

Denny to Wishaw Network Upgrades (DWNO)

Stage 1 Peat Management Plan
Substations

SP Transmission

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1 Introduction

1.1 Background

- 1.1.1 AECOM Limited (AECOM) have been appointed by SP Transmission (the Applicant) to produce a Stage 1 Peat Management Plan (PMP) for the Substations Works as part of the larger Denny to Wishaw Network Upgrade project.
- 1.1.2 The overall Denny to Wishaw Network Upgrade Project (the 'Project'), as described within Volume 1 Chapter 4 of the EIA Report, is covered under three separate Peat Management Plans (one for the uprated overhead lines, one for the New Build Overhead Line and one for the substations). As such, when referring to the 'Project' within this PMP this covers the works associated with the substation included as part of the Project. Reference shall be made to the other PMPs where peat management details relating to the other parts of the Project is required.
- 1.1.3 SP Transmission worked with the National Energy System Operator (NESO) to identify that, for the UK to meet its net-zero carbon emissions targets, there is a requirement to reinforce the electricity network between Denny and Wishaw. This led to the development of the Denny to Wishaw Network Optimisation (DWNNO) project. The Project is required to enable this reinforcement and also deliver connections to meet the NESO's Pathway to 2030 Holistic Network Design (HND). The published HND sets out the blueprint for the onshore and offshore transmission infrastructure that's required to support the forecasted growth in the UK's renewable electricity to create a pathway to Net Zero. The studies undertaken as part of the NESO's Pathway to 2030 HND also recommended the development of the overall Denny to Wishaw Network Upgrade Scheme Project.
- 1.1.4 This document has been prepared to inform the Scottish Ministers (by way of the Energy Consents Unit (ECU)), local planning authorities of Falkirk Council and North Lanarkshire Council and statutory consultees (Scottish Environment Protection Agency (SEPA) and NatureScot) of the proposed peat management methods to be employed during the construction of the Project. Based on a desk study review of the available information along with information gathered from site walkovers, it is anticipated that peat is only present at the Denny North Substation works. Information on this is included in the relevant desk studies completed for the Project, submitted as standalone report as part of the planning application. As such, this PMP focuses on the works involved with the Denny North Substation, however, the general principles presented as part of this PMP can be followed if peat were to be encountered at any of the other substations. The ground related works associated with the Denny North Substation which may not be on the existing platform are as follows:
- Extension of the existing security fencing;
 - Modifications to existing Denny North Substation;
 - Bulk earthworks and drainage works surrounding the existing platform;
 - Construction of two new towers;
 - Construction of temporary construction compounds at each new tower location;
 - Creation of level areas for use as pulling positions for the wiring operations; and
 - Installation of temporary access tracks from public roads to the infrastructure locations within the Project.
- 1.1.5 **Figure 2** located within **Appendix A** contains plans showing the works associated with Denny North Substation.
- 1.1.6 Note at the time of writing peat probing for the wider Project was ongoing. Although the probing across the Denny North Substation area was generally completed, the proposals for peat may be subject to change depending on the peat volumes estimated for the other areas of the Project. As such, peat volumes associated with the Project were not made at this stage and mitigation to reduce peat disturbance and/or excavation have not been confirmed. This PMP therefore provides the principles that will be followed as part of the Project without the specific detail. On completion of the peat probing

survey for the rest of the Project, this PMP will be updated, along with the other PMPs for the Project, and resubmitted as part of the planning application.

1.2 Site Description

- 1.2.1 Denny North Substation is located approximately 1.7km north of Denny at approximate National Grid Reference (NGR) NS 82427 84513. The main works area is located adjacent to the existing Denny North Substation, on the southern and eastern extents. The location of Denny North Substation is as shown on **Figures 1**, in **Appendix A**. Note wayleaves are included along the alignments of the temporary access tracks for the purposes of the planning application with these shown on the plans included as **Figure 2**, in **Appendix A**.
- 1.2.2 The Project is located within a largely level area of terrain. As the Project is adjacent to the existing Denny North Substation, existing access tracks and overhead lines are present. In the wider surrounding the land use is open heathland and grassland with sporadic localised tree regen present.

1.3 Objectives

- 1.3.1 This Stage 1 PMP relates to the works associated with the construction of the Substations and in particular Denny North Substation. The Stage 1 PMP has been prepared to satisfy the requirements of the Environmental Impact Assessment (EIA) (detailed in **Section 2** below) and to ensure that there has been systematic consideration of peat management and a quantitative assessment throughout the development process. Although a single EIA Report has been produced for the Project, three separate PMPs have been produced grouping the key aspects into uprated overhead lines, New Build Overhead Line and substations. Therefore this Stage 1 PMP should be read in conjunction with the associated Uprated Overhead Line PMP and New Build Overhead Line PMP.
- 1.3.2 The Stage 1 PMP looks to address the design principles set out by regulators as identified in Section 2 by providing background details on the possible peat deposits based on desk based sources, an investigation on the peat extent and depth across the Project, details on how the disturbance on peat has been avoided or minimised, details on the elements of the Project that are likely to require peat excavation, details on the approximate predicted volumes of peat that would be excavated during the construction activities, an estimation on the characteristics of the peat that would be excavated, and the principles of how and where this excavated peat would be stored, reused and managed.
- 1.3.3 Note at this stage as the peat probing for the Project has not yet been completed, full details on the volumes of peat excavated and the proposed peat reuse have not been made. This is due to the potential effects the peat volumes from the other aspects of the Project may have on the Substations peat management. Therefore, this document provides the general principles to be followed and on completion on the peat probing this PMP will be updated to include all required details and confirm proposals.
- 1.3.4 A Stage 2 PMP shall be prepared by the Principal Contractor and / or their Designer considering the management of peat for the works post-consent / pre-construction following further development and finalisation of the Project and on any further information becoming available (e.g. further ground investigation).

2 Stage 1 Peat Management Plan

- 2.1.1 This Stage 1 Peat Management Plan considers the excavation of peat and soils resulting from construction of the Project. It considers the potential for minimising the excavation and disturbance of the peat in order to avoid or reduce the generation of any unnecessary surplus of soil and peat.

2.2 Design Principles

- 2.2.1 As relates to the hierarchy of design principles to minimise the impacts associated with excavation of peat, SEPA follows those of the waste hierarchy set out in the Waste Framework Directive (WFD) 2008/98 as below:

- **Prevention:** The best management option for waste peat is to prevent or limit its production. This can be done through design, positioning infrastructure in shallower peat or through consideration of alternative construction methods or engineering solutions e.g. floated roads;
- **Reuse:** (on site or off site for peatland restoration): Using excavated peat in construction or reinstatement (where suitable) e.g., restoration of temporary infrastructure, peatland restoration etc. SEPA's preference is for all peat excavated onsite to be reused within the site itself;
- **Recycling / Recovery / Treatment:** Where peat cannot be reused on site or off site for restoration, it may be used for agricultural benefit or treated / blended with other materials to form a soil substitute or used in other relevant works. This use would require a waste management license or registration as an exempt activity and compliance with the legal requirements;
- **Storage:** Temporary storage of peat on site (for example, during short periods in the construction phase) and then reuse. Should the peat become unsuitable for reuse during storage, it would be classed as a waste material; and
- **Disposal (Waste):** Only after all other options have been explored and discounted would this option be considered.

- 2.2.2 In addition to the SEPA hierarchy, NPF4 mitigation hierarchy as presented within the guidance document "Advising on peatland, carbon-rich soils and priority peatland habitats in development management"¹ includes for the following:

- Avoid – by removing the impact outset;
- Minimise – by reducing the impact;
- Restore – by repairing damaged habitats;
- Offset – by compensating for residual impacts that remains, with preference to on-site over off-site measures; and
- Enhance – biodiversity, including restoring degraded habitats and building and strengthening nature networks.

- 2.2.3 Note this PMP covers the aspects of the SEPA hierarchy and the first three points from the NPF4 hierarchy. The purpose of a PMP is not to also cover off offsetting or enhancement with these aspects generally covered in a Landscape Habitat Management Plan (LHMP) where considered.

- 2.2.4 Three main stages within the development process are defined within the guidance and describe what data should be gathered and assessed to inform the site specific PMP:

- **Stage 1:** Environmental Impact Assessment (EIA);
- **Stage 2:** Post-consent / pre-construction; and
- **Stage 3:** Construction.

- 2.2.5 This report has been prepared in accordance with the requirements for Stage 1.

¹ NatureScot (2023) Advising on peatland, carbon-rich soils and priority peatland habitats in development management. Available at: [Advising on peatland, carbon-rich soils and priority peatland habitats in development management | NatureScot](#)

- 2.2.6 As part of the development process, SEPA were contacted and provided Pre-Application Consultation advice. This advice indicated that the Stage 1 PMP typically corresponds with the Outline PMP as highlighted within the Pre-Application Consultation advice.
- 2.2.7 This report details the methodologies required to assess all potential surplus peat material and presents estimates from the Designer of the expected volume of excavated peat material and anticipated reuse locations with associated estimated volumes.

2.3 Policy and Guidance for Peat Management

2.3.1 The significance of peatlands is most evident in their protection by various legislation, policy and local, national or international initiatives including, but not limited to:

- United Kingdom Biodiversity Action Plan (UKBAP)²;
- Scotland's National Peatland Plan (SNH, 2015)³;
- European Council Habitats Directive 92/43/EEC (Council of the European Communities, 1992)⁴;
- Scottish Biodiversity List (SBL) (Scottish Government, 2013)⁵;
- European Council Water Framework Directive 2000/60/EC (Council of the European Communities, 2000)⁶;
- Scottish Government discussion paper on the Management of Carbon-Rich Soils (Scottish Government, 2010)⁷;
- Scottish Soil Framework (Scottish Government, 2009)⁸; and
- Climate Change Plan (2017-2032) (Scottish Government, 2017)⁹.

2.3.2 SEPA has a statutory and legislative duty to ensure that where peat spoil is generated during construction; that it is stored, reused, treated or disposed of correctly; which may require authorisation or permits.

