

E.ON Climate & Renewables UK Developments Ltd

Enoch Hill Wind Farm

Borrow Pit Assessment



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Amec Foster Wheeler Environment
& Infrastructure UK Limited



Report for

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Executive summary

Purpose of this report

This Borrow Pit Assessment has been produced to address a consultation response from SEPA regarding the three proposed borrow pits associated for the proposed Enoch Hill Wind Farm section 36 application submitted in September 2015 (“the Proposed Development”). It provides an overview of the borrow pit developments, and summarises the assessment of matters set out in Schedule 9 of the Electricity Act 1989 and relevant planning policy.

In response to comments received from consultees on the application documents, some design changes have been made, most notably a reduction in the number of turbines (and associated infrastructure such as crane pads) from up to 19 (The “Original Layout”) to up to 16 (The “Revised Layout”), and the repositioning of some of the remaining turbines. This has resulted in a reduction in the length of track required by ~800m and therefore less stone would be required, which means that the number of borrow pit search areas has reduced from three to two. This report forms part of the Further Environmental Information (FEI) presented to support this design. This report is intended to be read in conjunction with the Environmental Statement (ES), FEI and the Planning Statement for the Proposed Development submitted to Scottish Ministers in support of the application for consent under S36 of the Electricity Act and associated request for a direction that deemed planning permission be granted under the Town and Country Planning (Scotland) Act 1997 for the Proposed Development.

The Revised Layout of the Proposed Development comprises up to 16 wind turbines (with a maximum height to blade tip of 130 metres and a maximum rated generating capacity of up to 3.4 MW per turbine), one vehicular site access point, on-site access tracks, hardstanding areas, control building, onsite Scottish Power Energy Networks (SPEN) substation, electrical cabling, two anemometry masts and up to two borrow pits. During construction, a temporary compound will also be required to house a site office, welfare facilities and turbine component laydown areas. The proposed operational period of the Proposed Development would be 25 years from the date of the first commercial export of power to the grid. It has been assumed for the purposes of the Environmental Impact Assessment (EIA) which has been undertaken that the wind farm would be decommissioned after this date.

The Development Site is located approximately 5km to the south west of New Cumnock and approximately 7km to the north east of Dalmellington, within the administrative boundary of East Ayrshire Council (EAC). The total Development Site covers an overall area of approximately 1,466 hectares (ha), the majority of which is rough grazing land. The actual land take during the operational phase of the wind farm would be approximately 13.06ha (around 1% of the Development Site).

The Proposed Development has been the subject of an EIA, as reported within an Environmental Statement (ES) which accompanies a section 36 application and other associated documents which have been submitted to Scottish Ministers.



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1. Introduction

1.1 Background

- 1.1.1 An Environmental Impact Assessment (EIA) has been carried out for the proposed Enoch Hill Wind Farm (“the Proposed Development”). Amec Foster Wheeler were commissioned to prepare an Environmental Statement (ES), planning statement and design and access statement for the Proposed Development.
- 1.1.2 In response to comments received from consultees on the application documents, some design changes have been made, most notably a reduction in the number of turbines (and associated infrastructure such as crane pads) from up to 19 (The “Original Layout”) to up to 16 (The “Revised Layout”) and the repositioning of 12 of the remaining turbines. This report forms part of the Further Environmental Information (FEI) presented to support the Revised Layout. This Borrow Pit Assessment Report has been prepared to accompany the ES, FEI and Planning Statement that accompany the application for consent and deemed planning permission for the Proposed Development and should be read in conjunction with the relevant sections of the ES and FEI.
- 1.1.3 The proposed two borrow pits (reduced from the three presented in the original application) associated with the construction works for the Proposed Development are development components for which section 36 consent and deemed planning permission is sought. The Proposed Development requires to be considered under the terms of the 1989 Act. Paragraph 3(1) of Schedule 9 to the 1989 Act, imposes a duty on the licence holder or person authorised by an exemption to:
- “a) Shall have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeology interest; and*
 - b) Shall do what he reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or any such flora, fauna, features, sites, buildings or objects”.*
- 1.1.4 Paragraph 3(2) of Schedule 9 to the 1989 Act, imposes a duty on the Secretary of State (in this case the Scottish Ministers) to have regard to:
- (a) The desirability of the matters mentioned in paragraph (a) of sub-paragraph (1) above; and*
 - (b) The extent to which the person by whom the proposals were formulated has complied with his duty under paragraph (b) of that sub-paragraph.*
- 1.1.5 Scottish Planning Policy (SPP) states (Paragraph 243) that “*Borrow pits should only be permitted if there are significant environmental or economic benefits compared to obtaining material from local quarries, they are time-limited; tied to a particular project and appropriate reclamation measures are in place.*”
- 1.1.6 Additionally, SEPA have requested that a map of all proposed borrow pits must be submitted along with a site specific plan of each borrow pit detailing the:
- a) Location, size, depths and dimensions of each borrow pit;*
 - b) Existing water table and volumes of all dewatering;*
 - c) Proposed drainage and settlement traps, turf and overburden removal and storage areas;*
 - d) Restoration profile, nature and volume of infill materials, and, if wetland features form part of the restoration, 25 year management proposals.*

The impact of such facilities (including dust, blasting and impact on water) must be assessed in accordance with Planning Advice Note PAN 50 Controlling the Environmental Effects of Surface Mineral Workings (Paragraph 53). In relation to groundwater, information

(Paragraph 52 of PAN 50) only needs to be provided where there is an existing abstraction or GWDTE within 250m of the borrow pit¹.

1.1.7 The assessment presented in this report seeks to address the points outlined in the sections above.

1.2 The Proposed Enoch Hill Wind Farm Development

Wind Farm

1.2.1 The Proposed Development comprises the erection, 25 year operation and subsequent decommissioning of a maximum of 16 wind turbines (each with a maximum height to blade tip of 130 metres and maximum rated capacity of up to 3.4 MW), one vehicular site access point, on-site access tracks, hardstanding areas, control building, on-site substation², electrical cabling and two anemometry masts. A detailed description of the Proposed Development can be found in **Chapter 4** of the FEI.

Temporary Construction Works

1.2.2 In addition to the borrow pits, a temporary compound to house a site office, welfare facilities, and laydown areas would also be required during the construction phase. See **Figures 4.1 to 4.12** of **Chapter 4** of the FEI for details of development components.

Borrow Pits

1.2.3 It is proposed that up to two borrow pits could be developed as part of the construction works associated with the Proposed Development. Three search areas were identified as part of the original EIA, and it is likely that subject to detailed geotechnical investigation, suitable material exists on site for use in creation of tracks and areas of hard standing. Once works have been completed, the borrow pits would be restored. Given the proposed reduction in the number of turbines and associated infrastructure, less stone would be required to be extracted and therefore there is potential to reduce the number of borrow pit search areas. This report assesses these three borrow pit search areas and provides recommendations in terms of which borrow pit would be the most appropriate to remove from the Revised Layout in terms of environmental considerations.

1.3 Structure of this Report

1.3.1 The rest of this report is structured as follows:

- ▶ Section 2 provides details of the site description and a high level method of working;
- ▶ Section 3 provides details of the rationale for the proposed borrow pits;
- ▶ Section 4 identifies the planning policy framework against which the proposed borrow pits have been assessed, in terms of National and Development Plan policies and other relevant considerations;
- ▶ Section 5 provides a summary of the environmental impacts of the proposed borrow pits;
- ▶ Section 6 sets out a detailed planning assessment of the proposed borrow pits against the applicable planning policy framework (which is outlined in section 4); and
- ▶ Section 7 provides a summary of sections 1 - 6 and an overall conclusion.

¹ Consultation response on the Enoch Hill section 36 application submission from SEPA dated 10 November 2015.

² This substation would be operated and built by SPEN. The details of this compound and the SPEN substation would be submitted for approval in accordance with the planning conditions should consent be granted.

2. Site Description and Method of Working

2.1 Development Site Characteristics

- 2.1.1 The Development Site, the boundary of which is shown on FEI **Figure 1.1 (Appendix A)** of this report, is located in East Ayrshire, directly north of the border with Dumfries and Galloway. The proposed turbines have been located in the southern portion of the Development Site through the iterative design process which has resulted in turbines being located south away from sensitive landscape and visual receptors and residential properties. A detailed site description of the Development Site is set out in section 3.2 of **Chapter 3** of the ES.
- 2.1.2 The proposed borrow pits which were presented as part of the section 36 application are located in the north western part of the site above areas which have been identified by desk study to be likely to contain suitable bedrock at the following indicative locations:
- ▶ Borrow Pit A search area – E 255100, N 609600;
 - ▶ Borrow Pit B search area – E 256000, N 608700; and
 - ▶ Borrow Pit C search area – E 255600, N 607800.
- 2.1.3 It is proposed to progress Borrow Pit A and Borrow Pit B only.
- 2.1.4 **Figures 1A-C** below shows a photograph for each of the proposed borrow pit locations. The borrow pits would be located within habitat dominated by mire plant communities which cover approximately 80% of the Development Site. 95% of this mire plant communities growing at the Development Site are classed as being blanket mire (M20 and M25), with the remaining 5% considered to be Soligenous Mire (M6). The rest of the Development Site (approximately 20%) is mainly comprised of rush pasture (M23).
- 2.1.5 **Figure 1A** below shows the site location for proposed Borrow Pit A and the vegetation in the area. The site contains Blanket Mire (M20 and M25) and Grassland (M23 and M23a).

Figure 1A Borrow Pit A (Peat Hill)



2.1.6 **Figure 1B** below shows the site location for Borrow Pit B and the range of vegetation in the area. The site contains mainly of Blanket Mire (M20 and M25) and Grassland (M23a).

Figure 1B Borrow Pit B (Rigg Hill)



2.1.7 **Figure 1C** below shows the site location for Borrow Pit C and the range of vegetation located on the site. The site contains Blanket Mire (M20), Soligenous Mire (M6) and rush pasture (M23a).

Figure 1C Borrow Pit C (Southerly Borrow Pit)



2.2 Site of Proposed Borrow Pits

- 2.2.1 Three locations within the Development Site boundary for proposed onsite borrow pits were identified. These locations contain rock suitable for tracks and hard standings. This conclusion is based on visual inspections during site visits. The three potential Borrow Pit Search Areas assessed in the ES are illustrated on FEI **Figure 1.2 (Appendix A)** of this report, although it should be noted that only two borrow pit search areas are included as part of the Revised Layout and a design has not been completed for Borrow Pit C as this would not form part of the Revised Layout for the reasons outlined later in this report.

Existing Ground Conditions

- 2.2.2 Borrow Pit A comprises Blanket Mire and Grassland over basalt andesite (igneous rock). There are very limited superficial deposits across much of the Borrow Pit Search Area with bedrock outcropping in several places. Most of the Peat Hill site has limited soils of up to 0.5m depth. There are pockets of the Borrow Pit Search Area having overburden up to 1m and the most southerly extent of the search area has deeper pockets of overburden up to 2.5m. These deposits comprise glacial till. However it is likely that these deeper overburden areas would be avoided through the design of the actual Borrow Pit. There is also a small watercourse that runs around the southern extent of the search area.
- 2.2.3 Borrow Pit B comprises Blanket Mire and Grassland over glacial till and basalt andesite. The Rigg Hill site predominantly contains little in the way of overburden, with most of the search area containing less than 0.5m of overburden. A small part of the southern end of the search area is likely to have overburden around 0.7m deep.
- 2.2.4 Borrow Pit C comprises a matrix of Blanket Mire, Soligenous Mire and Grassland. Borrow Pit Site C has a more undulating ground condition, with overburden depths ranging between outcropping rock and 1.7m of overburden comprising peat deposits and glacial till over conglomerate.
- 2.2.5 **Figure 5** of the revised Peat Slide Risk Assessment (**Appendix A** of this document) shows the extent of the Borrow Pit Search Areas overlain on the bedrock, and **Figure 4** of the revised Peat Slide Risk Assessment (**Appendix A** of this document) shows the extent of the Borrow Pit Search Areas overlain on the superficial deposits mapping.

2.3 Method of Working

- 2.3.1 Information about the method of working for the proposed borrow pits is set out below:

Borrow Pit Preparation

- 2.3.2 Preparatory works associated with the borrow pits would commence at the start of construction for the Proposed Development. Each Borrow Pit would be worked in accordance with Quarries Regulations 1999.
- 2.3.3 Initial site investigation works (enabling works) would be carried out to ascertain the quantity and suitability of the rock for both track/hardstanding prior to the soil stripping taking place.
- 2.3.4 Information obtained from site visits, and previous peat probing activities indicate there are limited soils and overburden at Borrow Pit Search Area A and B. However there is overburden up to 1.7m in places at Borrow Pit Search Area C. Soils and overburden material would be stripped from the area and stored in a bund as set out in **Section 2.4** below.

