	-	fallen trees preventing safe access
PP596	278930	708727	Additional Probe	-	fallen trees preventing safe access
PP597	278938	708733	Additional Probe	-	fallen trees preventing safe access
PP598	278946	708738	Additional Probe	-	fallen trees preventing safe access
PP599	278955	708744	Additional Probe	-	fallen trees preventing safe access
PP600	278963	708750	Additional Probe	-	fallen trees preventing safe access
PP601	278839	708648	Additional Probe	-	fallen trees preventing safe access
PP602	278847	708654	Additional Probe	-	fallen trees preventing safe access

SSEN Cambushinnie 400kV Substation  
Additional Peat Probe Results

PP603	278856	708659	Additional Probe	-	fallen trees preventing safe access
PP604	278864	708665	Additional Probe	-	fallen trees preventing safe access
PP605	278872	708671	Additional Probe	-	fallen trees preventing safe access
PP606	278880	708677	Additional Probe	-	fallen trees preventing safe access
PP607	278888	708683	Additional Probe	-	fallen trees preventing safe access
PP608	278896	708689	Additional Probe	-	fallen trees preventing safe access
PP609	278904	708695	Additional Probe	-	fallen trees preventing safe access
PP610	278912	708701	Additional Probe	-	fallen trees preventing safe access
PP611	278920	708707	Additional Probe	-	fallen trees preventing safe access
PP612	278928	708713	Additional Probe	-	fallen trees preventing safe access
PP613	278936	708719	Additional Probe	-	fallen trees preventing safe access
PP614	278944	708724	Additional Probe	-	fallen trees preventing safe access
PP615	278952	708730	Additional Probe	-	fallen trees preventing safe access
PP616	278960	708736	Additional Probe	-	fallen trees preventing safe access
PP617	278969	708742	Additional Probe	-	fallen trees preventing safe access
PP618	278853	708645	Additional Probe	-	fallen trees preventing safe access
PP619	278861	708651	Additional Probe	-	fallen trees preventing safe access
PP620	278870	708657	Additional Probe	-	fallen trees preventing safe access
PP621	278878	708663	Additional Probe	-	fallen trees preventing safe access
PP622	278886	708669	Additional Probe	-	fallen trees preventing safe access
PP623	278894	708675	Additional Probe	-	fallen trees preventing safe access
PP624	278902	708681	Additional Probe	-	fallen trees preventing safe access
PP625	278910	708687	Additional Probe	-	fallen trees preventing safe access
PP626	278918	708693	Additional Probe	-	fallen trees preventing safe access
PP627	278926	708699	Additional Probe	-	fallen trees preventing safe access
PP628	278934	708705	Additional Probe	-	fallen trees preventing safe access
PP629	278942	708710	Additional Probe	-	fallen trees preventing safe access
PP630	278950	708716	Additional Probe	-	fallen trees preventing safe access
PP631	278958	708722	Additional Probe	-	fallen trees preventing safe access
PP632	278966	708728	Additional Probe	-	fallen trees preventing safe access
PP633	278974	708734	Additional Probe	-	fallen trees preventing safe access
PP634	278867	708643	Additional Probe	-	fallen trees preventing safe access
PP635	278875	708649	Additional Probe	-	fallen trees preventing safe access
PP636	278883	708655	Additional Probe	-	fallen trees preventing safe access
PP637	278892	708661	Additional Probe	-	fallen trees preventing safe access
PP638	278900	708667	Additional Probe	-	fallen trees preventing safe access
PP639	278908	708673	Additional Probe	-	fallen trees preventing safe access
PP640	278916	708679	Additional Probe	-	fallen trees preventing safe access
PP641	278924	708685	Additional Probe	-	fallen trees preventing safe access
PP642	278932	708691	Additional Probe	-	fallen trees preventing safe access