2.3.3 As such, the following documents were referred to for guidance during the preparation of this PMP:

- Advising on peatland, carbon-rich soils and priority peatland habitats in development management¹
- Developments on Peatland: Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste¹⁰;
- SEPA Regulatory Guidance – Developments on Peat and Off-site Uses of Waste Peat¹¹;
- SEPA Planning Advice Note – Assessing the impact of developments on peatland and carbon rich soils¹²;
- Good Practice During Wind Farm Construction¹³;
- Peatland Survey. Guidance on Developments on Peatland¹⁴;
- Floating Roads on Peat¹⁵;

² United Kingdom Biodiversity Action Plan (UKBAP) (1994) Biodiversity The UK Action Plan. Available at:

<https://data.jncc.gov.uk/data/cb0ef1c9-2325-4d17-9f87-a5c84fe400bd/UKBAP-BiodiversityActionPlan-1994.pdf>

³ Scottish Nature Heritage (2015) Scotland's National Peatland Plan. Available at: <https://www.nature.scot/doc/scotlands-national-peatland-plan-working-our-future>

⁴ Council of the European Communities (1992) European Council Habitats Directive 92/43/EEC. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A01992L0043-20130701>

⁵ Scottish Government (2013) Scottish Biodiversity List (SBL). Available at: <https://www.nature.scot/doc/scottish-biodiversity-list>

⁶ Council of the European Communities (2000) European Council Water Framework Directive 2000/60/EC. Available at: <https://www.legislation.gov.uk/eu/2000/60/contents>

⁷ Scottish Government (2010) Scottish Government discussion paper on the Management of Carbon-Rich Soils. Available at: <https://www.iucn-uk-peatlandprogramme.org/news/scottish-government-publishes-discussion-paper-carbon-rich-soils>

⁸ Scottish Government (2009) Scottish Soil Framework. Available at: <https://www.gov.scot/publications/scottish-soil-framework/#:~:text=Published%201%20May%202009&text=This%20framework%20is%20aimed%20at,key%20stakeholders%20with%20an%20interest>

⁹ Scottish Government (2017) Update to the Climate Change Plan (2018-2032). Available at:

<https://www.gov.scot/publications/securing-green-recovery-path-net-zero-update-climate-change-plan-20182032/>

¹⁰ Scottish Renewables, SEPA (2012). Developments on Peatland: Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste, Version 1.

¹¹ SEPA (May 2017). SEPA Regulatory Guidance – Developments on Peat and Off-site Uses of Waste Peat, SEPA Guidance, WST-G-052. Version 1.

¹² SEPA (2025) SEPA Planning Advice Note – Assessing the impact of developments on peatland and carbon rich soils, December 2025

¹³ Scottish Renewables, Scottish Natural Heritage, SEPA, Forestry Commission Scotland, Historic Environment Scotland, Marine Scotland Science, AECOW (2019). *Good Practice During Wind Farm Construction*, 4th Edition.

¹⁴ Scottish Government, Scottish Natural Heritage, SEPA (2017). *Peatland Survey. Guidance on Developments on Peatland*

¹⁵ Scottish Natural Heritage, Forestry Commission Scotland (2010). *Floating Roads on Peat*, August 2010.

- Constructed Tracks in the Scottish Uplands¹⁶;
- Restoration Techniques using Peat Spoil from Construction Works¹⁷;
- Peatland Action – Technical Compendium¹⁸;
- Guidance on Design Principles for Renewable Energy Development on Peatland on the National Forests and Land¹⁹;
- A risk-based approach to peatland restoration and peat instability²⁰; and
- Windfarms and blanket peat²¹.

2.3.4 Additionally, the publication of the National Planning Framework (NPF) 4²² has illustrated the importance of more considered practices within peatlands. Policy 5 of NPF4 states:

a) Development proposals will only be supported if they are designed and constructed: i) In accordance with the mitigation hierarchy by first avoiding and then minimising the amount of disturbance to soils on undeveloped land; and ii) In a manner that protects soil from damage including from compaction and erosion, and that minimises soil sealing.

c) Development proposals on peatland, carbon-rich soils and priority peatland habitat will only be supported for: i) Essential infrastructure and there is a specific locational need and no other suitable site; iv) The generation of energy from renewable sources that optimises the contribution of the area to greenhouse gas emissions reductions targets; iv) Restoration of peatland habitats.

d) Where development on peatland, carbon-rich soils or priority peatland habitat is proposed, a detailed site specific assessment will be required to identify: i) the baseline depth, habitat condition, quality and stability of carbon rich soils; ii) the likely effect of the development on peatland, including on soil disturbance; iii) the likely net effect of the development on climate emissions and loss of carbon.

2.3.5 As such, the details required in line with NPF4 have been considered in this Stage 1 (Outline) PMP.

¹⁶ Scottish Natural Heritage (2015) Constructed Tracks in the Scottish Uplands, 2nd Edition, updated September 2015

¹⁷ EnviroCentre on behalf of SEPA (2011) Restoration Techniques using Peat Spoil from Construction Works, Final Report, July 2011.

¹⁸ NatureScot (2024) Peatland Action – Technical Compendium [online], available: <https://www.nature.scot/doc/peatland-action-technical-compendium> [last accessed July 2024].

¹⁹ Forestry and Land Scotland (2024) Guidance on Design Principles for Renewable Energy Development on Peatland on the National Forests and Land, Version 1, January 2024

²⁰ Mills, A.J. and Rushton, D. (2023) A risk-based approach to peatland restoration and peat instability. NatureScot Research Report 1259

²¹ Lindsay, R. and Bragg, O. (2005) Windfarms and blanket peat – A report on the Derrybrien bog slide, Second Edition

²² The Scottish Government (2024) National Planning Framework 4, available: <https://www.gov.scot/publications/national-planning-framework-4/>

3 Ground Conditions

- 3.1.1 A Geotechnical and Geo-Environmental Desk Study has been produced by AECOM covering the Project, which is provided as a standalone document as part of the planning application submitted for the wider DWNO Project. The below subsections summarise the relevant information pertaining to this PMP from the desk study produced and supplements this with further detail where required.

3.2 Topography

- 3.2.1 Ordnance Survey topographic information was obtained for the Project at Denny Substation. This file was used to produce the contour data as shown on **Figure 2a** within **Appendix A**. The topographic data obtained indicates the Site is generally level at around 100 mAOD, with potential for very local variations.

3.3 Geology and Soil Maps

- 3.3.1 The BGS GeoIndex²³ indicates the majority of the Denny North Substation works area to be underlain by glacial till, with peat being recorded in the northern section. Historic boreholes located adjacent to the works area records topsoil and peats over glacial till. A historic borehole on the south western extent records glacial till to 7.5 mbgl, without proving depth of superficial deposits. In the north eastern extent of the existing substation bedrock in the form of sandstone was recorded at 4.5 mbgl, indicating that bedrock is variable across the area.
- 3.3.2 The National Soil Map of Scotland²⁴ records the Denny North Substation works area to be predominately underlain by basin peats or peaty gleys with the northern extent recorded to be underlain by noncalcareous gleys.
- 3.3.3 Review of the 2016 Carbon and Peatland Map layer of the National Soil Map of Scotland Interactive Map Viewer¹⁵ indicates that the Denny North Substation works area is predominately underlain by Class 3 and Class 5 carbon and peatland soils. Class 3 is located in the southern portion of the works area, with Class 5 located in the eastern portion. Class 4 peatland is recorded in the immediate surroundings of the works area, to the south and east, and Class 0 mineral soils recorded in the immediate surroundings to the north and west. There were no Class 1 or 2 Nationally important carbon rich soils, deep peat and priority peatland habitat identified.
- 3.3.4 Reference shall be made to **Figures 3, 4 and 5**, within **Appendix A**, which shows the BGS superficial information, National Soil Map of Scotland Data and 2016 Carbon and Peatland Map data respectively, as relates to the Denny North Substation works area.
- 3.3.5 The 2016 Carbon and Peatland map provides further details on the classifications recorded as follows:
- Class 3 – Predominantly peaty soil with some peat soil. Dominant vegetation cover is not priority peatland habitat but is associated with wet and acidic type. Occasional peatland habitats can be found. Most soils are carbon rich soils, with some areas of deep peat;
 - 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; and
 - 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.
- 3.3.6 Based on review of the available desk-based information, it is expected that the majority of the Denny North Substation works areas, which are not contained on the existing platform or other existing infrastructure, are underlain by peat soils and require further consideration.

²³ BGS (2026) GeoIndex Onshore, Available: <https://mapapps2.bgs.ac.uk/geoindex/home.html> [accessed March 2026]

²⁴ NatureScot (2026) National Soil Map of Scotland Interactive Map Viewer, Available: https://map.environment.gov.scot/Soil_maps/?layer=1# [accessed March 2026]

3.4 Historic OS Mapping and Aerial Photography Review

- 3.4.1 Historic OS mapping was reviewed for the Denny North Substation works area as part of the Groundsure Report obtained for the Desk Studies and is included as Appendix D of the AECOM Geotechnical and Geo-Environmental Desk Study which is included as a standalone report as part of the wider DWNO Project submission. In summary, the Site has been largely undeveloped until the 1950s where the first electrical lines and pylons were noted within the vicinity of the Site. Sometime between 1968 and 1973, several pylons were constructed within the Site boundary with associated access tracks. In the 2015 mapping the Denny North Substation is indicated to be present at the Site. From the historical review, features of concern identified on site include pylons and the substation, while in the surrounding area include quarries and refuse tips dated between 1890s to 1990s. Based on the historic mapping reviewed, no clear indications of peat deposits have been identified, however, it is clear that where infrastructure is now present peat deposits are unlikely and that where peat deposits are present in the works area these are likely to have been modified or degraded as a result of the development works.
- 3.4.2 A review of aerial photographs relating to the Project was undertaken using the historical aerial imagery time slider of Google Earth²⁵. The earliest available aerial photograph from 1985 was of poor resolution, however, it appeared to record the Project to be predominately heathland or rough grassland. The next map with good quality resolution was from 2005 which includes the overhead lines. The next available photograph which showed any change was from 2015, which shows the construction of the currently existing substation, alongside all associated infrastructure and access tracks. A 3rd overhead line is also constructed, extending northwards from the substation. No further significant development was noted through the images reviewed up to the most recent from 2025. As relates to peat, the imagery reviewed does seem to show potential areas where peat may be present which typically correspond to the recorded peat locations as per Section 3.3 of this document.

²⁵ Google (2024) Google Earth

4 Peat within the Development

4.1 Field Observations

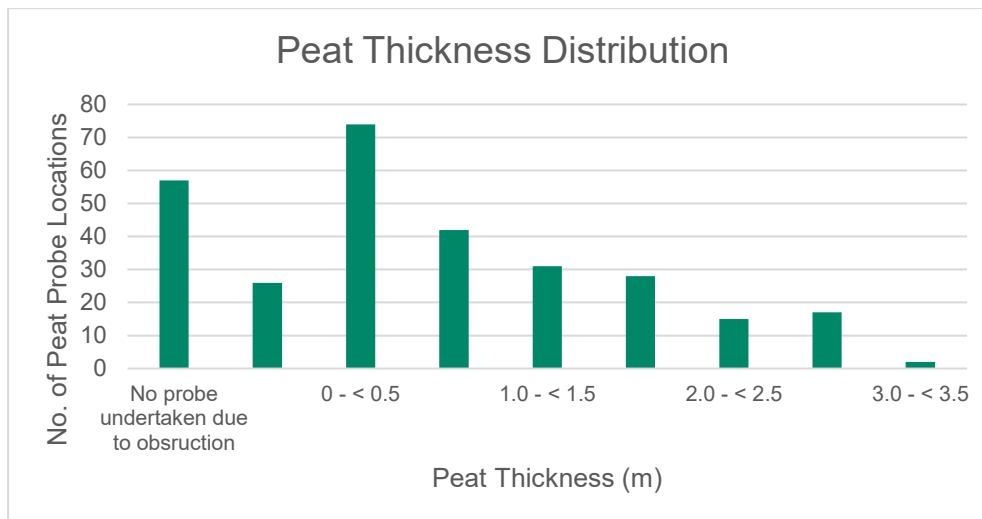
- 4.1.1 A site walkover was undertaken as part of the desk study for the works at Denny North Substation. The site walkover typically agreed with the information obtained through the desk-based research above. The Proposed Development primarily comprises hardstanding and asphalt, which is part of the existing Denny North Substation and access tracks. East of the substation the Site has dense scrub, on flat, well-drained ground. This habitat has developed from disturbed land and was possibly created as part of historical landscaping measures. There were no records of protected or notable species found during the surveys. Given the land surrounding the existing substation has been noted as being disturbed it is likely that any peat present within this will have been modified as part of the existing infrastructure construction.