Drainage

- 2.3.5 Prior to the commencement of construction of the Proposed Development, a drainage system incorporating adequate mitigation measures would be installed to prevent silt pollution around the perimeter of each of the borrow pits. The detail would be set out in a Construction Method Statement,

Environmental Management Plan and Water Quality Management Plan which are expected to be required by conditions attached to any deemed planning permission, and which would be approved in writing by East Ayrshire Council (EAC) should consent be granted. Mitigation measures may include:

- ▶ Overburden/loose spoil would be stabilised using geo-textile material should that be required and each mound would not exceed 3m in height;
- ▶ The borrow pits would be excavated with a slight slope into the hill, to provide attenuation of any accumulated runoff with each borrow pit, at a low point within each borrow pit to allow for settlement of solids; and
- ▶ Accumulated runoff within each borrow pit would be pumped out (provided water quality is suitable) into nearby vegetation away from watercourses, making sure to change the location of the hose to avoid inundation at any one location.

2.3.6 In addition, the following pollution prevention measures would be implemented to minimise any pollution risk that may arise through the increased surface run-off and sediment mobilisation likely to be generated by each borrow pit:

- ▶ Construction of each of the proposed borrow pit working areas would be carried out according to Scottish Environmental Protection Agency (SEPA) pollution prevention guidance (PPG) and the Construction Industry Research and Information Association (CIRIA) guidance for site works (C692);
- ▶ Installation of vegetated cut-off drains, peripheral bunds and ditches around the working areas would intercept uncontaminated surface run-off and divert it around the works ensuring that uncontaminated surface water run-off does not become laden with silt; and
- ▶ Silt traps, silt fences and/or straw bales would be used, if required, to capture suspended solids generated during the operation of the borrow pits and to minimise the spread of runoff to the wider environment including the potential Ground Water Dependant Terrestrial Ecosystems (GWDTEs) around Borrow Pit B Search Area.

Rock Extraction and Processing

2.3.7 Rock extraction would commence after soils and overburden have been stripped from the entire area of each borrow pit (the area for each borrow pit can be found on **Figure 4.14a** for Borrow Pit A, **Figure 4.14b** for Borrow Pit B, **Appendix A** of this report). A design has not been completed for Borrow Pit C as this would not form part of the revised wind farm design for the reasons outlined later in this report. Excavation of rock is likely to involve a combination of blasting in terms of the harder igneous rock accompanied by hard ripping. Sections of rock are likely to be progressively blasted depending on the nature of the rock. The area to be blasted would be identified, holes drilled, packed with charge and then blasted. The precise number of blasts would not be known until site investigation work has been completed and a suitable blast design established. Extraction of the blasted rock would take place using bulldozers and/or excavators with hydraulic excavator and shovels.

2.3.8 Blasts would be designed in line with modern working practices using a suitably qualified contractor to ensure that ground vibration and air overpressure are minimised. Measures would also be implemented to minimise dust arising from blast operations by dampening down blast areas prior to blasts taking place, should that be required.

2.3.9 An ongoing geotechnical assessment would be undertaken by a qualified geotechnical engineer throughout the excavation of rock at each of the Borrow Pit sites, to ensure that the stability of each hill is maintained and to ensure that the excavation area itself remains a safe environment to work within.

2.3.10 It is expected that approximately 75% of the stone extracted would be suitable for the intended uses for track and hard standing creation. This ratio is based on sites visits and previous experience of rock extraction in the wider area. If unsuitable material is encountered, this would either be left in

situ or extracted, stored in shallow peripheral bunds within the quarry floor then used in the restoration of the Borrow Pit.

- 2.3.11 The total volume of rock that is proposed to be extracted from each Borrow Pit is set out in **Table 2.1** below. However, a smaller volume of rock may be extracted if the rock quality is higher than that predicted.

Table 2.1 Estimated Volumes of Rock Available from the Borrow Pit

Search Area	Borrow Pit Search Area (m ²)	Estimated Area Excavated (m ²)	Total Estimated Rock Volume (m ³)*
A	136,000	30,000	90,000
B	73,000	10,000	30,000
Total Rock Volume			120,000

*assuming an average borrow pit depth of 4m, (1m-8m) and 75% recovery rate

- 2.3.12 In order to produce material suitable for use in road construction, it is likely to be necessary to crush the rock to a suitable size. Mobile crushing plant would be utilised within the Borrow Pit or at the concrete batching plant compound area. Some limited stockpiling of material may be necessary to facilitate materials handling during construction of the Proposed Development. Stockpiles would be accommodated within the Borrow Pit area, and within the batching plant compound area.

- 2.3.13 **Figure 4.14a** and **Figure 4.14b (Appendix A)** show the cross section of each of the Borrow Pits, together with their restoration profile, a photograph of each Borrow Pit location, a plan of Borrow Pit A and B, and an artist's impression (elevation) of the extent of extraction and restoration profile.

2.4 Soils and Overburden Storage Areas

- 2.4.1 Topsoil and other overburden materials would be excavated separately and stockpiled adjacent to the Borrow Pit working area. Stripped overburden would be placed to provide a natural bunded barrier, which would help to prevent public access to the borrow pit and prevent surface run-off from entering the Borrow Pits from surrounding land. Temporary fencing would be used to provide an additional physical barrier to prevent unauthorised public access whilst the Borrow Pits are active. Additional overburden material not placed in the peripheral bund would be temporarily stored in an overburden storage area, located immediately adjacent to the Borrow Pit working area. All soils would be stored in accordance with British Standard BS 8601:2013 and BS 3882 2015.

- 2.4.2 As illustrated on **Figures 9.1, 9.2** and **9.3** of the updated Peat Slide Risk Assessment (PSRA) produced as part of the FEI as **Appendix 6.B** of the FEI, it is not anticipated to encounter large quantities of peat at Borrow Pit locations A and B. **Table 2.2** illustrates the quantities of soils and peat at each of the Borrow Pit locations. Any peat encountered within the proposed Borrow Pit working area would be extracted and stockpiled in a dedicated area. Stockpiled peat would not be placed on steep ground in order to prevent the possibility of peat slide. Peat management would be carried out in accordance with a Soils and Peat Management Plan (PMP), which would be secured by a condition on the deemed planning permission should consent be granted. In addition to this, a revised PMP has been included in the FEI at **Appendix 6.A**.

Table 2.2 Soil / Peat Depths and Excavated Volumes at Borrow Pits

Borrow Pit Search Areas			
Search Area	Total Area m ²	Organic material average depth m	Organic material Volume m ³
A	30,000	0.33	9,900 (not peat)
B	10,000	0.34	3,400 (not peat)

2.5 Restoration Strategy

- 2.5.1 Following the completion of rock extraction, each Borrow Pit would be restored. The purpose of restoring the Borrow Pits is to ensure that the post-excitation landform is sympathetic with the surrounding topography, landscape character and allows natural drainage to occur down slope.
- 2.5.2 Borrow Pit A is located on the westerly slopes of Peat Hill and Borrow Pit B is located on the south westerly slopes of Rigg Hill. The sites have been chosen to maximise the potential to extract the required rock volume of the appropriate quality and because the adjacent landform provides the opportunity to minimise adverse landscape and visual effects. Both Borrow pits have been designed so that the working faces would be aligned in a south west to south east orientation and would face away from the sensitive receptors to the north of the site.
- 2.5.3 The proposed restoration of the Borrow Pits would retain the benches from the extraction process, thereby leaving bare crags. These crags would be left to revegetate naturally. The quarry floor and a small portion of the back wall of each Borrow Pit would be back-filled with the overburden and the limited soils removed during the preparatory works reinstated. Restoration would be carried out in accordance with the proposed restoration details illustrated in **Figure 4.14a** and **Figure 4.14b (Appendix A** of this report). Rock identified as being unsuitable for use onsite and any overburden (excluding soils and peat) would be taken out of storage and used to dress back the Borrow Pit floor and the lower slopes of each Borrow Pit. The excavated soil materials, including any peat identified for use in the borrow pit restoration as set out in the revised Peat Management Plan (PMP) (**Appendix 6.A** of the FEI) would be taken from the storage areas and the peripheral Borrow Pit bund and used to recreate a soil profile within each Borrow Pit area. The finished restoration profile would be gently undulating and tie in with the adjoining landform contours.
- 2.5.4 Together with any peat which may be encountered within the Borrow Pit areas, the PMP concludes that any surplus peat (from the wider wind farm construction process) could be used for reinstatement of the Borrow Pits. In line with the requirements of the revised PMP (**Appendix 6.A** of the FEI), the primary objective of peat reinstatement at the Development Site is to create conditions alongside, around and within Borrow Pits that will enable the establishment of habitats that tie into adjacent (mainly mire) habitats. Up to 17,200(m³) of peat could be reinstated in and around the Borrow Pit sites. This would strengthen the bog habitats present in and around the sites. It is anticipated that if peat turf has been correctly stored, no further re-seeding would be required. However, re-seeding would be carried out, if judged to be necessary, by the Ecological Clerk of Works (ECoW) and Site Environmental Engineer.

3. Rationale for the Proposed Borrow Pits

3.1 Construction Materials Requirement

- 3.1.1 The estimated volumes of stone required for the Proposed Development is set out in Table 4.6 of the ES. The estimated volumes of stone required from each of the Borrow Pits is indicated in **Table 2.1** above. This volume is in excess of the likely required volume of stone for construction, and recognises that detailed investigations may mean a relatively higher proportion is secured from one potential Borrow Pit Search Area than another, but captures necessary flexibility in the choice and size of each Borrow Pit.

3.2 Site Selection

- 3.2.1 Three potential Borrow Pit locations were identified within the Development Site boundary of the Proposed Development presented in the ES, the locations of which were informed by site visits both by ground investigation teams and landscape consultants. These search areas were identified by professional judgement, with the final location; extent and estimate of material to be won from each potential Borrow Pit to be determined after full ground investigation works and testing is complete which would be undertaken if the Proposed Development was granted planning consent. The search areas shown on FEI **Figure 1.2 (Appendix A)** of this report represent suitable areas on the Development Site in which rock could be excavated. It is important to note that the actual size of the Borrow Pits would comprise only a smaller portion of the search area shown.
- 3.2.2 Based on the existing site walk over observations, and geological mapping, Borrow Pit A may be suitable as a possible area to win rock to manufacture concrete aggregate. The rock identified on site is basalt andesite, an extrusive igneous volcanic rock. Not all rock is suitable to manufacture concrete aggregates. This would be confirmed during detailed ground investigation works, and chemical testing which would be undertaken if consent was granted for the Proposed Development. Borrow Pit B has a similar rock composition to Borrow Pit Search Area A, however there are deeper deposits of glacial till over the area. Borrow Pit C would comprise a different rock type, a conglomerate.

3.3 Benefits of the Proposed Borrow Pits

- 3.3.1 There are a number of benefits from the proposed Borrow Pits which are set out in further detail below:

Reduced Transport Impacts

- 3.3.2 The proposed Borrow Pits would provide an onsite source of rock and aggregate within the Development Site. This would reduce the need to import significant volumes of construction materials for the Proposed Development. Therefore, compared with alternatives, (Tincornhill Quarry, approximately 18km away) the proposed onsite Borrow Pits would result in a significant reduction in HGV movements (a reduction in approximately 15,300 two way trips) during the construction of the Proposed Development including a reduction in construction traffic on the local road network.
- 3.3.3 As highlighted in **section 3.2** above, by opening up the proposed Borrow Pits, the rock needed to construct the Proposed Development's infrastructure would be "won" within the confines of the Development Site which has associated environmental benefits as dump trucks, heavy plant and site vehicle movements would be reduced to the minimum distances of travel. Risks to the environment such as silt from the access roads finding its way into the watercourses, dust during dry spells getting into the watercourses and onto the surrounding Mire habitat would also be reduced as heavy vehicles, plant and site traffic would be confined to a much more condensed work area.

- 3.3.4 Compared to importing the full balance of required construction materials this would provide multiple local benefits, including reduced noise impacts from passing vehicles, reduced potential for congestion, lower air emissions and reduced diesel use during the construction phase of the Proposed Development. The proposed HGV route for transporting materials from Tincornhill Quarry to the site would pass through a number of villages including Sorn, Catrine and New Cumnock. The use of the proposed Borrow Pits would mean traffic through these villages, and therefore the effects of HGVs on the village would be reduced.

Landscape Restoration

- 3.3.5 A commitment to restore the landscape at the Borrow Pits after the required construction materials have been excavated was included in the ES for the Proposed Development. Once rock extraction has been completed, suitable overburden from the Borrow Pits would be replaced in order to create a new land profile that would provide exposed crags for the upper benches, and overburden and soil profile restoration around the lower bench and quarry floor. This soil profile on the quarry floor would be gently undulating to tie in with the contours of the land on either side of each of the Borrow Pits. The finished substrate would be allowed to vegetate through the process of natural colonisation. Should consent be granted for the Proposed Development, this restoration requirement would be secured by a condition on the deemed planning permission.

4. Planning Policy Framework

4.1 Introduction

- 4.1.1 This section identifies the national and development plan policies, and sets out the key considerations, planning policies and other relevant considerations for the proposed Borrow Pits.

4.2 National Level

The Electricity Act 1989

- 4.2.1 As identified in **Chapter 1** of the Planning Statement which accompanied the ES, the Proposed Development requires to be considered under the terms of the 1989 Electricity Act. This is discussed in full in the Planning Statement.