PP643	278940	708696	Additional Probe	-	fallen trees preventing safe access
PP644	278948	708702	Additional Probe	-	fallen trees preventing safe access
PP645	278956	708708	Additional Probe	-	fallen trees preventing safe access
PP646	278964	708714	Additional Probe	-	fallen trees preventing safe access
PP647	278972	708720	Additional Probe	-	fallen trees preventing safe access
PP648	278980	708726	Additional Probe	-	fallen trees preventing safe access
PP649	278881	708641	Additional Probe	-	fallen trees preventing safe access
PP650	278889	708647	Additional Probe	-	fallen trees preventing safe access
PP651	278897	708653	Additional Probe	-	fallen trees preventing safe access
PP652	278906	708659	Additional Probe	-	fallen trees preventing safe access
PP653	278914	708665	Additional Probe	-	fallen trees preventing safe access
PP654	278922	708671	Additional Probe	-	fallen trees preventing safe access
PP655	278930	708677	Additional Probe	-	fallen trees preventing safe access
PP656	278938	708683	Additional Probe	-	fallen trees preventing safe access
PP657	278946	708688	Additional Probe	-	fallen trees preventing safe access
PP658	278954	708694	Additional Probe	-	fallen trees preventing safe access
PP659	278962	708700	Additional Probe	-	fallen trees preventing safe access
PP660	278970	708706	Additional Probe	-	fallen trees preventing safe access
PP661	278978	708712	Additional Probe	-	fallen trees preventing safe access
PP662	278986	708718	Additional Probe	-	fallen trees preventing safe access
PP663	278895	708639	Additional Probe	-	fallen trees preventing safe access
PP664	278903	708645	Additional Probe	-	fallen trees preventing safe access
PP665	278911	708651	Additional Probe	-	fallen trees preventing safe access
PP666	278920	708657	Additional Probe	-	fallen trees preventing safe access
PP667	278928	708663	Additional Probe	-	fallen trees preventing safe access
PP668	278936	708669	Additional Probe	-	fallen trees preventing safe access
PP669	278944	708674	Additional Probe	-	fallen trees preventing safe access

SSEN Cambushinnie 400kV Substation  
Additional Peat Probe Results

PP670	278952	708680	Additional Probe	-	fallen trees preventing safe access
PP671	278960	708686	Additional Probe	-	fallen trees preventing safe access
PP672	278968	708692	Additional Probe	-	fallen trees preventing safe access
PP673	278976	708698	Additional Probe	-	fallen trees preventing safe access
PP674	278984	708704	Additional Probe	-	fallen trees preventing safe access
PP675	278992	708710	Additional Probe	-	fallen trees preventing safe access
PP676	279000	708715	Additional Probe	0.2	Topsoil
PP677	278909	708637	Additional Probe	-	fallen trees preventing safe access
PP678	278917	708643	Additional Probe	-	fallen trees preventing safe access
PP679	278925	708649	Additional Probe	-	fallen trees preventing safe access
PP680	278933	708655	Additional Probe	-	fallen trees preventing safe access
PP681	278942	708660	Additional Probe	-	fallen trees preventing safe access
PP682	278950	708666	Additional Probe	-	fallen trees preventing safe access
PP683	278958	708672	Additional Probe	-	fallen trees preventing safe access
PP684	278966	708678	Additional Probe	-	fallen trees preventing safe access
PP685	278974	708684	Additional Probe	-	fallen trees preventing safe access
PP686	278982	708690	Additional Probe	-	fallen trees preventing safe access
PP687	278990	708696	Additional Probe	-	fallen trees preventing safe access
PP688	278998	708702	Additional Probe	-	fallen trees preventing safe access
PP689	279006	708707	Additional Probe	0.1	Topsoil
PP690	278923	708635	Additional Probe	-	fallen trees preventing safe access