4.2 Definitions of Peat

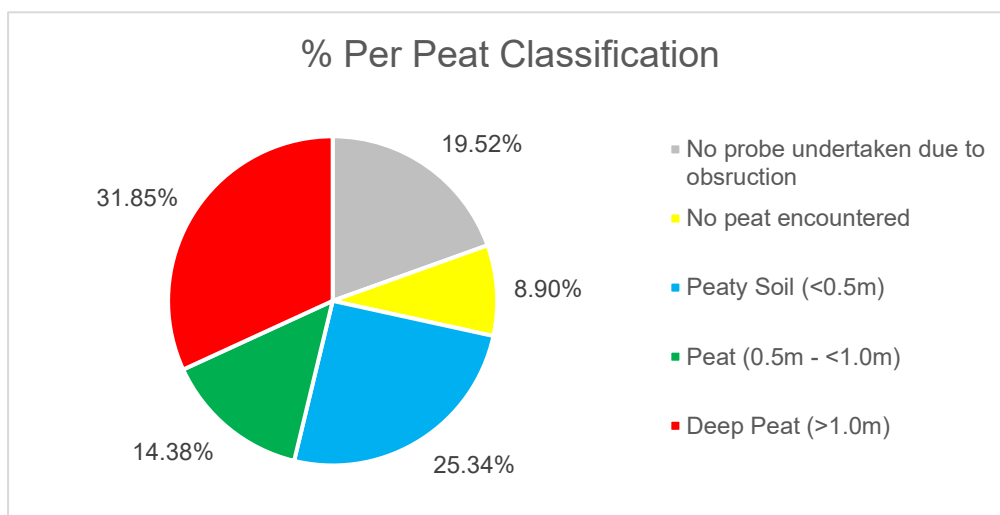
- 4.2.1 The Scottish Government Peat Landslide Hazard Best Practice Guide (2017) uses the following Joint Nature Conservation Committee (JNCC) report 455 'Towards an Assessment of the State of UK Peatlands' definition for classification of peat deposits:
- Peaty (or organo-mineral) soil: a soil with a surface organic layer less than 0.5 m deep;
 - Peat: a soil with a surface organic layer greater than 0.5 m deep which has an organic matter content of more than 60%; and
 - Deep Peat: a peat soil with a surface organic layer greater than 1.0 m deep.

4.3 Peat Depth Assessment

- 4.3.1 For the Denny North Substation, one phase of ground investigation to determine peat depths have been undertaken for the Project, as noted below:
- Peat depth probing (292 probes of which 57 were not completed due to site constraints such as obstructions) was undertaken by AECOM in February 2026. Probing was generally based on a 10m grid when within the red line boundary of the Denny North Substation works, extending out to a 20m grid when investigating the proposed temporary access tracks and temporary compound areas. The purpose of the probing was to determine the extent and depth of peat underlying the works areas of Denny North Substation where existing infrastructure (i.e. existing Denny North Substation and access tracks) is not present, as no peat would be expected underlying the existing infrastructure.
- 4.3.2 **Figure 6** within **Appendix A** of this PMP shows the location of the probes in relation to the Project, as well as the probed depths. **Figure 7** within **Appendix A** of this PMP provides a peat depth interpolation plan based on the peat probe results, noting that probes are not available for the full Red Line Boundary as some were not completed due to site constraints. **Plot 1** and **Plot 2** present the distribution of peat probes against the thickness range recorded. Where shallow bedrock or boulders, vegetation, waterlogged ground, or access restrictions, were encountered, no data was taken at these points.



Plot 1 - Peat Thickness Distribution



Plot 2 – Percentage Per Peat Classification

4.3.3 When considering the peat probe investigation survey the following observations were recorded:

- 57 probes (~19.5%) were not undertaken due to the presence of obstructions at surface (e.g. vegetation, waterlogged ground, access, etc.);
- No peat was encountered in 26 no. of the probes (~8.9%);
- Peaty soil <0.5 m thick were recorded in 74 no. of the probes (~25.3%);
- Peat deposits between 0.5 m and <1.0 m thick were recorded in 42 no. of the probes (~14.4%); and
- Deep peat >1.0 m in thickness was recorded in 93 no. of the probes (~31.9%).

4.3.4 In relation to the Project, the peat deposits recorded are typically >0.5 m in thickness with deep peat deposits (>1.0 m in thickness) generally present in the east of the works area. The deep deposits within the Project are locally recorded up to 3.0 m in depth with one probe extending >3.0m. Deeper deposits were recorded within both Class 3 and Class 5 areas as specified by the Carbon and Peatland 2016 map.

4.4 Peat Conditions at Site

Field Observations

4.4.1 For the purposes of this PMP, the peat has been separated into three distinct layers taking cognisance of the JNCC report 455 peat classifications, as reported in Section 4.2. These layers are:

- Where peat or peaty soils is recorded $\leq 0.5\text{m}$ thick from ground level to underlying substrate:
 - Peaty Soil;
- Where peat is recorded with thicknesses $>0.5\text{m}$ from ground level to underlying substrate would be categorised as one of two types:
 - Acrotelm – the shallow fibrous layer overlying deeper deposits of peat; and
 - Catotelm – the deeper, typically amorphous peat layer.

4.4.2 In relation to the boundary between the acrotelm and catotelm this is generally defined by the lowest level of the water table. Acrotelm represents the upper fibrous vegetation mat where accretion of material is occurring, with the NatureScot Research Report 1259 further identifying the acrotelm as lying above the seasonal water table fluctuations and displaying active root growth with some tensile strength exhibited. The catotelm underlies the acrotelm within the permanently saturated zone and comprises decomposing vegetation. Catotelmic peat is variable in characteristics, with the decomposition of fibres generally increasing with depth, ranging from semi-fibrous in nature through to amorphous where the original structure of the plant is completely decomposed. Water content can be highly variable and as fibre content affects structural strength of the material.

4.4.3 As at this stage of the development of the Project, only peat probing has been completed to characterise the peat deposits identified, no samples of peat are to be recovered, and no monitoring of groundwater levels is available. As such, a site-specific determination of the layer thicknesses associated with the acrotelm and catotelm cannot be made at this stage. Instead for the purposes of estimated peat volumes for this Outline PMP, an estimated average thickness of 0.50 m for the acrotelm layer has been applied throughout. This depth is consistent with the observed range of thicknesses included within Lindsay and Bragg – Windfarms and blanket peat²¹ which suggest the acrotelm is typically around 0.5m in thickness. Even though the estimated acrotelm thickness is 0.50m , it is noted that, due to the activity in the area and the likely disturbance of the peat deposits, the acrotelm may also contain part of the upper catotelm.

4.4.4 Based on the above, to estimate the volumes of peat across the Project the following assumptions are made:

- Where $\leq 0.5\text{m}$ of peat (i.e. shallow peat) is recorded, the peat is to be classified as 'Peaty Soil'; and
- Where $>0.5\text{m}$ of peat is recorded, an average acrotelm thickness of 0.5m is to be applied to the earthwork's footprint with the remaining thickness then estimated to be the catotelmic layer.

Peatland Condition Assessment

4.4.5 As part of the EIA Process AECOM undertook a UK Habitat (UKHab) survey across the Project with the results of this covered by Volume 1, Chapter 8 of the EIA Report. The survey indicated the Denny North Substation works area mainly comprises hardstanding, which is part of the existing Denny North Substation. East of the existing substation dense scrub, on flat, well-drained ground is recorded along with wet modified bog. This habitat was noted as likely being developed from disturbed land and was possibly created as part of historical landscaping measures. South of the existing substation, neutral and marshy grassland is recorded as well as wet modified bog and an area of standing water.

4.4.6 Volume 2, Figure 8.3 of the EIA Report shows the areas of bog as identified from the UK Habitat survey completed for the Project.

4.4.7 While the habitats listed above are recorded as nearby to the site, it is noted that no National Vegetation Classification (NVC) communities identified during the survey are within 50m of the proposed works are listed by SEPA guidance on Groundwater Dependent Terrestrial Ecosystems (GWDTE) as potential GWDTE. Volume 2, Figure 8.5 the EIA Report, does however identify potential GWDTEs within the works area of the Denny North Substation, predominately to the south with these either being typically of low or unimportance. A small area of potential moderate GWDTE is also noted encroaching into the working area of tower ZD096A towards the southwestern corner of Denny North Substation.

5 Sources of Peat During Construction

5.1.1 The following activities, all part of the substation works, are likely to generate excavation of peat during the construction process:

- Bulk earthworks and drainage works;
- Installation of primary utility services;
- Construction of equipment foundations;
- Extension of the existing security fencing;
- Modifications to existing Denny North Substation and adjacent sealing compounds;
- Construction of towers ZD096A and ZD096B, new terminal tower and overhead line gantry construction;
- Temporary construction compounds associated with the new towers;
- Construction of temporary access routes; and
- Installation of HV plant, cable and associated equipment.

5.1.2 As identified in Section 4.3, peat has been identified within the works area for Denny North Substation outwith the existing substation footprint. As works are proposed outwith the existing Denny North Substation footprint, peat will require to be excavated during the works and will require permanent relocation.

5.1.3 All efforts to minimise impact on peat and requirement for excavation of peat – while taking account of other constraints – have been made in the design process, informed by desk study, walkover observations, peat depth surveys and peatland condition assessment.

5.2 Substation Works

5.2.1 Much of the works associated with the Denny North Substation works are anticipated to be on the existing platform and therefore would not be anticipated to disturb or generate peat. Aspects of the works are, however, anticipated to be completed within areas where peat would be disturbed with extension of the substation to the east and south proposed. It is anticipated that peat would be stripped from areas where the substation is extended or modified as peat is not considered a suitable stratum for forming infrastructure. At present, the details of this are not available with this to be provided in the updated PMP when the full probing survey is completed across the Project.