National Planning Framework 3 (NPF3)

- 4.2.2 NPF3 provides a framework around which to orientate Scotland's long-term spatial development. The Framework represents the spatial expression of the Scottish Government's Economic Strategy (2011) and it highlights the spatial planning implications of multiple national policy documents and commitments, including the binding decarbonisation targets enshrined within the Climate Change (Scotland) Act 2009.
- 4.2.3 Overall the NPF3 emphasises the Scottish Government's commitment to increasing sustainable economic growth across all areas of Scotland and therefore orientates the efforts of Scotland's planning system towards this purpose. The introduction to the Framework notes the importance of maintaining economically active and vibrant rural areas whilst "*safeguarding our natural and cultural assets and making innovative and sustainable use of our resources*".

Scottish Planning Policy (SPP)

- 4.2.4 The stated purpose of SPP is "*to set out national planning policies which reflect Scottish Ministers' priorities for operation of the planning system and for the development and use of land*" (paragraph i). In doing so the SPP sets out the Scottish Government's expectations regarding the treatment of specific planning issues within development planning and development management.
- 4.2.5 SPP paragraph 29 sets out several sustainable development principles to guide policies, decisions and developers on how to consider and achieve sustainable development.
- 4.2.6 Information regarding sustainable resource extraction is set out within the SPP at paragraphs 234 – 248. Multiple policy principles related to resource extraction are identified within the SPP at paragraph 235, including that the planning system should:
- ▶ "*Safeguard workable resources and ensure that an adequate and steady supply is available to meet the needs of the construction, energy and other sectors;*
 - ▶ "*Minimise the impacts of extraction on local communities, the environment and the built and natural heritage; and*
 - ▶ "*Secure the sustainable restoration of sites to beneficial afteruse after working has ceased*".
- 4.2.7 Specific development management requirements for proposed Borrow Pits are set out within the SPP at paragraph 243. This paragraph states that Borrow Pits should only be permitted:
- ▶ "*If there are significant environmental or economic benefits compared to obtaining material from local quarries;*

- ▶ *They are time-limited; tied to a particular project; and*
- ▶ *Appropriate reclamation measures are in place.*

National Planning Advice and Circulars

4.2.8 National planning policy is supported by numerous Planning Circulars, Planning Advice Notes (PAN), Advice Sheets and Ministerial/Chief Planner Letters to Planning Authorities. The following Planning Circulars and Advice documents are considered to be of relevance to the proposed Borrow Pits and have been considered throughout the design process:

- ▶ PAN 2/2011 Planning and Archaeology (July 2011);
- ▶ PAN 1/2011 Planning and Noise (March 2011);
- ▶ PAN 60 Planning for Natural Heritage (2000, revised January 2008);
- ▶ PAN 51 Planning, Environmental Protection and Regulation (Revised October 2006); and
- ▶ PAN 79 Water and Drainage (September 2006).

4.3 The Development Plan

4.3.1 The current Development Plan applicable to the Development Site comprises:

- ▶ The Approved Ayrshire Joint Structure Plan 2007; and
- ▶ The Adopted East Ayrshire Local Plan 2010.

4.3.2 It should be noted that both plans are due to be superseded by the East Ayrshire Local Development Plan, currently at Proposed Plan stage with the aim to be adopted by November 2016.

Approved Ayrshire Joint Structure Plan (2007)

- 4.3.3 Policy STRAT 1 – Sustainable Development sets out East Ayrshire’s policy regarding sustainability. In particular Schedule 1, attached to the policy lists a number of “*guiding principles of sustainable development*” for use in determining planning applications.
- 4.3.4 Policy ENV1 Landscape Quality seeks to maintain and enhance the quality and distinctiveness of landscapes across Ayrshire.”
- 4.3.5 Policy ENV2 – Landscape Protection sets out assessment criteria for proposals within National Scenic Areas and Sensitive Landscape Areas. The Development Site is located within a Sensitive Landscape Area.
- 4.3.6 Policy ENV6 – Protection of the Built Heritage states that proposals which would have an adverse impact on listed buildings, conservation areas, historic gardens & designed landscapes, archaeological locations and landscapes will not be in conformity with the Structure Plan.

East Ayrshire Local Plan (2010)

The East Ayrshire Local Plan 2010 (the Local Plan) was adopted by East Ayrshire Council on 26th October 2010. Volume 1 of the Local Plan sets out an overall strategy for the development of East Ayrshire up to 2017. The Local Plan is focused around achieving a single primary strategic aim, which is “*to promote sustainable development, to maximise the economic potential of East Ayrshire and to improve the quality of life of its residents*”. Around this, a further nine specific aims to frame proposals and policies have been identified and the following four are of relevance to the Proposed Development:

- ▶ *“To maintain and improve the integrity, vitality and viability of the area’s settlements and their rural settings (AIM 2);*
- ▶ *To protect, conserve and enhance the character, appearance and amenity of East Ayrshire, especially as regards its landscape quality, the built and natural environment and areas of natural heritage and built heritage importance (AIM 4);*
- ▶ *To promote appropriate development in rural areas (AIM8); and*
- ▶ *To address the threat posed by climate change, to encourage the more efficient use of resources, to reduce energy consumption and CO₂ emissions and to facilitate the development of renewable sources of energy (AIM9)”.*

- 4.3.7 Policy SD1 – General Strategic Policy is linked to Policy STRAT 1 within the Structure Plan, and references the Guiding Principles for Sustainable Development contained within Schedule 1.
- 4.3.8 Strategic Policy ENV1 - Built Heritage seeks to protect Listed Buildings and Conservation Areas (including their respective settings), Historic Gardens and Designed Landscape, Scheduled Ancient Monuments and Archaeological and Industrial Archaeological Sites and Landscape.
- 4.3.9 Strategic Policy ENV2 - Natural Heritage aims to protect, preserve and enhance all natural heritage resources requiring conservation including Special Protection Areas, Special Areas for Conservation and Sites of Special Scientific Interest, Confirmed or Provisional Wildlife Sites and Local Nature Reserves.
- 4.3.10 Strategic Policy ENV 3 – Sensitive Landscape Areas sets out the *“priority and prime consideration”* which will be afforded to the protection and enhancement of the landscape in the determination of proposed developments located within Sensitive Landscape Areas. The Development Site is located within a Sensitive Landscape Area.
- 4.3.11 Policy ENV15: Natural Heritage aims to prevent development causing “unacceptable and irreparable damage to important landscape features”. It requires developers “to conserve and enhance features which contribute to the intrinsic landscape value and quality of the area concerned, and which are likely to be adversely affected by particular development proposed”.
- 4.3.12 Policy ENV16: Landscape Character seeks to prevent development which would create an unacceptable visual intrusion or irreparable damage to the landscape character of rural areas.
- 4.3.13 Policy ENV17 - Land in Rural Areas includes a general presumption against any development that would *“have significant unacceptable adverse impact or cause irreparable damage to built heritage resources requiring conservation of their settings, including listed buildings, conservation areas, historic gardens and designed landscape, scheduled ancient monuments, archaeological and industrial archaeological sites.”* This presumption applies to development proposals which would result in significant unacceptable adverse impact or cause irreparable damage to natural heritage resources, have significant unacceptable adverse visual impact or cause irreparable damage to the landscape character and scenic quality of the area within which it is proposed. The policy is also applicable to proposals which affect the quality of water resources or result in the destruction of areas of peat which are considered to be of significant ecological value.
- 4.3.14 Policy ENV21: Flooding includes a presumption against development that is likely to result in increased flood risk.
- 4.3.15 Policy ENV24: Water Environment includes a presumption against any developments which have an adverse effect on the water environment.
- 4.3.16 Policy ENV25: Air Quality, Noise and Light Pollution requires all developers to ensure that their proposals have minimal adverse impact on air quality. The policy also states that the Council will also ensure that *“new development will have minimum adverse effects on the physical environment and the amenity of an area as a result of light and noise pollution”.*
- 4.3.17 Policy ENV26: Noise includes a presumption against any proposals *“located in areas demonstrated or proven to be directly adversely affected by existing noise or other polluting activities, or within safety zones around recognised hazardous installations”.*

The Proposed East Ayrshire Local Development Plan

4.3.18 The most relevant policies identified in the proposed Local Development Plan are:

- ▶ Policy OP1: Overarching Policy sets out a number of criteria relating to general environmental and amenity issues which should be considered in the determination of all development proposals;
- ▶ RES11 Residential Amenity; and
- ▶ ENV12 Water, Air and Noise Pollution.

5. Environmental Impacts

5.1 Introduction

- 5.1.1 The proposed Borrow Pits have been assessed in detail in the technical chapters in **Volume 1** of the ES and FEI. A summary of the environmental impacts of the Borrow Pits is provided below.

5.2 Hydrology and Hydrogeology

- 5.2.1 The ES and FEI at **Chapter 13: Geology, Hydrology and Hydrogeology** in Volume 1 has assessed Borrow Pits and their potential impacts on the water environment. The proposed Borrow Pits would not be located on any watercourse or require the diversion of any watercourse. Borrow Pit A would be located in excess of 50m from the Polmath Burn and Borrow Pit B would be located approximately 150m from the Knockburnie Burn and approximately 100m from the Crockradie Burn, and Borrow Pit C would be located 35m from the Knockburnie Burn. These watercourses are tributaries of the River Nith. The EIA concludes that the proposed Borrow Pits would not result in significant effects on surface water features. The ES concludes that the Borrow Pits have the potential to affect the groundwater flow environment of the area to a negligible degree, and the excavation of the Borrow Pits would not result in a significant effect on aquifers.
- 5.2.2 The ES concludes that the Proposed Development, including the proposed Borrow Pits, would not result in significant effects in terms of hydrology, including surface water, ground water, GWDTE and private water supplies. Notwithstanding this, the ES suggests a number of mitigation measures to minimise potential effects from the Borrow Pits. These mitigation measures are outlined below:
- ▶ A Construction and Environmental Management Plan (CEMP) would be put in place to ensure that the most sensitive construction activities with the greatest impact would be properly considered and managed to ensure negligible damage is caused to the area's hydrology and hydrogeology factors;
 - ▶ A Drainage Management Plan (DMP) would be implemented to ensure that adequate drainage is provided throughout construction of the Proposed Development in order to prevent runoff entering and polluting nearby watercourses. The DMP would set out the types of drainage to be specifically installed across the site, and would meet with the requirements of SEPA and its PPG notes/ Controlled Activity Regulations (CAR) guidance. The plan would also set out the drainage maintenance strategy, to ensure that drainage features are regularly inspected and cleared out so as to ensure effective operating. Consultation on this plan would take place with the SEPA/Scottish Natural Heritage (SNH)/EAC to ensure that all parties are content with the proposed pollution control measures;
 - ▶ Adequate drainage should be designed to cater for expected heavy rainfall events, such that water is not allowed to pond upslope of the excavation;
 - ▶ Similar additional mitigation measures relevant to controlling erosion and runoff from the Borrow Pits would be installed e.g. use of cut-off drains or bunds.

5.3 Ecology

Protected Species

- 5.3.1 Protected species surveys for otter, water vole, badger and bats have been carried out across the Development Site. In addition habitats on site have been assessed for other notable species including invertebrates, fish, amphibians, reptiles, red squirrel and hedgehog have been carried out. No evidence of badgers or water vole have been found around the Borrow Pit areas. A number of otter spraints have been found near Borrow Pit B. There is limited evidence of bats using the

Development Site, owing to the limited foraging potential, however it is likely that pipistrelles would be using the water courses for foraging and commuting from one side of the Development Site to the other. No evidence of invertebrates, amphibians, reptiles, red squirrel, hedgehog, brown hare, mountain hare, polecat, pine martin and wild cat have been found around the Development Site. Small numbers of brown trout have been identified in some of the watercourses within the Development Site, and not close to the Borrow Pit areas.

Habitat

- 5.3.2 A national vegetation classification (NVC) survey has been carried out, and this is set out together with the protected species surveys in **Appendix 11.A** of the ES. The Borrow Pit areas mainly comprise mire, including blanket bog and flush (NVC M25 at Borrow Pit A and B, and NVC M20 at Borrow Pit C). The excavation of the Borrow Pits (total 5 ha excavated from within the defined search areas) would result in the temporary and permanent loss of some of this habitat. However this would not result in any significant adverse effects in EIA terms as set out in **Chapter 11** of the ES and FEI.
- 5.3.3 **Chapter 11: Ecology** of the ES contains a number of mitigation measures to reduce not significant adverse effects on ecology. In addition to the preparation of a CEMP, it is proposed that:
- ▶ All construction activity would be limited to clearly-defined working areas, vegetation clearance would be kept to a minimum and areas of hard standing would also be minimised to reduce the need for additional drainage provision;
 - ▶ Storage of materials would be confined to areas of hard standing and appropriately located away from sensitive features such as those areas of known value to protected species and watercourses;
 - ▶ Any trenches associated with the Borrow Pits would have a means of escape (such as a long wooden or metal plank). Furthermore, the Borrow Pit would be fenced off appropriately to reduce access. Pipes being stored on-site would be open at both ends to allow animals to enter and exit. Where pipes are not open at both ends, they will be capped to prevent otters from entering/becoming trapped.