PP691	278931	708641	Additional Probe	-	fallen trees preventing safe access
PP692	278939	708646	Additional Probe	-	fallen trees preventing safe access
PP693	278947	708652	Additional Probe	-	fallen trees preventing safe access
PP694	278956	708658	Additional Probe	-	fallen trees preventing safe access
PP695	278964	708664	Additional Probe	-	fallen trees preventing safe access
PP696	278972	708670	Additional Probe	-	fallen trees preventing safe access
PP697	278980	708676	Additional Probe	-	fallen trees preventing safe access
PP698	278988	708682	Additional Probe	-	fallen trees preventing safe access
PP699	278996	708688	Additional Probe	-	fallen trees preventing safe access
PP700	279004	708694	Additional Probe	-	fallen trees preventing safe access
PP701	279012	708699	Additional Probe	0	topsoil
PP702	278937	708633	Additional Probe	-	fallen trees preventing safe access
PP703	278945	708638	Additional Probe	-	fallen trees preventing safe access
PP704	278953	708644	Additional Probe	-	fallen trees preventing safe access
PP705	278961	708650	Additional Probe	-	fallen trees preventing safe access
PP706	278970	708656	Additional Probe	-	fallen trees preventing safe access
PP707	278978	708662	Additional Probe	-	fallen trees preventing safe access
PP708	278986	708668	Additional Probe	-	fallen trees preventing safe access
PP709	278994	708674	Additional Probe	-	fallen trees preventing safe access
PP710	279002	708680	Additional Probe	-	fallen trees preventing safe access
PP711	279010	708686	Additional Probe	-	fallen trees preventing safe access
PP712	279018	708691	Additional Probe	0	topsoil
PP713	278951	708630	Additional Probe	-	fallen trees preventing safe access
PP714	278959	708636	Additional Probe	-	fallen trees preventing safe access
PP715	278967	708642	Additional Probe	-	fallen trees preventing safe access
PP716	278975	708648	Additional Probe	-	fallen trees preventing safe access
PP717	278983	708654	Additional Probe	-	fallen trees preventing safe access
PP718	278992	708660	Additional Probe	-	fallen trees preventing safe access
PP719	279000	708666	Additional Probe	-	fallen trees preventing safe access
PP720	279008	708672	Additional Probe	-	fallen trees preventing safe access
PP721	279016	708678	Additional Probe	-	fallen trees preventing safe access
PP722	279024	708683	Additional Probe	-	fallen trees preventing safe access
PP723	278965	708628	Additional Probe	-	fallen trees preventing safe access
PP724	278973	708634	Additional Probe	-	fallen trees preventing safe access
PP725	278981	708640	Additional Probe	-	fallen trees preventing safe access
PP726	278989	708646	Additional Probe	-	fallen trees preventing safe access
PP727	278997	708652	Additional Probe	-	fallen trees preventing safe access
PP728	279006	708658	Additional Probe	-	fallen trees preventing safe access
PP729	279014	708664	Additional Probe	-	fallen trees preventing safe access
PP730	279022	708670	Additional Probe	-	fallen trees preventing safe access
PP731	279030	708675	Additional Probe	-	fallen trees preventing safe access
PP732	278979	708626	Additional Probe	-	fallen trees preventing safe access
PP733	278987	708632	Additional Probe	-	fallen trees preventing safe access
PP734	278995	708638	Additional Probe	-	fallen trees preventing safe access
PP735	279003	708644	Additional Probe	-	fallen trees preventing safe access
PP736	279011	708650	Additional Probe	-	fallen trees preventing safe access

SSEN Cambushinnie 400kV Substation  
Additional Peat Probe Results

PP737	279020	708656	Additional Probe	-	fallen trees preventing safe access
PP738	279028	708661	Additional Probe	-	fallen trees preventing safe access