5.3 Temporary Access Tracks

5.3.1 Temporary access tracks are proposed as part of the Denny North Substation works to provide access from public highways to the infrastructure locations during construction. In general, existing access tracks will be utilised for the works with no disturbance of peat required. However, in order to access the New Build Overhead Line towers and exterior of the substation extension, new tracks are required. These tracks are proposed to be constructed using trackway. The use of trackway will involve the laying of plastic tracks (approximately 4.0m wide including construction areas) directly onto the ground surface and hence no stripping of soil will be required.

5.4 Temporary Compounds

5.4.1 Each New Build Overhead Line tower location is required to have a temporary construction compound at its base to allow the construction works to take place. Each of these compounds will be approximately 50 x 50m in area, and will comprise a construction laydown area, turning head, and segregated bunding area. These proposed construction compounds will provide welfare facilities for construction staff, storage of plant, storage of materials and equipment to carry out the works safely, and bunding areas for storage and final reinstatement of excavated materials. Within these compounds a temporary crane pad and/or a stone piling pad would be constructed where required to allow the construction works. For the

compounds it is anticipated the surface vegetation and soils, including peat deposits, would be stripped to create a suitable level and stable platform for the construction works. The excavated material for the compounds would be stored adjacent to the area of excavation and, given these are temporary, will be fully reinstated when no longer required.

5.5 Construction of New Tower Foundations

- 5.5.1 The foundation design for the new towers is subject to the GI works and detailed design process. Pad and column, micro-pile and rock anchor are all potential construction methods which could be adopted for the tower foundations. Average, dimensions for each foundation are 4m x 4m x 0.5m. Due to restricted working room, no more than two excavations will be open at any time.
- 5.5.2 The type of foundation used will be informed by the peat probing which has been completed but not yet considered in the design, as well as the ground investigation which will be completed post-consent for the detailed design process. An assumption of the foundation type will be made based on the peat depths recorded from the peat probing and used in the calculation of the volume of peat displaced as a result of the foundations being installed for the purposes of this Stage 1 PMP. As peat is present within the footprints of the new towers, these deposits will require excavation at the location of the foundations and permanent reuse within the Project.

5.6 Pulling Position

- 5.6.1 A pulling position is proposed as part of the Project. At the location of the pulling position, it is proposed that the area will be levelled and trackway installed to create a stable platform. Based on the proposed location of this from **Figure 6** within **Appendix A**, the pulling position is within an area of peaty soil rather than peat, however, would have at least some of the peaty soil deposits stripped to create the level platform. The works involved would be temporary and therefore any peaty soil stripped to create a level platform would be stored adjacent to the area of excavation and reinstated when the position is no longer required.

6 Proposed Mitigation During Construction

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

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

6.1.2 A range of methods and control measures can be adopted to minimise the impact on peat which are described below and are designed to prevent these impacts from occurring. This best practice guidance shall be adhered to throughout the construction phase.

6.2 Access Tracks

6.2.1 As noted, much the access tracks to be used as part of the Project are proposed to be on existing tracks or using trackway. This would avoid or minimise as best as possible the peat disturbance and excavation required as part of the works.

6.3 Temporary Compounds

6.3.1 It is anticipated that peat will be stripped as part of the construction of the temporary compounds for the New Build Overhead Line towers. However, at one for the tower locations peat depths >1.0m has been identified and therefore consideration as to other forms of forming the temporary compounds will be given, such as floating the compound on top of the peat. This will be confirmed by the designer once the peat depth data has been reviewed and discussed in the updated PMP submitted as part of the planning application on completion of the Project wide peat probing currently ongoing.

6.3.2 Where the temporary compounds are excavated into the peat, these have the potential to disrupt natural hydrological drainage pathways. Therefore, appropriate temporary drainage will be designed to mitigate this. Further details of the drainage will be developed as the detailed design of the Project is progressed and will be contained in the Stage 2 PMP post consent as well as being contained within the available Construction Environmental Management Plan (CEMP).

6.3.3 Good practice guidance in association with the excavated platform and drainage are as follows:

- Any ditches should capture surface water (within the acrotelm) before it reaches the compound;
- Any additional interceptor drains associated with the compound should be shallow and flat bottomed (and preferably entirely within the acrotelm to limit drawdown of the water table); and
- Any excavation within peat creates the potential for minor slippages to occur from the cut face of the peat mass. Accordingly;
 - Free faces should be inspected for evidence of instability (cracking, bulging, excessive discharge of water or sudden cessation in discharge); and
 - Where peat is to be stored adjacent to an excavation, stability analysis should be conducted to determine Factor of Safety (FoS) and an acceptable FoS adopted for loaded areas.

6.4 Construction of New Towers

- 6.4.1 The foundation solution for the new proposed towers has not yet been determined as these will depend on the results of the ground investigation completed and could vary from tower to tower based on the findings. However, it is expected that the majority of towers will be formed with shallow pad foundations and hence require excavation of the full depth of peat across the foundation footprint. As deep peat has been identified as part of the probing completed affecting one of the New Build Overhead Line towers, consideration of deep foundation solutions such as micro piling may be given. This will be confirmed by the designer once the peat depth data has been reviewed and discussed in the updated PMP submitted as part of the planning application on completion of the Project wide peat probing currently ongoing. Note the selection of foundation solution will be dependent on other factors also and it should be noted that at least 1.0m of surface deposits including peat would be excavated to form these.

6.5 Peat Excavation, Storage & Transport

- 6.5.1 As described previously there are three distinct layers of peat; for peat depths <0.5m thickness these are considered as peaty soil, and for peat depths >0.5m these are considered as acrotelm (including the vegetated turves) with underlying catotelm. These distinct layers should be recognised during peat excavation and reuse activities.
- 6.5.2 If peat is to be reused or reinstated with the intention that its supported habitat continues to be viable, the following good practice applies:
- Where excavation is required, superficial materials will be carefully separated during excavation, to keep peat (and peaty soils) and other soil materials (e.g. glacial till, weathered rock, etc.) apart. Turves of peat (approximately 0.3m to 0.5m thick) should be cut and relocated temporarily nearby. These peat turves can then be used to support revegetation of excavated areas and any new fill areas (turves shall be placed vegetation up);
 - Where the peat is in excess of 0.5 m thick, the acrotelm and catotelm will be separated, with the acrotelm retained for surface in-situ reinstatement;
 - Turves will be as large as possible to minimise desiccation during storage;
 - Mineral soils are to be transported and stored separately to reduce the risk of contamination of excavated peat; and
 - The timing of excavation of peat shall avoid periods of very wet weather and multiple handling of peat should be avoided to reduce the risk of peat losing its structural integrity.

Temporary Storage

- 6.5.3 Peat storage will be required as part of the works at Denny North Substation where peat is encountered given much of the proposed works are temporary. At this stage it is anticipated all stored peat will be reinstated / reused within the Project by the end of the construction phase, however, this will require confirmation once the generated peat volumes and reuse locations including volumes have been identified. This will be presented as part of the updated PMP submitted on completion of the Project wide probing. Where excavated peat is not immediately relocated or reused, proposed temporary storage areas are typically adjacent to the area of excavation or in the case of the temporary compounds for the towers, within the compound area.
- 6.5.4 All efforts will be made to avoid double handling of the peat generated from the Site, however, in the cases of the temporary infrastructure this is not likely to be possible, as full reinstatement when the infrastructure is no longer required, is generally proposed. To ensure the proposed temporary storage areas are suitable in terms of environment, construction practicality and safety, the areas will be assessed at a site level by the ECoW, geotechnical engineer and Contractor's temporary works engineer using the guiding principles below:
- Where possible peat shall be excavated, stored and reused as turves. The turves will be stored green side up to avoid drying out of the peat and encourage regrowth;
 - Peat turves should be stored in wet conditions or irrigated to prevent desiccation (once dry, peat will not rewet);

- Stockpiling of peat should be in large volumes to minimise exposure to wind and sun but with due consideration for slope stability;
- Excavation and handling of peat can cause the internal structure of the peat to deteriorate. The peat can therefore be a greater hazard when temporarily stored with this loss of structure and strength requiring to be considered and monitored during temporary storage;
- Where minimal peat underlies the ground surface, the peat will be stripped back to the underlying superficial deposits or rock to allow stockpiling to be undertaken to a maximum of 1.0 m thick (unless otherwise agreed by the Geotechnical Engineer). Where peat is approved to be stored higher than 1.0 m this should not be stored greater than 2.0 m, as this can lead to stability issues and could damage the peat itself, and all peat material underlying the proposed storage area will require removal prior to the stockpile being formed to ensure sliding risk is controlled;
- Cut off ditches and suitable treatment systems should be considered and installed at temporary storage areas, to ensure any leachate or sediment from stored peat does not reach any watercourse; and
- Monitor areas of peat / storage during period of wet weather, or during snow melt, to identify early signs of peat instability.

6.5.5 Where peat cannot be transferred immediately to an appropriate reuse area, short term storage (<2 months) will be required. The following good practice applies:

- Peat should be stored around the perimeter at sufficient distance from the cut face to prevent overburden induced failure;
- Local gullies, drainage lines, wet ground and steep slopes should be avoided;
- Stored upper turves (incorporating vegetation) should be organised and identified for reinstatement adjacent to like communities in the intact surrounding peat blanket; and
- Drying of stored peat should be avoided by irrigation (although this is unlikely to be significant for peat materials stored less than 2 months).

6.5.6 Where longer term storage is required (>2 months) the following good practice applies:

- Peat generated should be transported directly to its allocated reuse area to minimise the volume being stockpiled, with the possibility of drying out, where possible;
- Drying of stored peat should be avoided by irrigation, particular in hotter and drier months. Care shall be taken to use a fine spray to irrigate the peat to avoid run-off and / or oversaturation; and
- Monitoring of large areas after wet weather or snow melt.

Handling

6.5.7 The following will be considered when handling peat:

- Care will be taken when excavating peat to ensure that the acrotelm and catotelm layers are not mixed during stripping and storing;
- Handling peat can cause the internal structure to deteriorate and therefore make it more of a hazard when relocated due to a loss of shear strength. Peat will be relocated as close as practicable to where it was excavated or be reinstated in the area from which it was excavated. Care will be taken when transporting peat to avoid causing unnecessary structural damage;
- The removal of peat from site is considered to be the least desirable environmental option and is not currently anticipated;
- Where possible the peat will be excavated, relocated and re-used/reinstated as turves. Turves will be relocated green side up to avoid drying out of peat and encourage regrowth. If it is not possible the peat will be reseeded when it is re-used. Where additional reseeded is deemed necessary a suitable seed mix will be agreed with NatureScot and the local planning authority. Restoration/reseeding to be monitored by ECoW throughout the works and in the first growing season post-construction (subject to further reseeded within 2 years). Monitoring detailed below;
- Peat will be relocated and reused as close to the source of excavation as possible, to promote habitat similar to the surrounding areas and promote vegetation regrowth towards natural conditions. This also reduces the haulage distance which should be kept at a minimum throughout

the works to reduce potential impact on the peat/soil structure and reduce carbon emissions. Peat handling can also increase the bulking factor of the material (which at present is assumed to be 25%) which has an impact on volumes of peat to be reused;

- Where peat is to be reused/reinstated, the placement of the catotelmic materials will be in the bottom layers, with the acrotelmic materials to the top.