Ground Water Dependent Terrestrial Ecosystems (GWDTE)

- 5.3.4 There are three GWDTEs located within the Development Site. Borrow Pit Search Area A is not located close to, or within a zone of influence of any GWDTE, the nearest GWDTE is located at GWDTE 207. Borrow Pit Search Area B is located within a zone of influence of GWDTE 208. This area is identified as having a high likelihood of GWDTE, and is made up of habitat comprising M23 rush-pasture, vegetation of High ground water dependence. However careful consideration of the design of the actual Borrow Pit extraction area has avoided the zone of influence. Borrow Pit search area C is also located close to GWDTE 208. FEI **Figure 13.1** Hydrological Constraints (included in **Appendix A** of this report) shows this. In order to minimise any potential impact of all the construction works associated with the Proposed Development, (including Borrow Pits), on the local 3 GWDTEs, the following mitigation measures would be adopted should consent be granted:
- ▶ Storage of material/re-fuelling on defined areas of hardstanding to prevent infiltration to the groundwater body;
 - ▶ Contingency plans to ensure risk of spillages are minimised;
 - ▶ Abstraction of groundwater from excavations to be utilised for compensatory support;
 - ▶ Implementation of a PMP including inspection and maintenance programme; and
 - ▶ Designated areas for refuelling, maintenance and washing of vehicles/plant.
- 5.3.5 **Chapter 11** of the ES and FEI concludes that the Borrow Pits would not result in significant effects in terms of ecology.

5.4 Air Quality

- 5.4.1 The main air quality issue that could be associated with the proposed Borrow Pits (mineral extraction) is the generation of dust. This is because the method of extraction can sometimes involve large-scale excavation and handling of potentially dry materials, which are susceptible to dust generation. In addition to operations involving the excavation or processing of rock, dust generation is mainly associated with transportation of overburden. Such operations involve the trafficking of unsurfaced haul roads by dump trucks and other vehicles. Wind blow across bare ground or stockpiles of processed mineral can also represent a source of potential dust generation.
- 5.4.2 In theory, receptors can potentially be affected by dust up to 1 km from the source. This is generally seen as a worst case scenario, and any dust emissions are more likely to be deposited much closer to the dust sources, usually within 500m, depending on size characteristics and in the absence of appropriate mitigation. Receptors identified as being susceptible to dust from the proposed Borrow Pits, relate largely to the small burns around the proposed Borrow Pit areas as they are tributaries of the River Nith. Residential receptors located to the north of the site, have the potential to be impacted by Borrow Pit A. The nearest residential properties are located at Maneight and Ault Farmhouse (Craighouse), approximately 560m and 620m from the proposed Borrow Pit A. The precise distance that dust can travel will depend on the nature of the activity onsite, wind direction, wind speed, particle size distribution and moisture content, which all influence whether the potential for dust annoyance exists.
- 5.4.3 A number of measures to minimise the generation of fugitive dust at the Borrow Pit faces would take place. This would include any drilling rigs being fitted with effective dust suppression equipment. This type of inherent mitigation is good practice. Prior to drilling and blasting taking place, the area to be blasted would be dampened down if necessary. In addition to this, and owing to the fact that such operations would be taking place within the Development Site, the likelihood of fugitive dust from drilling and blasting operations leaving the Development Site perimeter would be unlikely.
- 5.4.4 It is considered that the proposed Borrow Pit activities would not result in the generation of fugitive or particulate dust that would result in significant impacts on the nearby receptors including the water courses and the residential properties. This is owing to the inherent mitigation proposed to minimise dust generation at source.

5.5 Noise and Vibration

- 5.5.1 Construction noise effects are normally of a temporary nature and result from both moving and static sources. An assessment considering noise from the construction and use of the Borrow Bits has been undertaken following guidance presented within BS 5228:2009+A1:2014 '*Code of practice for noise and vibration control on construction and open sites – Part 1: Noise*'. The assessment considered compliance with appropriate noise limit(s) advocated within BS 5228:2009+A1:2014.
- 5.5.2 In the absence of a detailed method statement for construction of the Proposed Development, predictions of noise impacts from the construction and use of the Borrow Bits were undertaken using a typical plant list based upon knowledge of similar wind farm construction projects.
- 5.5.3 The noise predictions confirmed that noise effects may occur when work is at its closest approach to the receptors. However, due to the separation distances of approximately 560m between Borrow Pit A and the nearest receptor, the minimum noise guideline value of 65dB (A) quoted in BS5228-1:2009+A1:2014 would not be exceeded at any of the identified receptors. On this basis, construction noise including extraction at the Borrow Pit areas is unlikely to have a 'significant' effect upon the closest assessed receptors. However, general guidance for controlling construction noise, which is given in British Standard 5228-1:2009+A1:2014 is listed in **Chapter 7: Noise** of the ES and summarised below:
- ▶ Restricted hours of working for most HGV movements (07:00 to 19:00 Monday to Friday, 07:00 - 12:00 Saturdays) to avoid sensitive periods. Any requirement to work outside these periods would only occur through prior agreement with East Ayrshire Council and is unlikely to include rock extraction;

- ▶ All construction activities would be undertaken in accordance with good practice as set out in BS 5228-1:2009+A1:2014;
- ▶ All employees on the construction site would be advised of quieter methods of operating plant and tools, and to report any damage to noise control measures as soon as they are identified;
- ▶ Where practicable, for any particular activity, suitable plant, machinery and working practices would be adopted. All equipment would be maintained in good working order and would be fitted with appropriate noise controls at all times (e.g. silencers, mufflers and/or acoustic hoods); and
- ▶ Construction plant capable of generating significant noise and vibration levels would be operated in a manner to minimise the duration of the higher magnitude levels.

5.6 Other Environmental Considerations

Landscape and Visual Impacts

- 5.6.1 The Borrow Pits have been designed to minimise adverse effects on the sensitive visual receptors located to the north of the Development Site and the residential properties located to the North West. Both Borrow Pits A and B have been sited on south westerly facing slopes and designed so that the working rock face is orientated to the south west or south east to minimise adverse landscape and visual effects for those sensitive receptors to the north. A design for Borrow Pit C has not been carried out, as this does not form part of the revised wind farm design. The rising landform to the north and west (Peat Hill and Rigg Hill) of the Borrow Pits would provide visual containment particularly in relation to sensitive receptors to the north and east. The existing woodland provides screening between Borrow Pit A and the residential property at Maneight.
- 5.6.2 The potential landscape and visual effects of the Borrow Pits have been assessed in **Chapter 9: Landscape and Visual Impact Assessment** in **Volume 1** of the ES and FEI. **Chapter 9** also established some mitigating measures that would be implemented to reduce the effects of the Borrow Pits on the surrounding landscape and visual receptors:
- ▶ Upon completion of extraction at the Borrow Pits, they would be restored to ensure they complement the surrounding landscape. An indicative restoration profile is provide in **Figure 4.14a and 4.14b (Appendix A** of this report); and
 - ▶ A detailed borrow pit restoration plan would be developed with advice from a landscape architect and an ecologist, and would be implemented in consultation with East Ayrshire Council and SEPA should consent be granted for the Proposed Development.

Historic Environment

- 5.6.3 There is the potential for direct and indirect effects on heritage features as a result of the proposed Borrow Pits. An earthwork boundary bank (the Peat Hill Boundary Banks HER 7988) has the potential to be partially disturbed by excavation at Borrow Pit A. The indicative design (**Figure 4.14a**) for Borrow Pit A (**Appendix A** of this report) shows that the extent of extraction may not impact on this asset. Notwithstanding this, the asset is considered of local importance at best and therefore would not give rise to a significant effect as set out in the ES. In addition, previously unrecorded archaeological features could also be affected by the proposed Borrow Pits. Because of this, the ES has suggested mitigation measures such as photographic recording and/or archaeological watching briefs within areas of disturbance, which would ensure that any adverse residual effects would be not significant.
- 5.6.4 The presence of peats and blanket bog on the site indicates the potential for survival of deposits of palaeoecological interest. In this case, these assets will comprise soils where plant and insect (macrofossil) and pollen (microfossil) remains are preserved in waterlogged contexts which can be securely dated through scientific dating techniques. Such deposits are important for understanding past environments and allowing anthropogenic features to be set in an environmental context on a

regional scale. Disturbance is likely to be confined to very small proportions of much more extensive deposits and would therefore present a change of negligible to low magnitude and would be unlikely to give rise to a significant adverse effect.

5.6.5 Potential direct effects can be effectively mitigated by an agreed programme of archaeological work to be overseen by an Archaeological or Environmental Clerk of Works (ACoW/ECoW). The details of this work would be contained within a Written Scheme of Investigation including a Post-Excavation and Research Design (PERD) to be agreed with West of Scotland Archaeology Service (WoSAS), but in principle it would comprise the following elements:

- ▶ Micro-siting of access tracks to avoid/minimise direct effects;
- ▶ Photographic survey and recording of the Peat Hill boundary bank (HER 7988) including identification of areas of poor preservation that may be utilised as a crossing point;
- ▶ Monitoring of intrusive groundworks within areas of deep peat;
- ▶ Archaeological Recording: any archaeological features or deposits of archaeological or palaeoenvironmental importance which cannot be preserved in situ will be excavated to standards agreed with WoSAS; and
- ▶ Analysis, archival, reporting and dissemination: standards for analysis and archival of archaeological and palaeoenvironmental material with subsequent reporting.

Ornithology

5.6.6 The potential impacts of the proposed Borrow Pits has been assessed in **Chapter 12: Ornithology** of the ES and FEI (**Volume 1**). Taking into account the mitigation measures proposed in **Chapter 12**, no significant impacts on birds were predicted. The construction of Borrow Pit A would potentially result in the loss of a small section of foraging habitat for birds, in particular black grouse. However, the potential loss is very small in comparison to the overall habitat on offer in and around the Development Site. There would be some small scale temporary disturbance of birds during the excavation works at the Borrow Pits. This has been mitigated by designing the Borrow Pit A to the south of the access road, increasing the distance between the Borrow Pit face and the lekking site, and preventing any construction activities before 9am between mid-March and the end of May. An Ecological Clerk of Works (ECoW) would be employed for the duration of the construction of the Proposed Development to ensure compliance with good practice principles are maintained and local birds are protected.



6. Planning Assessment

6.1 Introduction

6.1.1 Having regard to the nature and location of the proposed Borrow Pits, the site history and the relevant planning policy context it is considered that the key issues in this case are:

- ▶ Consideration against Paragraph 3(2) of Schedule 9 to the 1989 Electricity Act;
- ▶ Consideration of paragraph 243 of SPP, and whether or not the proposed Borrow Pits accord with the presumption in favour of development that contributes to sustainable development (as set out within the SPP); and
- ▶ Consideration against the Development Plan and other relevant considerations.

6.2 The Electricity Act 1989

6.2.1 As identified in section 1.5 of the Planning Statement a decision on the section 36 application for the Proposed Development must be made under the 1989 Act. Schedule 9 to the Electricity Act 1989 deals with preservation of amenity. The provisions of that Schedule set out a number of environmental features to which regard must be had by licence holders and the Scottish Ministers respectively and that mitigation must be considered so far as reasonably possible.

6.2.2 E.ON has sought to develop a project that takes full account of these duties. It is relevant to note the use of the terms 'desirability' and 'reasonably' with regard to project design, siting and mitigation. This recognises that there are balances and reconciliations to be considered in decision making for section 36 consent, and in particular the associated borrow pits.

6.2.3 The information that is contained within the individual topic chapters of the ES and FEI fully addresses these matters. Where adverse effects have been identified in terms of the design of the borrow pits, these effects have been reduced through design of each of the borrow pits and the scaling back of the surface area to minimise effects on black grouse and residential properties (**Appendix A, Figure 4.14c** Design iterations for Borrow Pit A). In terms of the wind farm, these effects have been mitigated through inherent mitigation through the design evolution of the Proposed Development as described in **Chapter 3: Site Selection and Design Evolution** of the ES and FEI and in the Design and Access Statement or additional mitigation has been identified as summarised in **Chapter 18: Summary of Mitigation of the ES**.

6.2.4 Through the EIA process, which has been undertaken in accordance with good practice, many possible environmental effects have been avoided or reduced. It is considered that the detailed work undertaken for the EIA has confirmed in the planning statement that the proposed Enoch Hill Wind Farm is environmentally acceptable, including the works required for the Borrow Pits, as concluded within this document. It is therefore considered that the Proposed Development fully addresses Schedule 9 of the Electricity Act in this regard.