PP739	279036	708666	Additional Probe	-	fallen trees preventing safe access
PP740	278993	708624	Additional Probe	-	fallen trees preventing safe access
PP741	279001	708630	Additional Probe	-	fallen trees preventing safe access
PP742	279009	708636	Additional Probe	-	fallen trees preventing safe access
PP743	279017	708642	Additional Probe	-	fallen trees preventing safe access
PP744	279025	708647	Additional Probe	-	fallen trees preventing safe access
PP745	279033	708653	Additional Probe	-	fallen trees preventing safe access
PP746	279041	708658	Additional Probe	-	fallen trees preventing safe access
PP747	279007	708622	Additional Probe	-	fallen trees preventing safe access
PP748	279015	708628	Additional Probe	-	fallen trees preventing safe access
PP749	279023	708634	Additional Probe	-	fallen trees preventing safe access
PP750	279031	708639	Additional Probe	-	fallen trees preventing safe access
PP751	279039	708645	Additional Probe	-	fallen trees preventing safe access
PP752	279047	708650	Additional Probe	-	fallen trees preventing safe access
PP753	279021	708620	Additional Probe	-	fallen trees preventing safe access
PP754	279029	708625	Additional Probe	-	fallen trees preventing safe access
PP755	279037	708631	Additional Probe	-	fallen trees preventing safe access
PP756	279045	708637	Additional Probe	-	fallen trees preventing safe access
PP757	279053	708642	Additional Probe	-	fallen trees preventing safe access
PP758	279061	708649	Additional Probe	-	fallen trees preventing safe access
PP759	279035	708617	Additional Probe	-	fallen trees preventing safe access
PP760	279043	708623	Additional Probe	-	fallen trees preventing safe access
PP761	279051	708629	Additional Probe	-	fallen trees preventing safe access
PP762	279059	708634	Additional Probe	-	fallen trees preventing safe access
PP763	279067	708641	Additional Probe	-	fallen trees preventing safe access
PP764	279049	708615	Additional Probe	-	fallen trees preventing safe access
PP765	279057	708621	Additional Probe	-	fallen trees preventing safe access
PP766	279065	708626	Additional Probe	-	fallen trees preventing safe access
PP767	279073	708633	Additional Probe	-	fallen trees preventing safe access
PP768	279063	708613	Additional Probe	-	fallen trees preventing safe access
PP769	279079	708625	Additional Probe	-	fallen trees preventing safe access
PP770	279087	708630	Additional Probe	-	fallen trees preventing safe access
PP771	279070	708619	Additional Probe	-	fallen trees preventing safe access
PP772	279085	708617	Additional Probe	-	fallen trees preventing safe access
PP773	279093	708622	Additional Probe	-	fallen trees preventing safe access
PP774	279099	708614	Additional Probe	-	fallen trees preventing safe access
PP775	279130	708638	Additional Probe	0.25	clean
PP776	279138	708644	Additional Probe	0.45	
PP777	279146	708650	Additional Probe	0.25	clean - topsoil
PP778	279155	708656	Additional Probe	0.45	
PP779	279163	708662	Additional Probe	0.5	7m W
PP780	279171	708668	Additional Probe	-	Dense tree coverage preventing access
PP781	279179	708674	Additional Probe	-	Dense tree coverage preventing access
PP782	279187	708679	Additional Probe	-	Dense tree coverage preventing access
PP783	279195	708685	Additional Probe	-	Dense tree coverage preventing access
PP784	279203	708691	Additional Probe	0.1	topsoil
PP785	279211	708697	Additional Probe	0.4	
PP786	279219	708703	Additional Probe	0	gravel road
PP787	279227	708709	Additional Probe	0	
PP788	279235	708715	Additional Probe	0.1	
PP789	279243	708721	Additional Probe	0.2	
PP790	279251	708727	Additional Probe	0.4	
PP791	279112	708614	Additional Probe	0.55	5m SE due to fallen trees
PP792	279120	708620	Additional Probe	0.5	