6.5.8 A detailed storage and handling plan will be prepared by the Principal Contractor as part of the construction phase PMP, including:

- Best estimate excavation volume at each infrastructure location (including peat volume split into peaty soil, acrotelm or 'turf' and catotelm);
- Volume to be stored locally and volume to be transferred directly on excavation to reuse areas elsewhere to minimise handling;
- Location and size of storage area relative to natural peat morphology and drainage features; and
- Irrigation requirements and methods to minimise desiccation of excavated peat during short term storage.

6.5.9 These parameters will be determined by the contractor prior to construction.

Transport

6.5.10 Movement of turves should be kept to a minimum once excavated, and therefore it is preferable to transport peat planned for translocation and reinstatement to its destination at time of excavation.

6.5.11 If HGVs are used for transporting non-peat material and excavated peat, measures should be taken to minimise the risk of cross-contamination.

6.5.12 Care shall be taken when transporting the peat to avoid causing unnecessary structural damage.

Reinstatement & Restoration of Disturbed Areas

6.5.13 At this stage, as the generated peat volumes and proposed reuse locations for the permanent works have not been identified, it cannot be confirmed that all peat generated as part of the Denny North Substation works will be able to be reused within the Project. It is however anticipated all peat generated would be reused within the Project. Confirmation of the volume of peat generated requiring permanent relocation and the reuse proposals will be provided as part of the updated PMP resubmitted as part of the planning application. All peat generated as part of the temporary works areas will be fully reinstated to pre-construction levels once no longer needed with the peat excavated restored to its previous level. Further detail on the peat reuse/reinstatement as part of the Project, including estimated volumes, will be provided in **Section** Error! Reference source not found. of this PMP once the peat probing survey for the wider Project has been completed and the peat probe data from the substation areas has been considered as part of the design.

6.5.14 The following shall be considered when considering reinstatement of disturbed areas of peat:

- Undertake reinstatement / relocation and revegetation works as soon as possible;
- Where required, consider exclusion of livestock and deer from areas undergoing peat reinstatement;
- As far as is reasonably practicable, reinstatement should be carried out concurrently with construction rather than at its conclusion; and
- To ensure safe reuse, all peatland reuse/reinstatement works should be subject to assessment by a geotechnical specialist, ensuring that emplacement of peat will not increase the likelihood of peat instability.

7 Site Based Excavation & Management Assessment

7.1 Estimated Peat Excavation

- 7.1.1 Based on the details of the Project, the total volume of peat to be excavated has been calculated and is summarised in **Table 7-1**. At present, as the peat probing survey for the Denny North Substation works has not yet been considered in the design and as the peat probing for the wider Project is ongoing estimated peat excavation volumes have not yet been determined. Anticipated sources of peat are presented in Section 5. When considering the excavated peat volume, areas of temporary works are neglected from the calculation as the peat excavated from these will be fully reinstated when they are no longer required. The calculations presented in Table 7-1 will therefore present excavation volumes where permanent reuse of the peat is required. This section will be updated to estimate peat excavation volumes once the wider peat probing exercise for the Project is completed.
- 7.1.2 The estimate will include a breakdown of the peaty soil, acrotelmic and catotelmic peat quantities based on the assessed proportion of each material as discussed earlier in Section 0.
- 7.1.3 Note that the excavated volumes relating to the Project will be provided by the Designer for the works and not calculated by AECOM. The volumes provided will be approximate and will require refinement as the detailed design progresses. This further refinement will be taken into consideration within the Stage 2 (Detailed) PMP post consent / pre-construction.

Table 7-1 Excavation Materials Management Plan

Description	Total Estimated Peat Volume (m ³)	Estimated Peaty Soils Volume (m ³)	Estimated Acrotelmic Peat Volume (m ³)	Estimated Catotelmic Peat Volume (m ³)
Permanent				
Substation Works	TBC following completion of peat probing for wider project and consideration of peat probing data completed by the Designer.			
Construction of New Build				
Overhead Line tower foundations				
Total*				
Total (25% bulking factor applied)				

* No bulking factors have been applied to the volumes

7.2 Peat Relocation and Reuse

Peat Reuse

- 7.2.1 Based on current design proposals, an outline approach for managing peat generated as a result of the works is presented below.
- 7.2.2 Note where tree stumps are present these can be chipped and turned into mulch for reuse or reinstatement.

Temporary

- 7.2.3 It is anticipated that all peat excavated from the temporary works (e.g. access tracks, construction compounds and pulling positions) will be fully reinstated when the infrastructure is no longer required. All peat excavated from the temporary works will temporarily be stored adjacent to the area of excavation, or in the case of the temporary compounds within the works area itself following stripping.

- 7.2.4 A calculation of the volume of peat to be reinstated as part of the temporary works has not been made as all peat excavated as part of the temporary works will be fully reinstated when the temporary works are no longer required.

Permanent

- 7.2.5 Permanent reuse of peat is anticipated to be required associated with those works presented in Table 7-1. Identification of permanent reuse areas have not yet been confirmed for the Denny North Substation works area as the peat probing data across the Denny North Substation have not yet been taken into consideration, and the results of the ongoing Project wide peat probing are not available and may affect peat reuse proposals for the substation area. Peat reuse proposals will be confirmed following the completion of the Project wide peat probing and consideration of the peat depths from the completed probing at the substation have been made by the Designers. This will then be presented in the updated PMP resubmitted as part of the application. The table below presents the data anticipated to be presented in the updated PMP following consideration of the probing data available.

Table 7-2 - Permanent Peat Reuse Volumes

Location	Area (m ²)	Anticipated acrotelm deposition Depth (m)	Anticipated catotelm deposition Depth (m)	Total Relocation Capacity
TBC				
Total				

7.3 Peat Balance

- 7.3.1 It is anticipated that all peat generated from the Project would be able to be reused within the Project, however, this will require confirmation prior to commitment. This will be confirmed in the updated PMP completed following completion of the ongoing peat probing survey for the wider Project and consideration of the peat depth data at the Denny North Substation in the design of the works.
- 7.3.2 Note that as the detailed design is still being progressed, further refinement in the peat volumes (both excavated and relocation) is likely to occur. As such following the updated PMP submitted on completion of the currently ongoing peat probing survey, a Stage 2 (Detailed) PMP will be produced to cover the detailed design, post-consent, prior to construction.