6.3 Scottish Planning Policy for Borrow Pits and Consistency with the Presumption in Favour of Development that Contributes to Sustainable Development

SPP for Borrow Pits

6.3.1 Paragraph 243 of SPP states "*Borrow pits should only be permitted if there are significant environmental or economic benefits compared to obtaining material from local quarries, they are time-limited; tied to a particular project and appropriate reclamation measures are in place.*"

- 6.3.2 In terms of paragraph 243, the proposed Borrow Pits would time limited as they would be ancillary development to and used only for the construction of the Proposed Development and are needed at this particular location to provide material to enable the construction of the Proposed Development. It is considered to be more sustainable to source the material onsite rather than transport such materials from elsewhere. The nearest suitable quarry to the Development Site is located at Tincornhill Quarry, approximately 18km away. On completion of construction works, the proposed Borrow Pits would be restored in line with **Figure 4.14a** and **4.14b (Appendix A)**.
- 6.3.3 The location of the proposed Borrow Pits would significantly reduce the number of HGVs travelling to the Development Site on the public highway. This would have a number of environmental benefits (which are detailed in **Section 3** above) for example reduced noise and air quality impacts from fewer HGV journeys, a reduction in pollution risks and reduced congestion on the local road network surrounding the Development Site.
- 6.3.4 HGVs bringing construction stone to the Development Site would pass through the villages of Sorn, Catrine and New Cumnock. The route would take the HGVs directly past Sorn's post office and close to Sorn Inn, Village Hall and Primary School. Whilst traveling through the village of Catrine, the HGVs would pass Daldorch House School's access and would take them near The Brewery Bar; Costcutter; Catrine Post Office; a Royal Bank of Scotland; and Catrine Community Centre. The proposed route includes New Cumnock High Street and would pass New Cumnock's train station; Glenafton Athletics and adjoining sports ground; the Parish Church; Post Office; Community Centre; Lloyds Pharmacy; and the Primary School.
- 6.3.5 As the above highlights, bringing construction stone to site from the nearest quarry would require HGV's to travel directly through a number of villages and a therefore have a potential impact on those villages' services and amenities. The creation of the proposed Borrow Pits would reduce the need for HGVs (a reduction in approximately 15,300 two way trips) to travel through these villages by a substantial amount. This would reduce potential for congestion in the villages, and reduce the potential for additional traffic noise and reduce the perceived effects for the safety of vulnerable receptors such as schools, community centres and similar services, which can be vulnerable to an increase in HGV traffic because of the noise and imposing nature of these vehicles.
- 6.3.6 In addition to this, as turbine foundations have to be poured and set in one go, a large number of HGVs are required to arrive at the Development Site over a short period of time. In having an onsite source of suitable stone, and an onsite batching plant, the need to have these HGVs (2,000 loads or 4,000 trips for concrete for turbine bases (**Chapter 14: Traffic and Transport** of the FEI) travelling to site is substantially reduced. Furthermore, the choice of location has been influenced by the need to win rock for road construction and the temporary compounds. This removes the need to transport 4,188 loads or 8,376 trips of stone for track and hard standings from an off-site quarry (likely to be Tincornhill Quarry, approximately 18km away). Opening Borrow Pits at the Development Site would mean that the majority of rock needed to construct the Proposed Development would be "won" within the Development Site boundary. By developing Borrow Pits in these locations, the distance that dump trucks, heavy plant and site vehicle movements would need to travel would be minimised.

SPP Sustainable Development

- 6.3.7 SPP introduces a "*presumption in favour of development which contributes to sustainable development*". The planning system should support economically, environmentally and socially sustainable places by enabling development that balances the costs and benefits of a proposal over the longer term. The aim is to achieve the right development in the right place; it is not to allow development at any cost.
- 6.3.8 SPP at paragraph 29 sets out several sustainable development principles to guide policies and decisions, including:
- ▶ Giving due weight to net economic benefit;
 - ▶ Making efficient use of existing capacities of land, buildings and infrastructure;
 - ▶ Supporting climate change mitigation and adaptation including taking account of flood risk;

- ▶ Having regard to the principles for sustainable land use set out in the Land Use Strategy;
- ▶ Protecting, enhancing and promoting access to cultural heritage, including the historic environment;
- ▶ Reducing waste, facilitating its management and promoting resource recovery;
- ▶ Avoiding over-development, protecting the amenity of new and existing development; and
- ▶ Considering the implications of development for water, air and soil quality.

6.3.9 As detailed in **Section 3** of this report, the proposed Borrow pits are required at this particular location in order to provide necessary construction materials for the construction of the Proposed Development through the most economical, time limited, efficient and environmentally acceptable solution. Overall, the detailed planning assessment presented in this Borrow Pit report demonstrates that there is a clear need for the Borrow Pits, and that they are clearly associated with the construction of the Proposed Development. The proposed Borrow Pits would support renewable energy development and in turn help to mitigate and adapt to climate change. As detailed in the following sections there would be no unacceptable adverse environmental impacts for biodiversity, the historic environment, or water and air quality. Through on site use of Borrow Pits there would be greater opportunities for waste management and re-use on site of materials excavated from the proposed Borrow Pits. For the above reasons, the proposed Borrow Pits are fully compliant with, and should benefit from, the presumption in favour of development that contributes to sustainable development.

6.4 Hydrology and Hydrogeological Impacts

6.4.1 Planning policy seeks to protect the quality of water resources and avoid adverse impacts on local water quality. Detailed ground investigation works would be undertaken at the Borrow Pit locations prior to working to determine the slope stability of the upslope area which would be undercut by the excavation, informing the detailed design for extraction. Potential effects on the water resource and water quality would be mitigated through the implementation of mitigation identified in **Section 5.2**. The adoption of the mitigation measures would ensure that there are no unacceptable adverse impacts in relation to groundwater, drainage and erosion / runoff from the working of the proposed Borrow Pits. Should consent be granted for the Proposed Development, these mitigation measures would be secured through a planning condition requiring a Construction Environmental Management Plan (CEMP) which would be included on any decision for approval.

6.4.2 With the implementation of the above mitigation measures (where necessary) this would protect the quality of water resources and avoid any potentially significant adverse impacts. On this basis it is considered that the proposed Borrow Pits would not result in any unacceptable hydrology or hydrogeological impacts. Whilst this is set out in the ES, this detailed Borrow Pit assessment has identified that Borrow Pit C is located in relatively close proximity to GWDTE 208, and although no significant effects have been identified in the ES, this Borrow Pit has been removed from the Revised Layout owing to a number of factors as set out below, and including proximity to the GWDTE. The remaining Borrow Pit A and Borrow Pit B would be located in close proximity to the development, would be limited to the construction timescale for the Proposed Development and would not result in changes to the water catchment area. It is therefore considered that the Borrow Pits accord with the requirements of NPF3, SPP, PAN 79 and national planning guidance, STRAT 1 and ENV2 of the Joint Structure Plan (2007), AIM8, SD1, ENV3, ENV15, ENV 21 and ENV24 of the Local Plan.

6.5 Ecology Impacts

6.5.1 With regards to habitat loss there could have been a permanent loss of a small section of M20 *Eriophorum vaginatum* blanket mire owing to extraction associated with the proposed Borrow Pit C (removed as part of the Revised Layout). However, this potential loss of habitat, taken together with other sensitivities at the Borrow Pit C location, influenced the removal of Borrow Pit C from the Revised Layout.

- 6.5.2 No evidence of badgers or water vole has been found around the Borrow Pit Search Areas. A number of otter spraints have been found near Borrow Pit B. There is limited evidence of bats using the Development Site, owing to the limited foraging potential, however it is likely that pipistrelles would be using the water courses for foraging and commuting from one side of the Development Site to the other. No evidence of invertebrates, amphibians, reptiles, red squirrel or hedgehog has been found around the Development Site. Small numbers of brown trout have been identified in some of the water courses within the Development Site, and not close to the Borrow Pit areas. A CEMP would be prepared prior to construction which would further help to mitigate any adverse effects on protected species and where necessary an ECoW would be employed on site to oversee construction works, including working of the Borrow Pits.
- 6.5.3 Planning policy seeks to protect and enhance biodiversity and will only permit mineral extraction where there would be no adverse impacts on biodiversity and that where East Ayrshire Council is minded to permit mineral extraction appropriate mitigation measures will be sought in relation to biodiversity. In addition local planning policy seeks to safeguard the integrity of habitats which are of importance for maintenance and enhancement of local biodiversity. As detailed above there would be minor loss of habitats associated with the proposed Borrow Pits and a CEMP and ECoW is recommended should consent be granted for the Proposed Development. This would help to ensure no adverse impacts on protected species.
- 6.5.4 Overall it is not considered that there would be any significant effects from the proposed Borrow Pit A and Borrow Pit B on habitats or protected species in light of the above points and the mitigation measures which would be adopted. It is therefore considered that the proposed Borrow Pits would accord with NPF3, SPP, PAN60, PAN51 and national guidance, STRAT1, ENV1 and ENV2 of the Joint Structure Plan, AIM4, SD1, ENV3, ENV15, ENV16 and ENV17 of the Local Plan and ENV12 of the Proposed East Ayrshire Local Development Plan.

6.6 Air Quality Impacts

- 6.6.1 As set out in **Section 5.4** above, dust emissions are more likely to be deposited close to the dust sources, and in most circumstances within 500m, depending on size characteristics and in the absence of appropriate mitigation. Receptors identified susceptible to dust from the proposed Borrow Pits, relate largely to the small burns around the proposed Borrow Pit areas as they are tributaries of the River Nith. Residential receptors located to the north of the site, have the potential to be impacted by Borrow Pit A. The nearest residential properties are located at Maneight and Ault Farmhouse (Craighouse), approximately 560m and 620m from the proposed Borrow Pit A. The precise distance that dust can travel will depend on the nature of the activity onsite, wind direction, wind speed, particle size distribution and moisture content, which all influence whether the potential for dust annoyance exists.
- 6.6.2 A number of measures to minimise the generation of fugitive dust at the Borrow Pit faces would take place. This would include any drilling rigs being fitted with effective dust suppression equipment which is considered good practice. In addition, and prior to drilling and blasting taking place, the area to be blasted would be dampened down if necessary. Owing to the distance from sensitive receptors (residential properties), and the measures proposed through a CEMP, it is considered that effects from blasting and other dust generating activities would not result in any unacceptable impacts on the identified receptors.
- 6.6.3 Planning policy seeks to protect air quality and in particular local planning policy seeks to protect air quality and human health. For the reasons identified above it is considered that the proposed Borrow Pits would not adversely affect local air quality and in turn there would be no adverse impacts upon human health for any construction workers. It is therefore considered that the proposed Borrow Pits would accord with NPF3, SPP, STRAT1 of Joint Structure Plan, AIM9, ENV16 and ENV25 of the Local Plan and ENV12 of the Proposed East Ayrshire Local Development Plan.

6.7 Noise Impacts

- 6.7.1 Construction noise effects are normally of a temporary nature and result from both moving and static sources. The predicted noise impacts from the construction and use of the Borrow Pits meet the noise limits at noise sensitive receptors calculated through the application of relevant standards. No significant noise effects are expected, and no specific mitigation is required with regards to construction noise. Therefore, considering the separation distance of the Borrow Pits to receptors, the way the Borrow Pits have been designed (i.e. to work away from sensitive residential receptors), the distance between the Borrow Pits and residential receptors, screening (including topographical and existing vegetation) and good practice for site noise control, it is considered that even during the most intense period of extraction, noise at the receptors would not result in any unacceptable impacts.
- 6.7.2 Planning policy seeks to protect residential amenity and requires that the generation of noise from new development is assessed. As demonstrated above no significant noise effects from the proposed Borrow Pits are expected. This is owing to the distance and topography between any properties and the proposed Borrow Pits. It is therefore considered that the proposed Borrow Pits would accord with NPF3, SPP, PAN 1/2011 and national planning guidance, STRAT1 of the Joint Structure Plan, AIM8, SD1, ENV3, ENV15, ENV16, ENV17, ENV25 and ENV26 of the Local Plan and RES11 and ENV12 of the Proposed East Ayrshire Local Development Plan.

6.8 Other Environmental Impacts

Landscape and Visual Impacts

- 6.8.1 The Development Site is located in the Southern Uplands and Forestry landscape character type (LCT) within East Ayrshire. This landscape character is large scale. Locally, it is recognised that there are variations in the landscape character and landuse which comprises forestry and open-cast mining activities.
- 6.8.2 The Borrow Pits have been sited to minimise adverse effects on the landscape character, on the sensitive visual receptors located to the north of the Development Site and the residential properties located to the North West. This is illustrated in **Figure 4.14c** (Design iterations for Borrow Pit A, **Appendix A**) Both Borrow Pit A and B have been sited on south westerly facing slopes and designed so that the working rock face is orientated to the south west or south east to minimise adverse landscape and visual effects for those sensitive receptors to the north. The rising landform of Peat Hill and Rigg Hill would provide some screening and visual containment particularly in relation to sensitive receptors to the north and east. The existing woodland provides screening between Borrow Pit A and the residential property at Maneight. No design work was carried out for Borrow Pit C as this Borrow Pit has been deleted from the Revised Layout.
- 6.8.3 National planning policy seeks to protect nationally designated landscapes from adverse impacts, and Development Plan Policy ENV2 seeks to protect Sensitive Landscape Areas. As highlighted above, the landscape and visual impact from the proposed Borrow Pits would be localised and owing to the scale of the landscape and the design of the Borrow Pits, it is considered that the Borrow Pits would not have any unacceptable impacts on any designated landscape areas or the local landscape character. Whilst the extraction of rock from quarrying would be permanent, the actual loss of land from extraction is relatively small in scale. The restoration scheme has been designed to complement the surrounding landscape.
- 6.8.4 On this basis it is considered that the proposed Borrow Pits would not result in any unacceptable landscape or visual impacts and therefore that the proposed Borrow Pits accord with NPF3, SPP and national planning guidance, STRAT1, ENV1 and ENV2 of the Joint Structure Plan, AIM2, AIM4, SD1, ENV1, ENV2, ENV3, ENV15, ENV16, ENV17 and ENV25 of the Local Plan and ENV12 of the Proposed East Ayrshire Local Development Plan.