PP793	279128	708625	Additional Probe	0.3	clean
PP794	279136	708631	Additional Probe	0.5	topsoil
PP795	279144	708637	Additional Probe	0.25	
PP796	279153	708643	Additional Probe	0.55	clean
PP797	279161	708649	Additional Probe	0.5	
PP798	279169	708655	Additional Probe	0.25	clean
PP799	279177	708661	Additional Probe	-	Dense tree coverage preventing access
PP800	279185	708666	Additional Probe	-	Dense tree coverage preventing access
PP801	279193	708672	Additional Probe	-	Dense tree coverage preventing access
PP802	279201	708678	Additional Probe	-	Dense tree coverage preventing access
PP803	279209	708684	Additional Probe	-	Dense tree coverage preventing access



SSEN Cambushinnie 400kV Substation  
Additional Peat Probe Results

PP804	279217	708690	Additional Probe	0.25	
PP805	279225	708696	Additional Probe	0.1	
PP806	279233	708702	Additional Probe	0	gravel road
PP807	279241	708708	Additional Probe	0.2	topsoil
PP808	279249	708714	Additional Probe	0.35	topsoil
PP809	279142	708623	Additional Probe	0.35	topsoil
PP810	279150	708629	Additional Probe	0.4	clean
PP811	279158	708635	Additional Probe	0.25	clean
PP812	279167	708641	Additional Probe	0.4	
PP813	279175	708647	Additional Probe	0.3	clean
PP814	279183	708653	Additional Probe	-	Dense tree coverage preventing access
PP815	279191	708659	Additional Probe	-	Dense tree coverage preventing access
PP816	279199	708664	Additional Probe	-	Dense tree coverage preventing access
PP817	279207	708670	Additional Probe	-	Dense tree coverage preventing access
PP818	279215	708676	Additional Probe	-	Dense tree coverage preventing access
PP819	279223	708682	Additional Probe	-	Dense tree coverage preventing access
PP820	279231	708688	Additional Probe	-	Dense tree coverage preventing access
PP821	279239	708694	Additional Probe	0.2	clean
PP822	279247	708700	Additional Probe	0	
PP823	279165	708628	Additional Probe	0.4	topsoil
PP824	279173	708634	Additional Probe	0.35	topsoil
PP825	279181	708640	Additional Probe	0.35	topsoil
PP826	279189	708646	Additional Probe	-	Dense tree coverage preventing access
PP827	279197	708651	Additional Probe	-	Dense tree coverage preventing access
PP828	279205	708657	Additional Probe	-	Dense tree coverage preventing access
PP829	279213	708663	Additional Probe	-	Dense tree coverage preventing access
PP830	279221	708669	Additional Probe	-	Dense tree coverage preventing access
PP831	279229	708675	Additional Probe	-	Dense tree coverage preventing access
PP832	279237	708681	Additional Probe	-	Dense tree coverage preventing access
PP833	279245	708687	Additional Probe	-	Dense tree coverage preventing access
PP834	279186	708634	Additional Probe	0.5	clean
PP835	279194	708640	Additional Probe	-	Dense tree coverage preventing access
PP836	279202	708646	Additional Probe	-	Dense tree coverage preventing access
PP837	279210	708651	Additional Probe	-	Dense tree coverage preventing access
PP838	279218	708657	Additional Probe	-	Dense tree coverage preventing access
PP839	279226	708663	Additional Probe	-	Dense tree coverage preventing access
PP840	279234	708669	Additional Probe	-	Dense tree coverage preventing access
PP841	279242	708675	Additional Probe	-	Dense tree coverage preventing access
PP842	279208	708638	Additional Probe	-	Dense tree coverage preventing access
PP843	279216	708644	Additional Probe	-	Dense tree coverage preventing access
PP844	279224	708650	Additional Probe	-	Dense tree coverage preventing access
PP845	279232	708656	Additional Probe	-	Dense tree coverage preventing access
PP846	279240	708662	Additional Probe	-	Dense tree coverage preventing access
PP847	279237	708649	Additional Probe	-	Dense tree coverage preventing access