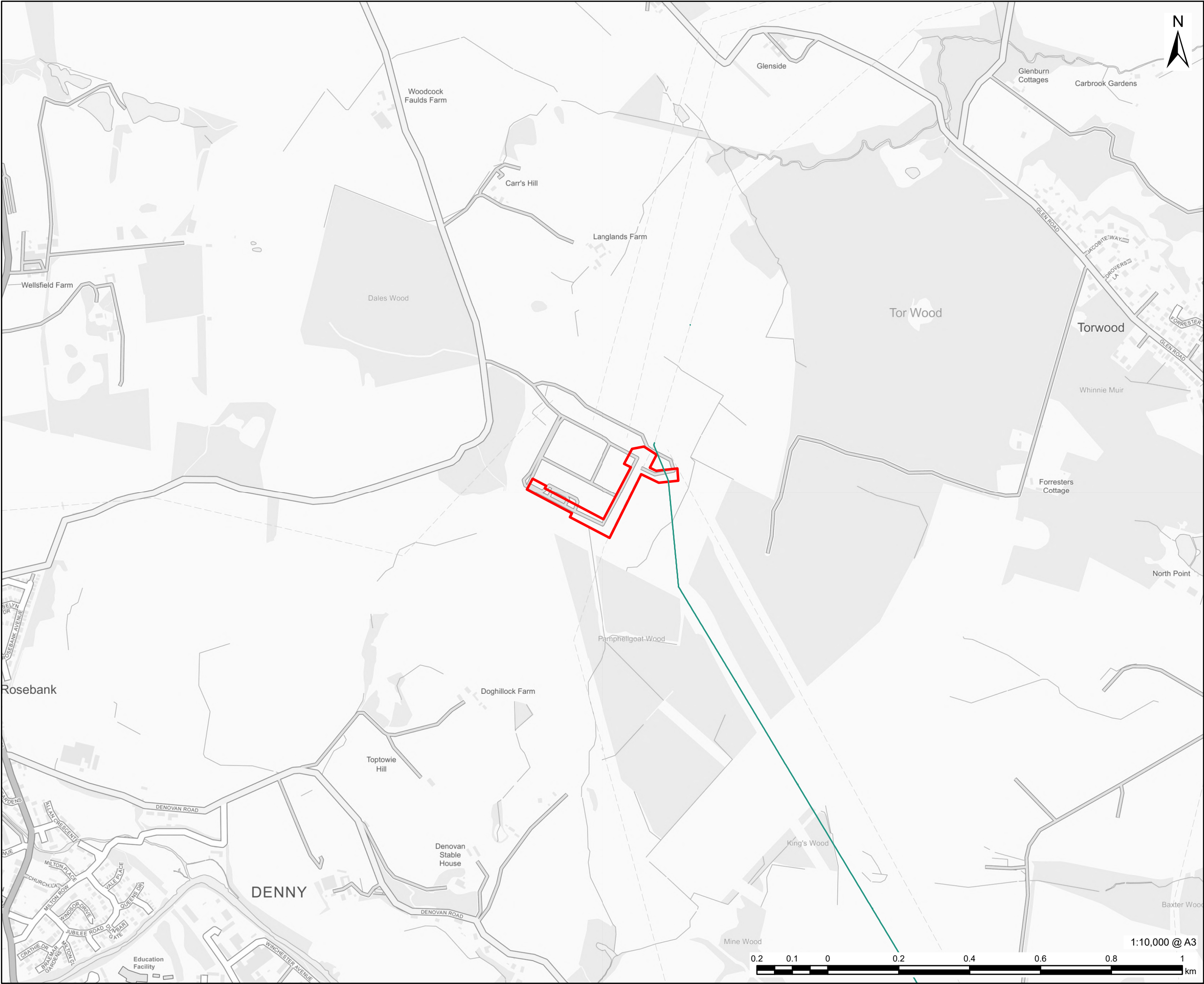
8 Monitoring & Inspection

- 8.1.1 The construction phase of the Project would be supported by a geotechnical engineer and ECoW. There would be frequent, routine and regular inspections of peat in all stockpiles and temporary storage areas as part of the PMP audit process. Inspections would assess in situ peat physical conditions, integrity of containment and temporary drainage conditions, and they would seek to confirm that stockpile design and management was adequate to prevent erosion and peat slide. These inspections would take place weekly (at a minimum) during stockpile creation and storage.
- 8.1.2 Should any problems be observed during regular visual inspections of peat stockpiles, this would invoke implementation of an appropriate corrective action which would be recorded and monitored for effectiveness. All reuse areas are to be monitored long term to assess new growth, germination of seed bank and overall vegetation cover. Vegetation establishment will be assessed during monitoring and appropriate remedial actions taken if vegetation cover is inadequate in line with landscaping requirements. Types of corrective actions would include, but would not necessarily be limited to:
- Modification of temporary drainage;
 - Additional or modified bunding;
 - Incorporating of sediment fencing if required; and
 - Light re-grading to correct any areas of surface erosion, etc.
- 8.1.3 Regular, frequent inspections of peat conditions during construction and reuse/reinstatement phases of work would be carried out by the Geotechnical Engineer and ECoW as follows:
- Peat surface, peat profile and peat consistency conditions would be carried out as part of ground investigations prior to the start of construction. This information would provide detailed information on the baseline conditions for each part of the infrastructure footprint;
 - Reinstated/reuse peat conditions would be inspected immediately after reuse to ensure that the methods detailed in the PMP had been correctly implemented and to inform any corrective actions should they be required;
 - The physical condition of peat would be retained as carefully as possible both at the peat storage and the peat Reinstated/reuse stages. This is particularly important for vegetation establishment;
 - Within 3 months of completion of works in any area, the ECoW inspects the reinstatement efforts to determine satisfactory placement of sub-soil, topsoil and turves;
 - Monitoring for success could involve fixed-point photo monitoring, fixed-point vegetation quadrat sampling, and condition assessment all undertaken by the ECoW;
 - For long terms monitoring the ECoW (or other qualified person) undertakes a inspection of all reinstated areas at the end of the first growing season following completion of reinstatement with the following suggested frequency following year 2, 5, 10 and then every 5 years until 30 years, or until restoration has been deemed a success; and
 - The ECoW will complete a daily diary of onsite activities which is then compiled as part of a monthly ECoW report which will include information relating to peat restoration/reuse, these reports will be available at the request of the Planning Authority.

9 Conclusions

- 9.1.1 This Stage 1 (Outline) PMP follows the guiding principles and has been created in adherence with best practice guidance. It is acknowledged that this PMP is currently incomplete and does not currently identify permanent peat excavation volumes or their associated peat reuse. On completion of the peat probing currently ongoing across the wider Project and following consideration of the completed probing at Denny North Substation, this document will be updated and confirm the peat management proposals for the Project.
- 9.1.2 On completion of the PMP it is expected the document will address the following peat related issues:
- The depth and condition of peat deposits across the Project;
 - The peat generating activities associated with the Project and the volumes of excavated peat that require permanent relocation, along with its suitability for reuse peat;
 - The capacity to reuse the peat on-site for reinstatement;
 - Peat handling and temporary storage; and
 - Monitoring of the reinstated peat or peatland habitat following deposition.
- 9.1.3 Note that the estimate of the peat extents, depths and volumes within the finalised PMP will be based on a series of assumptions for the Project including measurement of the current design compared to existing ground level and using ground models developed through the desk based and peat probing data available. Such parameters can still vary over small scale and therefore topographic changes in the substrate, historical ground disturbance, etc. may impact the total accuracy of the volume calculations. The peat volumes provided as part of the complete PMP will be refined further as part of the detailed design, taking account of any further information obtained (e.g. ground investigation data across the Project) and as the geotechnical design develops to the fully mature construction design. This PMP will look to identify peat reuse and relocation areas for all peat generated as part of the Project, with it currently anticipated all peat will be able to be reused within the Project although a commitment to this cannot be made at this stage. This will require confirmation in the updated PMP resubmitted as part of the planning application following completion of the peat probing currently ongoing and consideration of the peat probing which has already been completed at Denny North Substation.
- 9.1.4 It is anticipated that a Stage 2 PMP will be generated post consent to update this Stage 1 PMP with any new information obtained and based on a more refined design. The Stage 2 PMP will also provide further details on the volumes of delineated peat, volumes of permanent and temporary relocations of peat, the peat balance, alongside the peat reuse / relocation areas. Following this a Construction Phase PMP will be developed by the Contractor which will be an update of the Stage 1 and 2 PMPs and which will be constantly updated and maintained throughout the site works.
- 9.1.5 The implementation of a construction phase PMP would ensure a commitment from the Contractor to excavating, handling, storing, transporting and reinstating peat that follows good practice and ensures protection of peat throughout the construction and post construction phases. A series of good practice standards detailed within this PMP relating to excavation, handling and storage of peat will be utilised to maintain the structural integrity of excavated peat and its suitability for reuse.

Appendix A – Figures



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AECOM

PROJECT

Denny Wishaw Network Upgrade

CLIENT

SP Energy Networks

CONSULTANT

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LEGEND

- Denny North Substation Site Boundary
- ZG Uprated Overhead Line

NOTES

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ISSUE PURPOSE

Peat Management Plan

PROJECT NUMBER

60602788

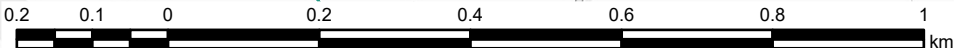
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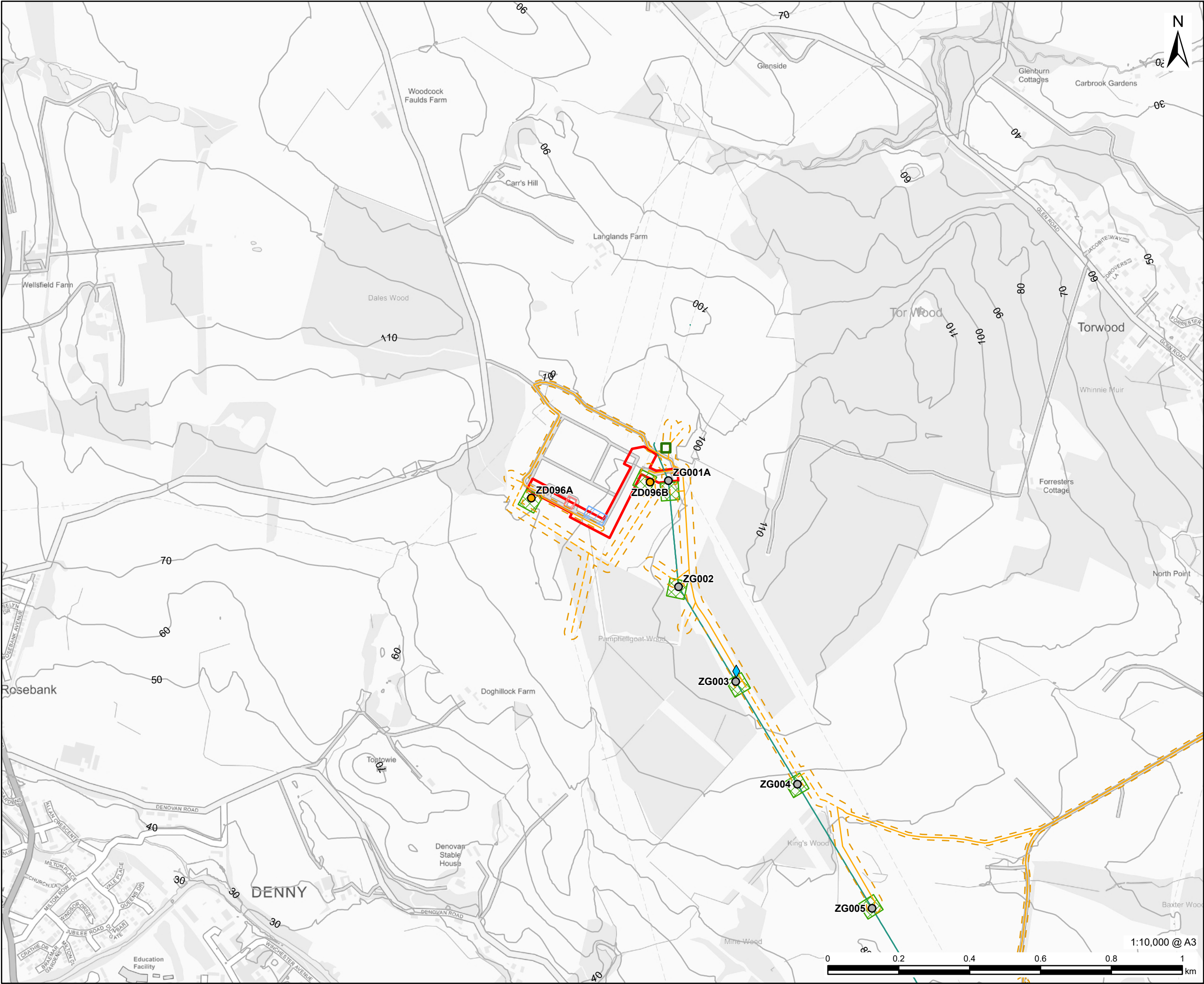
Overview

FIGURE NUMBER

Figure 1

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- LEGEND**
- Denny North Substation Site Boundary
 - Existing Tower
 - New Tower
 - ZG Tower Compound
 - ZG Uprated Overhead Line
 - Temporary Trackway
 - Temporary Stone Track
 - Temporary Trackway and Temporary Stone Track Limit of Deviation
 - Substation Site Compound
 - Substation Laydown Area
 - Pulling Position
 - Water Crossing
 - Contours (10m)