Historic Environment

- 6.8.5 There is the potential that the Peat Hill boundary bank (HER7988) heritage asset, located within Borrow Pit Search Area A could be impacted by the proposed Borrow Pit. However, it is possible that the actual Borrow Pit extraction area would not remove the boundary bank. In addition, should the bank be extracted in part, a record of the asset would be taken. The historic sheepfolds (DBA12 and HER47363) lie 250m away from Borrow Pit B. No evidence for further heritage assets was identified during the site walkover and the potential for further, as yet unknown, heritage assets at the Borrow Pit locations is low.
- 6.8.6 Planning policy seeks to protect the historic environment and avoid harm to important archaeological sites and their settings. There is a heritage asset located within the area of search at Borrow Pit A and close to the area of search for Borrow Pit B. However, per the mitigation methods discussed in **Section 5.6** above, any heritage assets found would be recorded before being removed. Because of the need for the Borrow Pits, the limited number of known heritage assets and the low likelihood of unrecorded assets in the area together with the mitigation measures outlined above, it is considered that the proposed Borrow Pits would not result in an unacceptable impact on heritage assets. It is therefore considered that the proposed Borrow Pits would accord with NPF3, SPP, National Planning Policy PAN 2/2011, STRAT1, ENV6 of the Joint Structure Plan, AIM4, SD1, ENV1, ENV2 and ENV16 of the Local Plan and ENV12 of the Proposed East Ayrshire Local Development Plan.

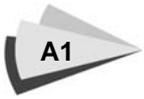
Ornithology

- 6.8.7 There would be a small loss of foraging habitat for birds through the development of the Borrow Pits. However, it is a small area (approximately 4ha) relative to the moorland habitat within the Development Site itself and surrounding land. In addition, owing to the time limited period of extraction (approximately 18-24months, and the proposed site restoration, the loss of habitat would be temporary. There could also be some temporary disturbance to birds during the operation of the Borrow Pits. However the Borrow Pits are not located near to the nesting grounds for two key species, namely black grouse and merlin, and Borrow Pit A was designed to give maximum distance between the quarry face and the Lek site for black grouse. In addition construction works would be time limited (i.e. no works before 9am from mid-march to the end of May). Mitigation would also be implemented to ensure that the legislation protecting nesting birds and Schedule 1 birds is adhered to, to be overseen by an Ecological Clerk of Works. Taking this into account, it is considered that the proposed Borrow Pits would not have any significant effects on any bird species.
- 6.8.8 Planning policy seeks to safeguard important designated ecological sites and only allows mineral extraction where it would not adversely affect European, national and local areas and sites of biodiversity importance. In addition development plan policy seeks to safeguard the integrity of habitats which are of importance for maintenance and enhancement of local biodiversity. As demonstrated above, a relatively small area of habitat would be lost and the proposed Borrow Pit locations would not result in any adverse impacts on national designations, are away from nesting areas for key bird species thus avoiding adverse impacts on birds. It is therefore considered that the proposed Borrow Pits would not result in unacceptable adverse impacts on birds, and that the proposed Borrow Pits would accord with National Planning Policy, SPP, national planning guidance, STRAT1 and ENV2, Joint Structure Plan, SD1 and ENV17 of the local plan.

7. Summary and Conclusion

- 7.1.1 This Borrow Pit Assessment has been produced to address a consultation response from SEPA regarding the proposed borrow pits. It provides an overview of the borrow pit developments, and summarises the assessment of matters set out in Schedule 9 of the Electricity Act 1989 and relevant planning policy.
- 7.1.2 In response to comments received from consultees on the application documents, some design changes have been made to the Proposed Development, most notably a reduction in the number of turbines from up to 19 to up to 16, and the repositioning of 12 of the remaining turbines which resulted in a reduction in the length of track required by ~800m. This means that the number of borrow pit search areas has reduced from three to two.
- 7.1.3 This Borrow Pit Assessment draws on the environmental conclusions set out in the ES that supports the application submissions for the Proposed Development. The ES and this assessment demonstrate the clear need for the proposed Borrow Pits at the Development Site to support the construction of the Proposed Development. The Borrow Pits are required for stone associated with the construction of access tracks, crane pads, substation compounds and backfilling of turbine foundations, etc. at the Proposed Development, the Borrow Pits are located in very close proximity to the proposed construction areas, and that the extraction timescales are short (less than 24 months (including restoration)).
- 7.1.4 Careful consideration of the siting of each of the Borrow Pits has been carried out. Borrow Pit C has been removed from the Proposed Development for a number of reasons including:
- ▶ Borrow Pit C would yield conglomerate rock. This is a sedimentary rock, made up of smaller sections of other rocks. This type of rock is not as hardwearing as the rock found in Borrow Pits A and B;
 - ▶ Borrow Pit C has an overburden profile of up to 1.7m in places. This would result in the movement and storage of large quantities of surface material in a relatively small area, potentially making movement within the Borrow Pit difficult;
 - ▶ A potential GWDTE is located in proximity to Borrow Pit C Search Area and the area includes NVC M20, a more sensitive habitat; and
 - ▶ Borrow Pit C would be located within 50m of a watercourse (35m from the Knockburnie Burn).
- 7.1.5 The use of the proposed on-site Borrow Pits (Borrow Pit A and B) would result in local benefits in terms of reducing the number of HGVs on the rural road network, reducing the impact on local amenities and sensitive groups (schools), reducing fuel and noise emissions from HGVs and sourcing stone in very close proximity to its use. The identified impacts from the proposed Borrow pits including hydrology, ecology, ornithology, landscape and visual, air quality and noise are all considered to be small in nature, such that they would not result in any unacceptable impacts when weighed in the planning balance against the benefits of having two on site Borrow Pits.
- 7.1.6 This assessment concludes that the proposed Borrow Pits in their siting and design have had regard to, and addressed the requirements of, Schedule 9 of the Electricity Act 1989. The proposed Borrow Pits are required as ancillary development to the primary development being applied for (a new electricity generating station), and the application demonstrates a clear need for their use as required by paragraph 243 of Scottish Planning Policy. The assessment also concludes that the Borrow Pits would not result in any significant effects, and where impacts are identified they can be mitigated by planning condition. It is therefore considered that the proposed Borrow Pits accord with paragraph 3(2) of Schedule 9 of the Electricity Act 1989, NPF3, SPP, PAN2/2011, 1/2011, 60, 81, 51, 79, STRAT1, ENV1, ENV2 and ENV6 of the Ayrshire Joint Structure Plan, AIM2, 4, 8, 9, SD1, ENV1, 2, 3, 15, 16, 17, 21, 24, 25 and 26 and RES11 and ENV12 of the Proposed East Ayrshire Local Development Plan.





Appendix A

Drawings

FEI Figure 1.1 – Revised Site Layout.

FEI Figure 1.2 - Revised Site Layout Compared to September 2015 Application Layout.

Figure 4.14a – Borrow Pit A site plan, cross section, elevation and restoration profile.

Figure 4.14b – Borrow Pit B site plan, cross section, elevation and restoration profile.

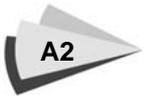
Figure 4.14c – Borrow Pit A Design iterations.

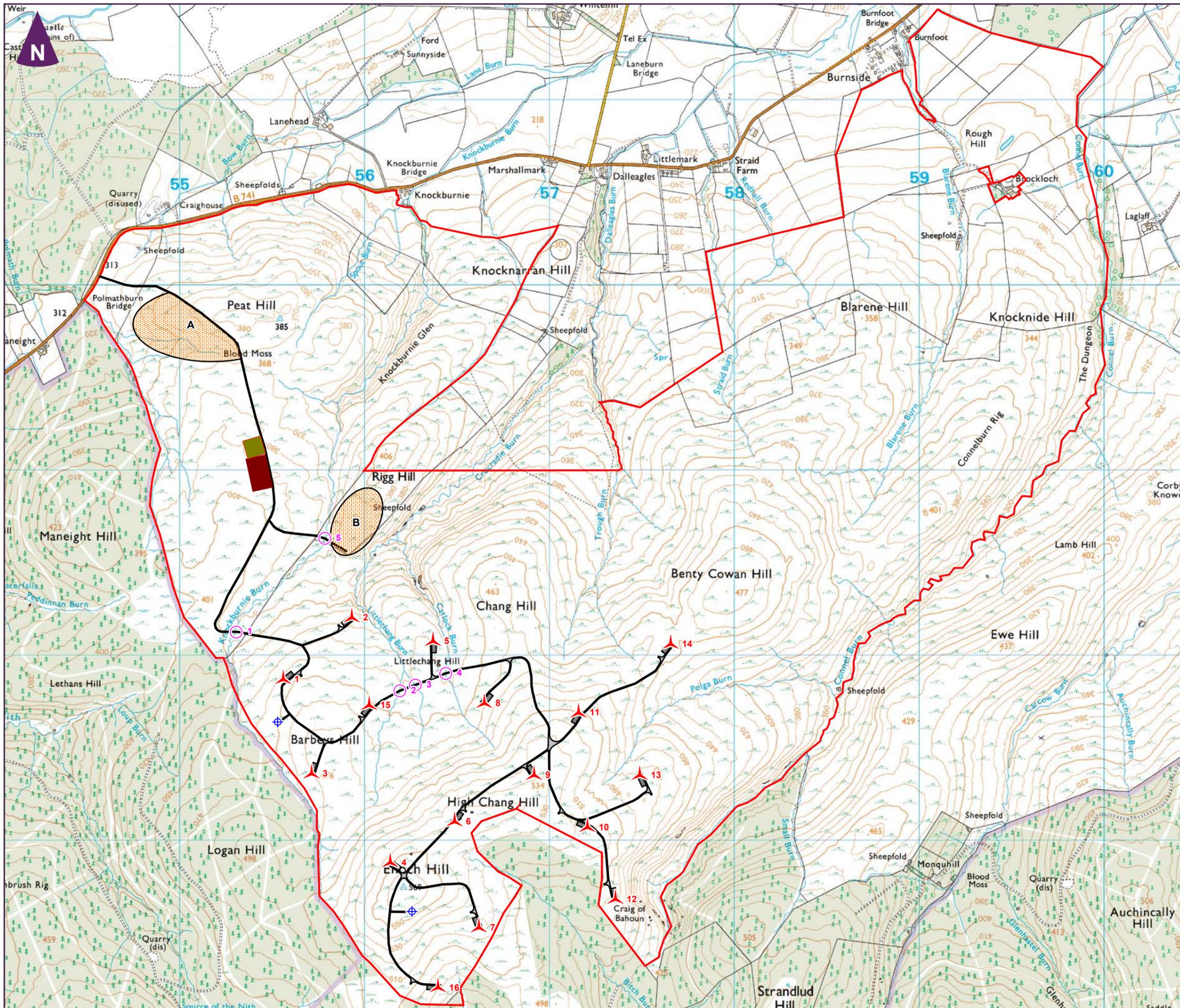
FEI Revised Peat Management Plan (FEI **Appendix 6.B**) Figures 9.1 to 9.3 – Peat Depth Survey Data.

FEI Revised Peat Slide Risk Assessment (FEI **Appendix 6.A**) - Figure 4 BGS Superficial Geology.

FEI Revised Peat Slide Risk Assessment (FEI **Appendix 6.A**) - Figure 5 BGS Bedrock Geology.

FEI Figure 13.1 – Hydrological Constraints.