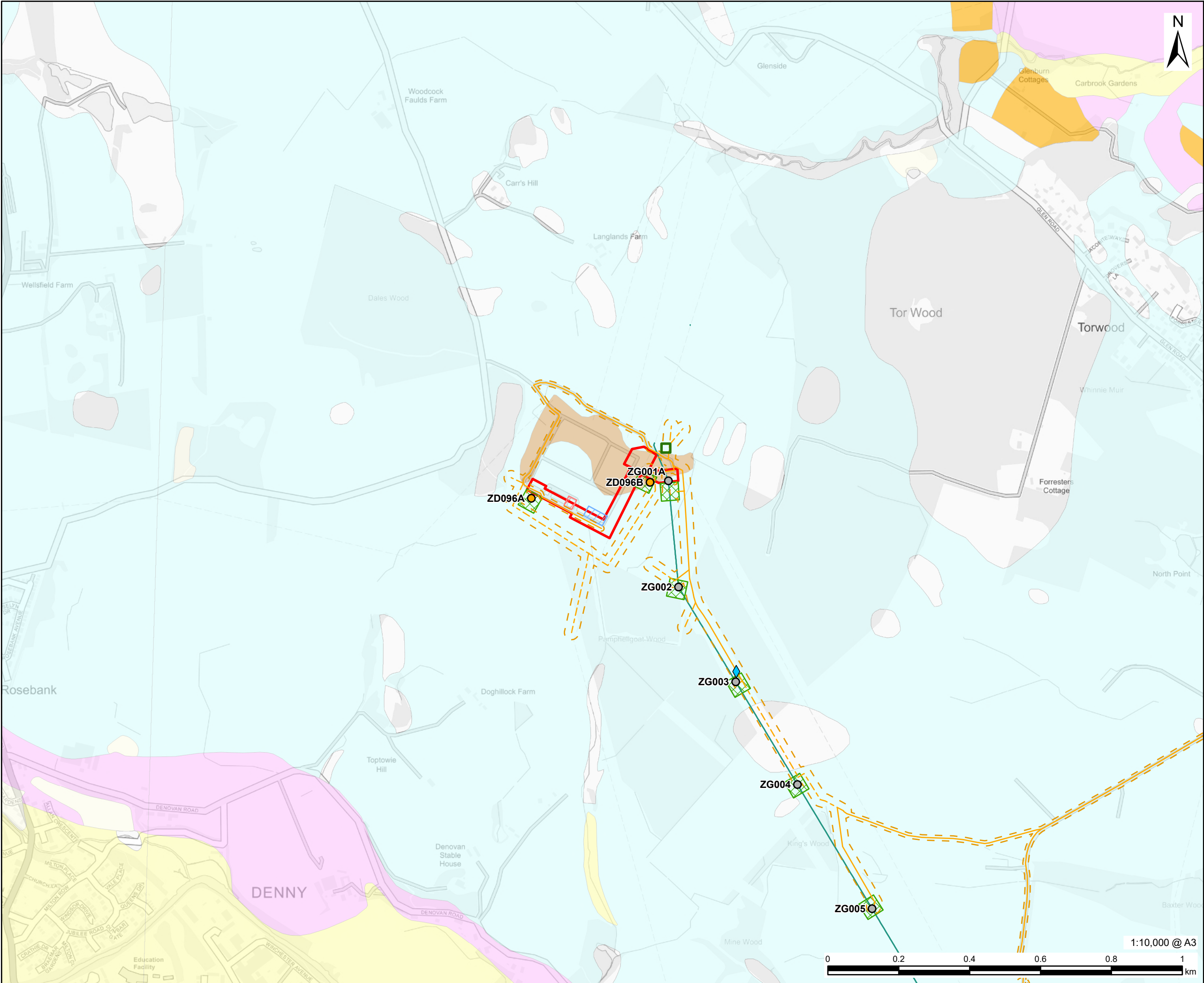
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ISSUE PURPOSE
Peat Management Plan

PROJECT NUMBER
60602788

FIGURE TITLE
Layout

FIGURE NUMBER
Figure 2



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PROJECT

Denny Wishaw Network Upgrade

CLIENT

SP Energy Networks

CONSULTANT

AECOM Limited
One Trinity Gardens
Newcastle
NE1 2HF
www.aecom.com

LEGEND

- Denny North Substation Site Boundary
- Existing Tower
- New Tower
- ZG Tower Compound
- ZG Uprated Overhead Line
- Temporary Trackway
- Temporary Stone Track
- Temporary Trackway and Temporary Stone Track Limit of Deviation
- Substation Site Compound
- Substation Laydown Area
- Pulling Position
- Water Crossing
- BGS 1:50,000 Superficial Deposits
 - Alluvium - Clay, silt, sand and gravel
 - Glaciofluvial ice contact deposits - Gravel, sand and silt
 - Peat - Peat
 - Raised marine deposits, Devensian - Clay, silt, sand and gravel
 - Till, Devensian - Diamicton

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Peat Management Plan

PROJECT NUMBER

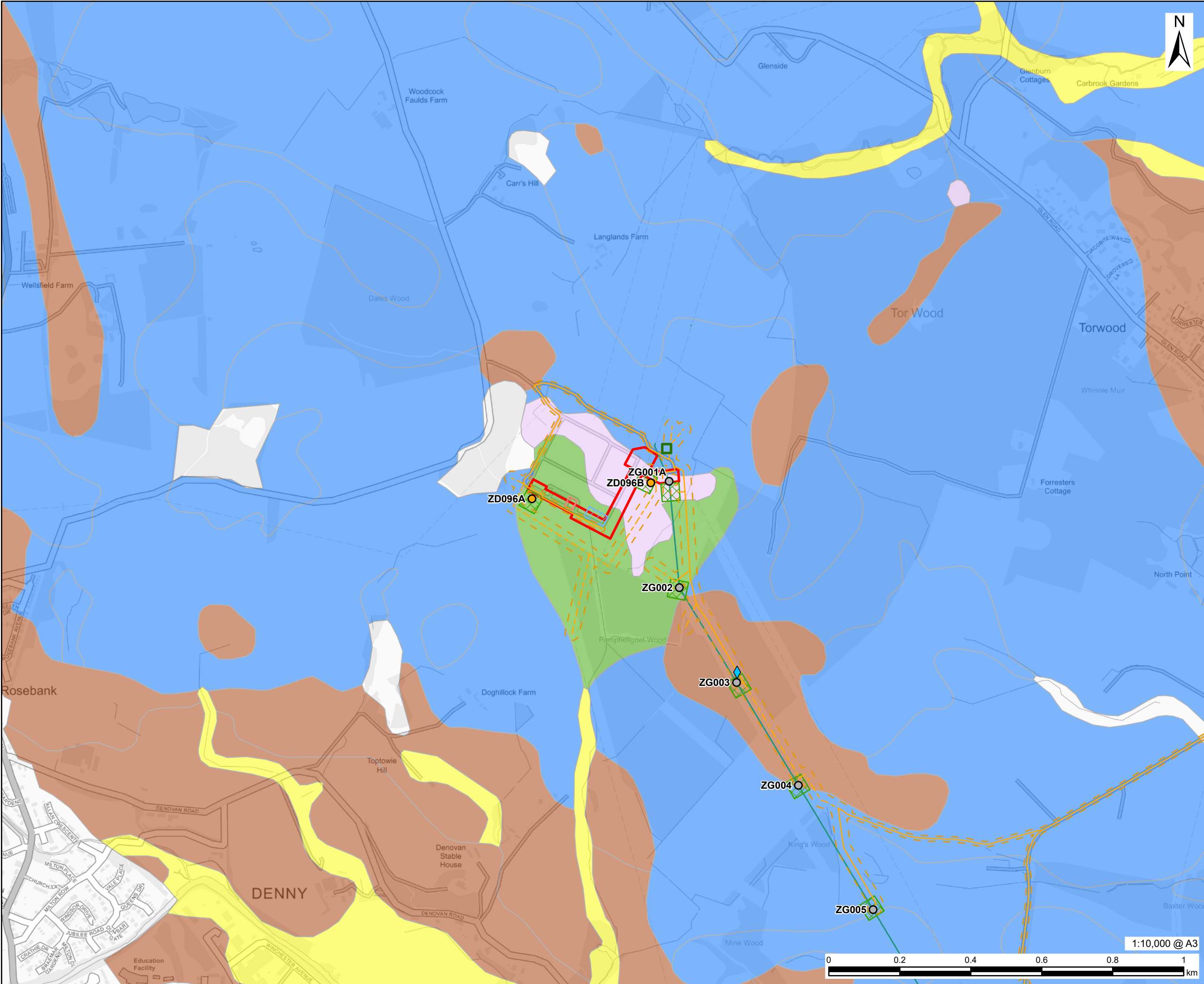
60602788

FIGURE TITLE

Superficial Geology

FIGURE NUMBER

Figure 3



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LEGEND

Denny North Substation Site Boundary

Existing Tower

New Tower

ZG Uprated Overhead Line

ZG Tower Compound

Temporary Trackway

Temporary Stone Track

Temporary Trackway and Temporary Stone Track Limit of Deviation

Substation Site Compound

Substation Laydown Area

Pulling Position

Water Crossing

Soil Map of Scotland

Brown earths

Mineral alluvial soils

Noncalcareous gleys

Peaty gleys

Undifferentiated alluvial soils

Undifferentiated basin peats

NOTES

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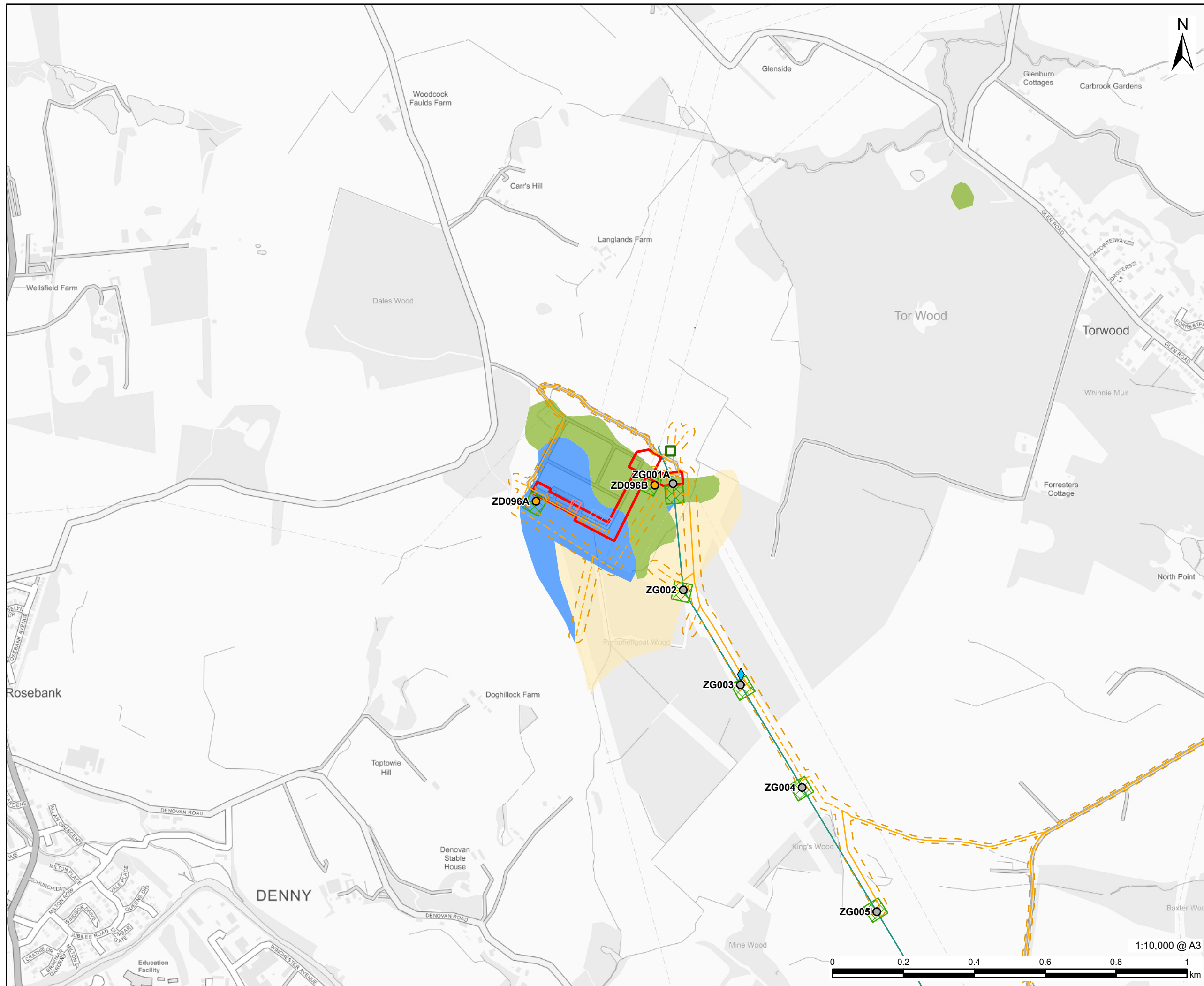
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FIGURE TITLE