Key

- Site boundary
- ▲ Turbine location
- Crane pads
- Wind farm access tracks
- Substation
- Watercourse crossing
- ⊕ Permanent meteorological mast
- Borrow pit search area
- Temporary construction compound

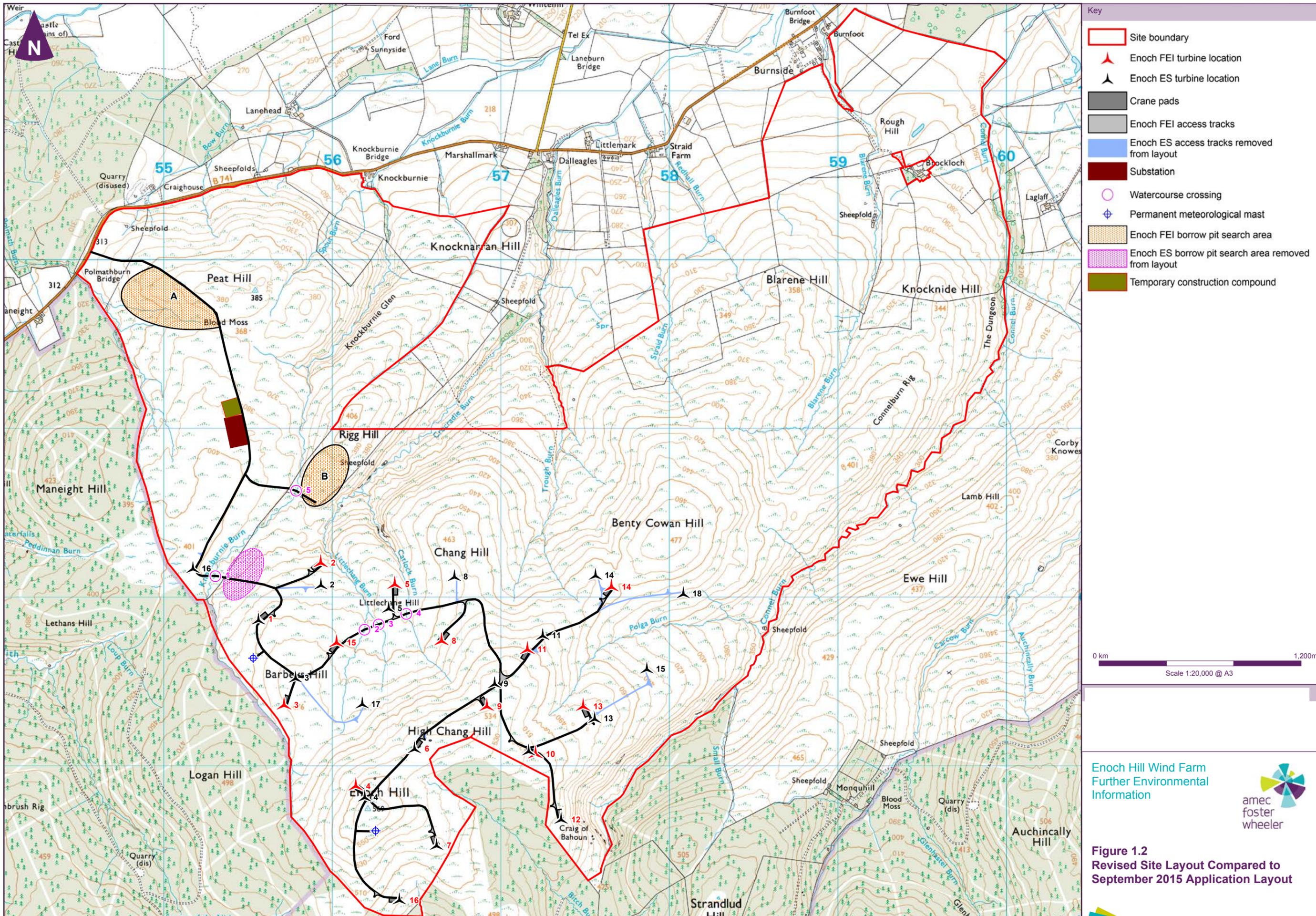
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Enoch Hill Wind Farm
 Further Environmental
 Information

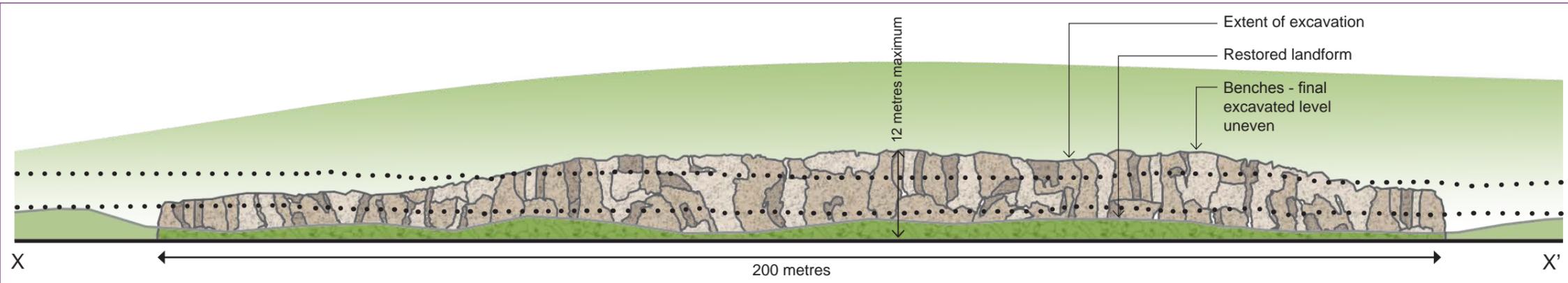


Figure 1.1
 Revised Site Layout

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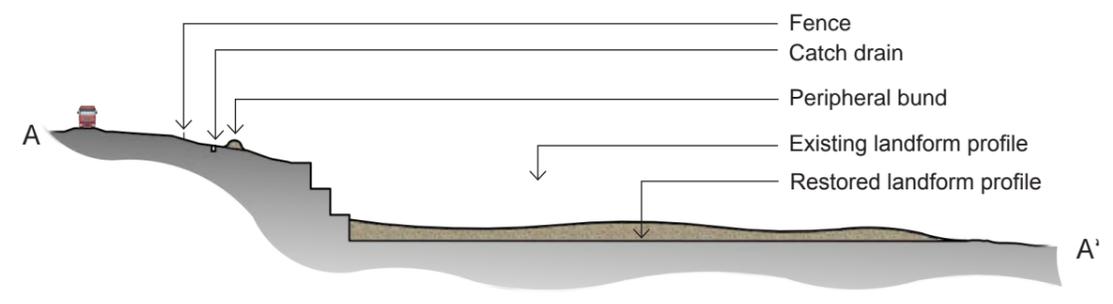
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Elevation X-X' - Indicative borrow pit design 1:750



Photograph of borrow pit location

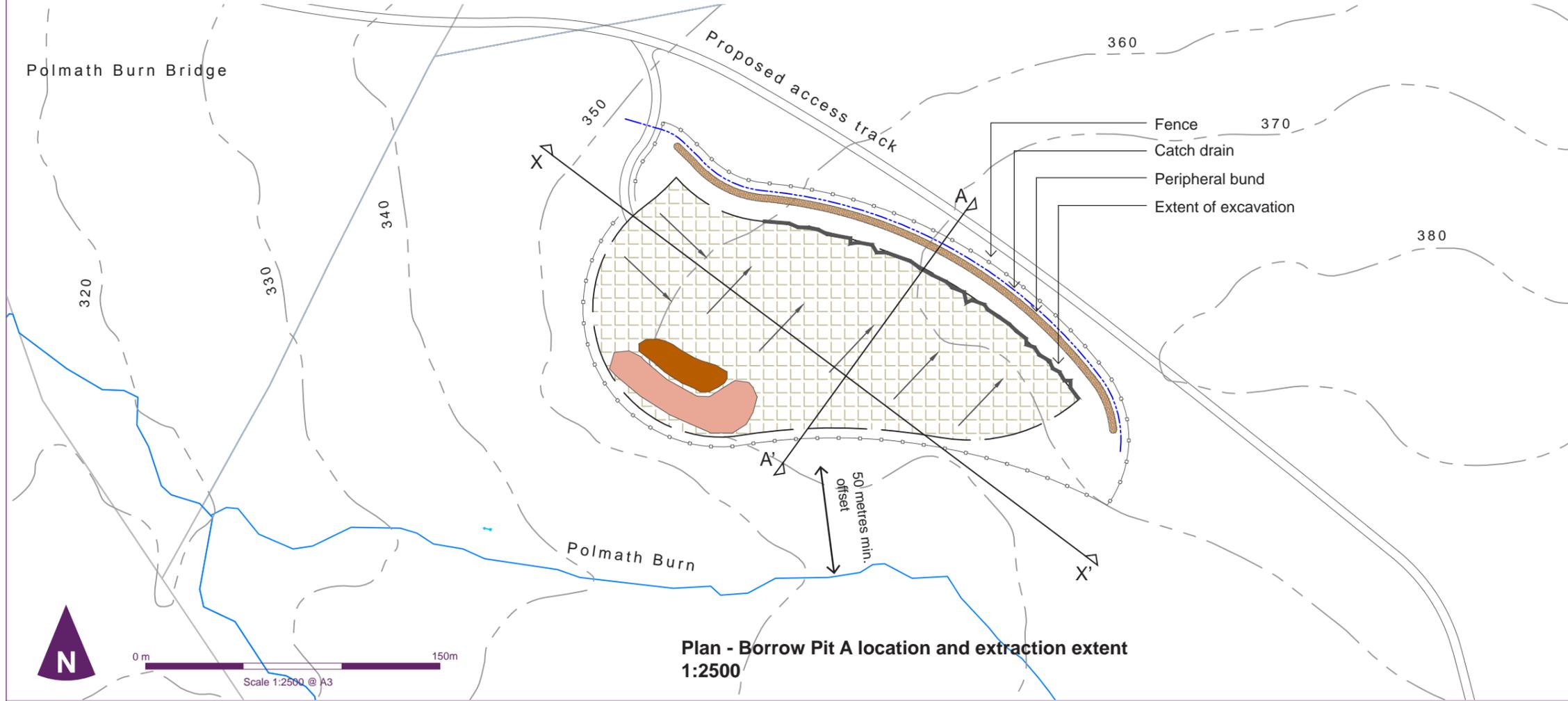


Section A-A' - Indicative borrow pit design 1:1000

Key

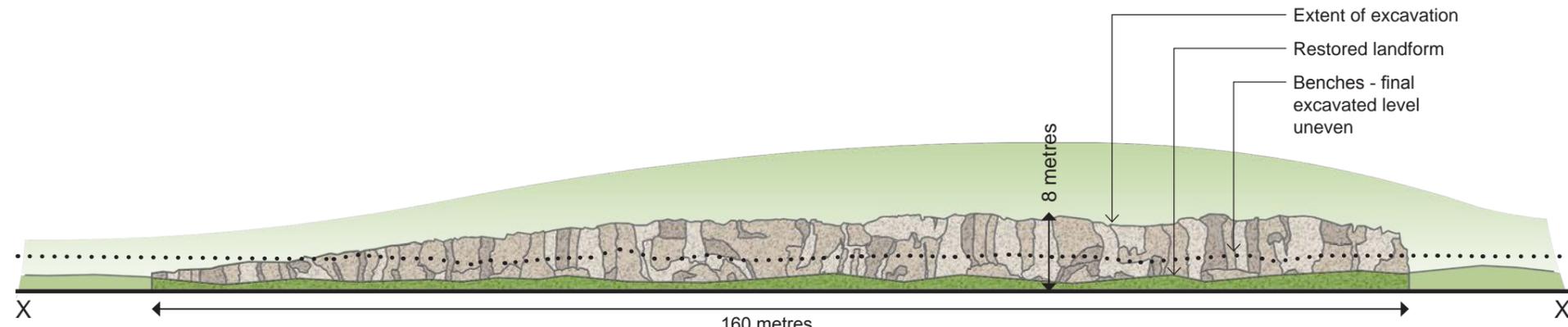
	Borrow pit area
	Peripheral bund
	Temporary overburden storage
	Temporary soil storage mound
	General working direction
	Indicative surface water drain (diverting water to prevent ingress into borrow pit)
	Post and wire fence

- Notes
1. Indicative design only. Detailed design will require ground investigation using trial pits to determine rockhead, characterise rock mass, groundwater and assess slope stability parameters and drainage.
 2. Indicative borrow pit area 22,000 sq. m.
 3. Indicative borrow pit dimensions 230 x 75-125m.
 4. Indicative depth is 3-12m.
 5. Indicative volume 90,000 cubic m.
 6. Restoration profile is indicative only.