Soil Map of Scotland

FIGURE NUMBER

Figure 4



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The map displays the Carbon and Peatland 2016 (SNH) area. It includes a legend with the following items:

- PROJECT**
- CLIENT**
- CONSULTANT**
- LEGEND**
 - Denny North Substation Site Boundary (Red rectangle)
 - Existing Tower (Grey circle)
 - New Tower (Yellow circle)
 - ZG Tower Compound (Green cross-hatched rectangle)
 - ZG Upgraded Overhead Line (Green line)
 - Temporary Trackway (Dashed orange line)
 - Temporary Stone Track (Solid orange line)
 - Temporary Trackway and Temporary Stone Track Limit of Deviation (Dashed orange line with yellow border)
 - Substation Site Compound (Red cross-hatched rectangle)
 - Substation Laydown Area (Blue diagonal-hatched rectangle)
 - Pulling Position (Green rectangle)
 - Water Crossing (Blue diamond)
- Carbon and Peatland 2016 (SNH)**
 - Class 3 (Blue square)
 - Class 4 (Yellow square)
 - Class 5 (Green square)

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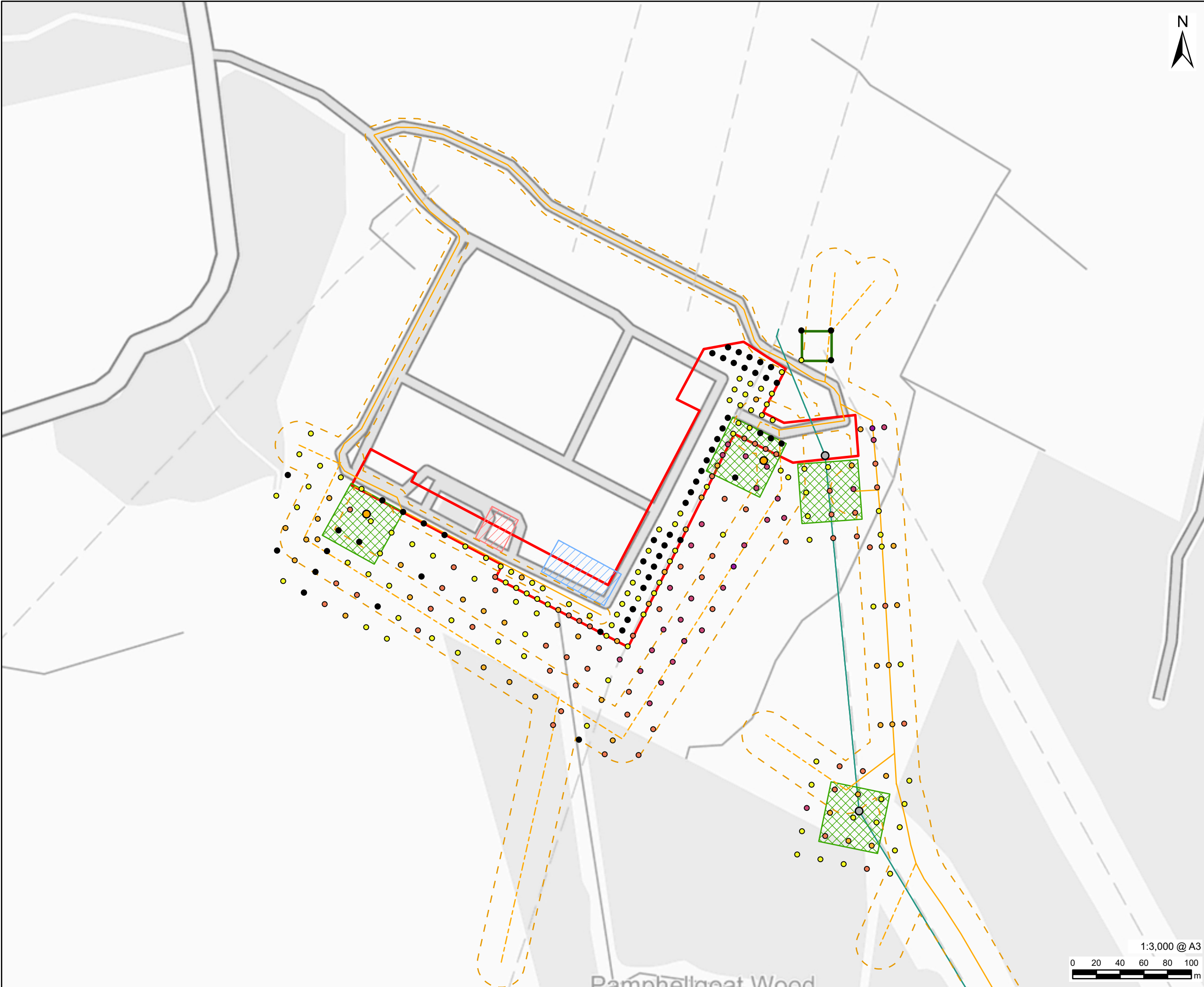
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FIGURE TITLE

Carbon and Peatland

FIGURE NUMBER

Figure 5



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PROJECT

Denny Wishaw Network Upgrade

CLIENT

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LEGEND

- Denny North Substation Site Boundary
- Existing Tower
- New Tower
- ZG Tower Compound
- ZGUpgraded Overhead Line
- Temporary Trackway
- Temporary Stone Track
- Temporary Trackway and Propsoed Stone Track Limit of Deviation
- Pulling Position
- Substation Site Compound
- Substation Laydown Area
- Peat Probe Locations - Depth(m)
 - 0 - 0.5
 - 0.51 - 1
 - 1.1 - 2
 - 2.1 - 3
 - 3.1 - 4
 - Not Completed Due to Obstruction

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Peat Management Plan

PROJECT NUMBER

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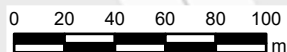
FIGURE TITLE

Peat Probing Location Plan

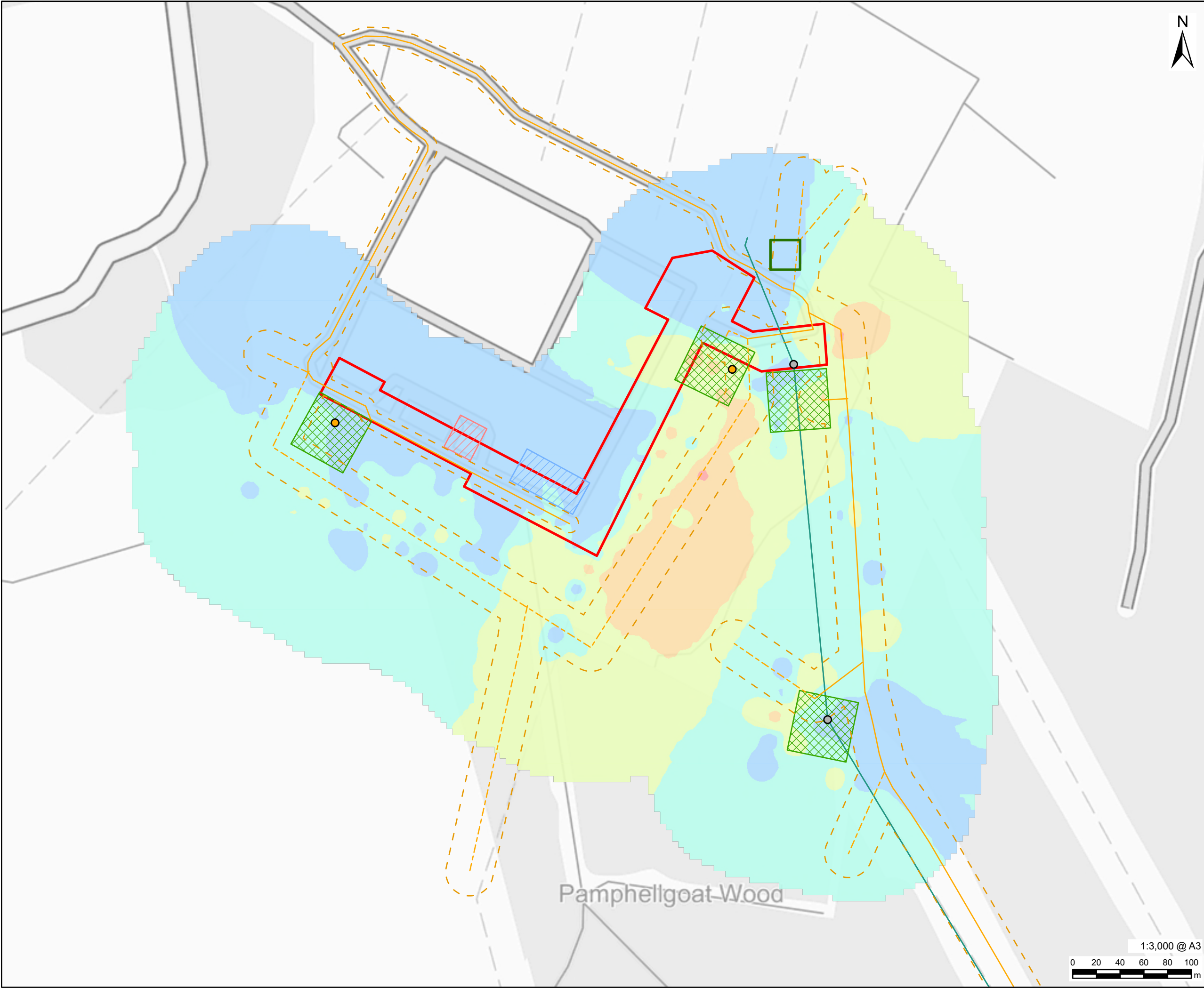
FIGURE NUMBER

Figure 6

1:3,000 @ A3



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PROJECT
Denny Wishaw Network Upgrade

CLIENT
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- LEGEND**
- Denny North Substation Site Boundary
 - Existing Tower
 - New Tower
 - ZG Uprated Overhead Line
 - ZG Tower Compound
 - Temporary Trackway
 - Temporary Stone Track
 - Temporary Trackway and Temporary Stone Track Limit of Deviation
 - Substation Site Compound
 - Substation Laydown Area
 - Pulling Position
 - Peat Depth Interpolation (m)
 - 0.01 - 0.50
 - 0.51 - 1.00
 - 1.01 - 2.00
 - 2.01 - 3.00
 - 3.01 +

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ISSUE PURPOSE
Peat Management Plan

PROJECT NUMBER
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FIGURE TITLE
Peat Depth Interpolation

FIGURE NUMBER
Figure 7

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