Plan - Borrow Pit A location and extraction extent 1:2500

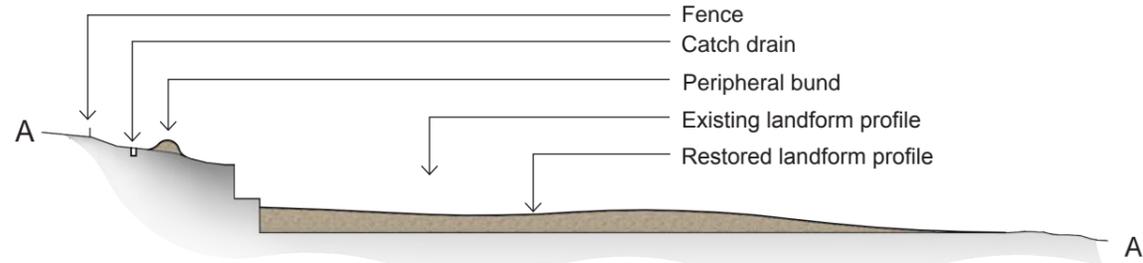
Figure 4.14a
Indicative Borrow Pit A Design



Elevation X-X' - Indicative borrow pit design 1:750



Photograph showing borrow pit location

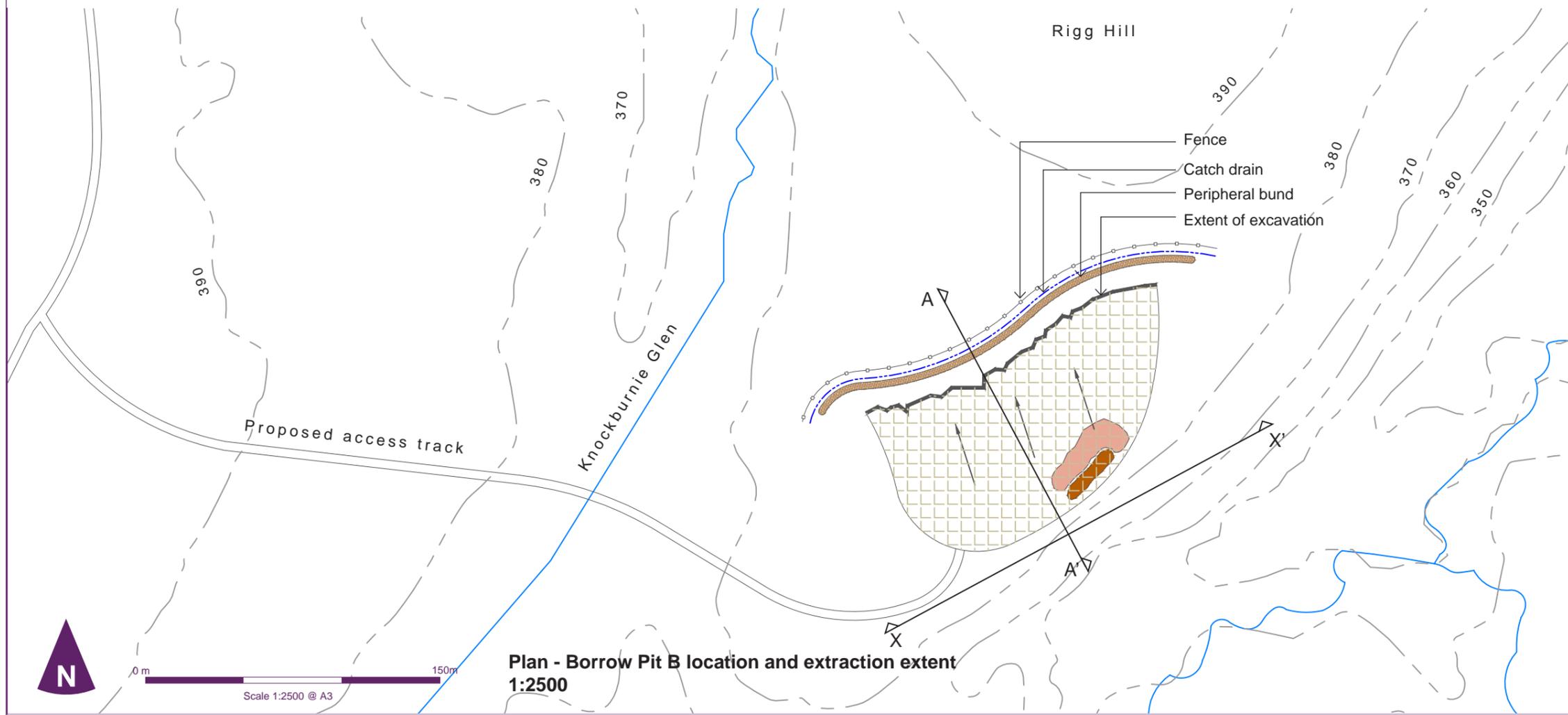


Section A-A' - Indicative borrow pit design 1:750

Key

- Borrow pit area
- Peripheral bund
- Temporary overburden storage
- Temporary soil storage mound
- General working direction
- Indicative surface water drain (diverting water to prevent ingress into borrow pit)
- Post and wire fence

- Notes**
1. Indicative design only. Detailed design will require ground investigation using trial pits to determine rockhead, characterise rock mass, groundwater and assess slope stability parameters and drainage.
 2. Indicative borrow pit area 10,000 sq. m.
 3. Indicative borrow pit dimensions 160 x 80m.
 4. Indicative depth is 3-8m.
 5. Indicative volume 30,000 cubic m.
 6. Restoration profile is indicative only.



Plan - Borrow Pit B location and extraction extent 1:2500

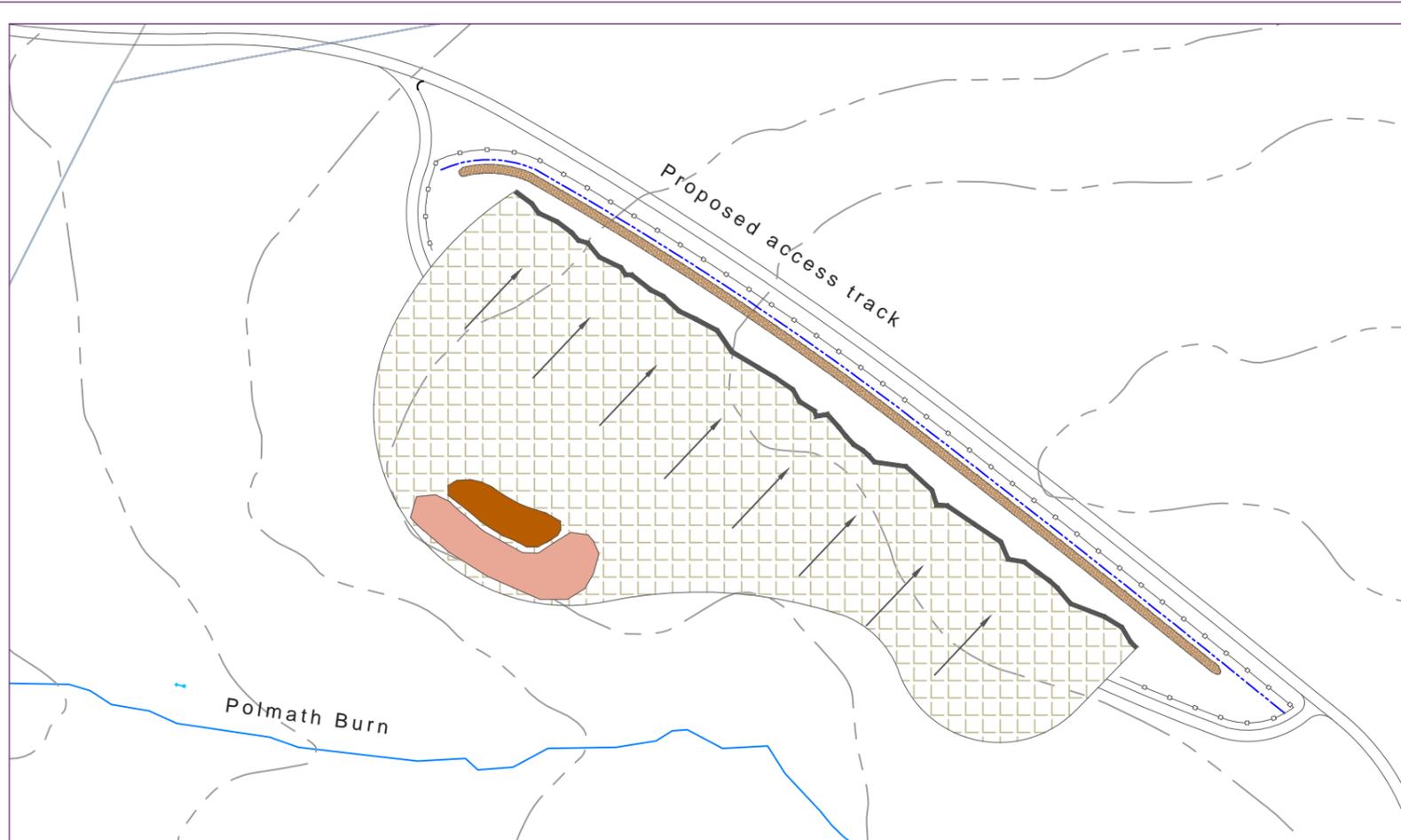
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0m 150m

Scale 1:2500 @ A3

Enoch Hill Wind Farm Environmental Statement

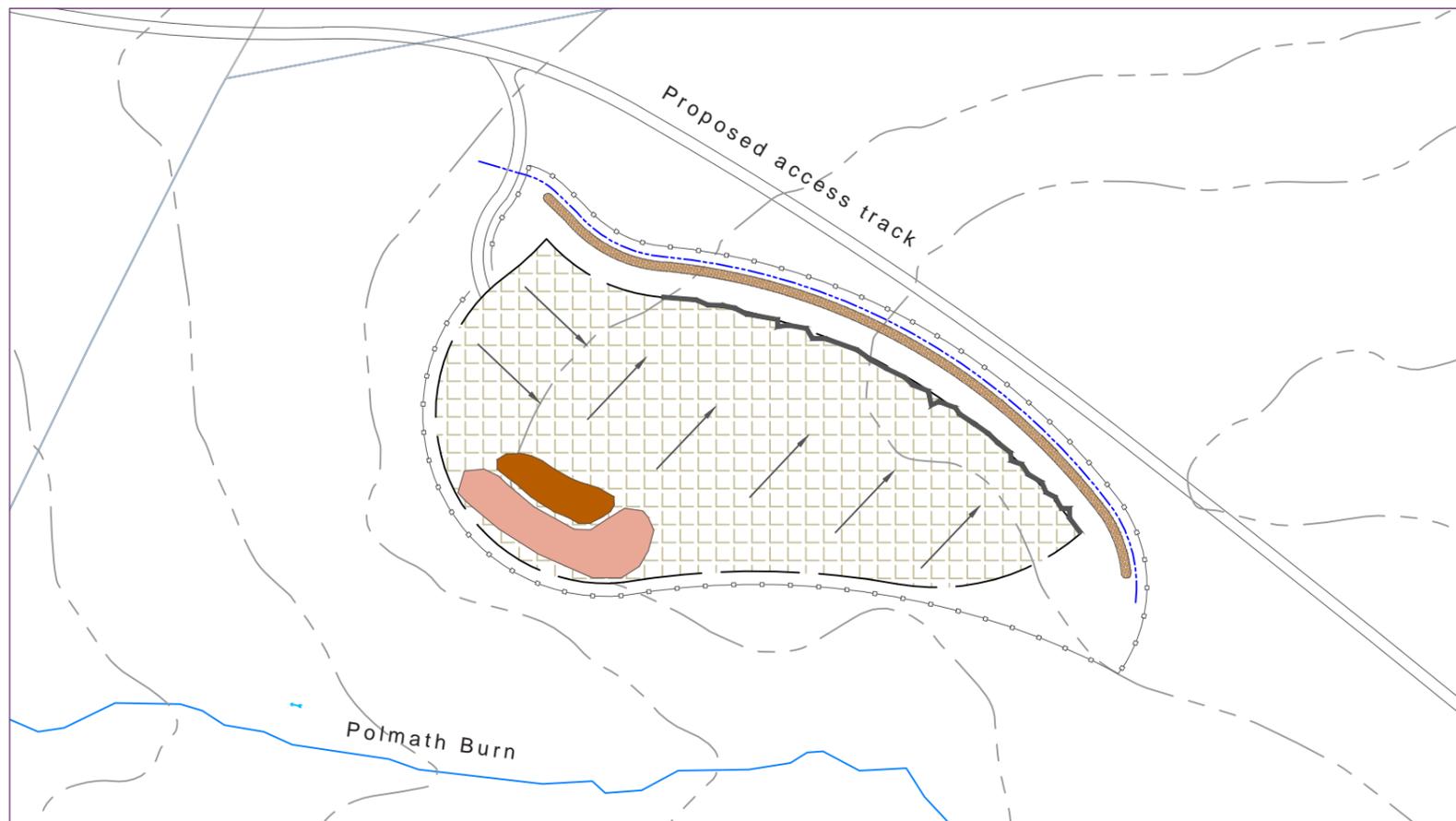
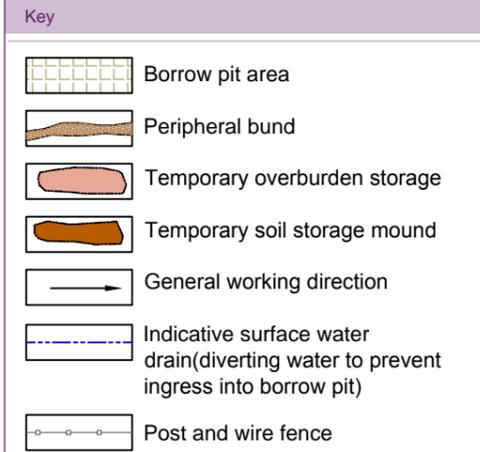
Figure 4.14b Indicative Borrow Pit B Design



Original Design February 2016

Key points

- Total area of the borrow pit extraction area is 30,000m²;
- Length of worked face would be approximately 300m;
- Maximum height of worked face would be 12m;
- Dual access points.



Revised Design May 2016

Key points

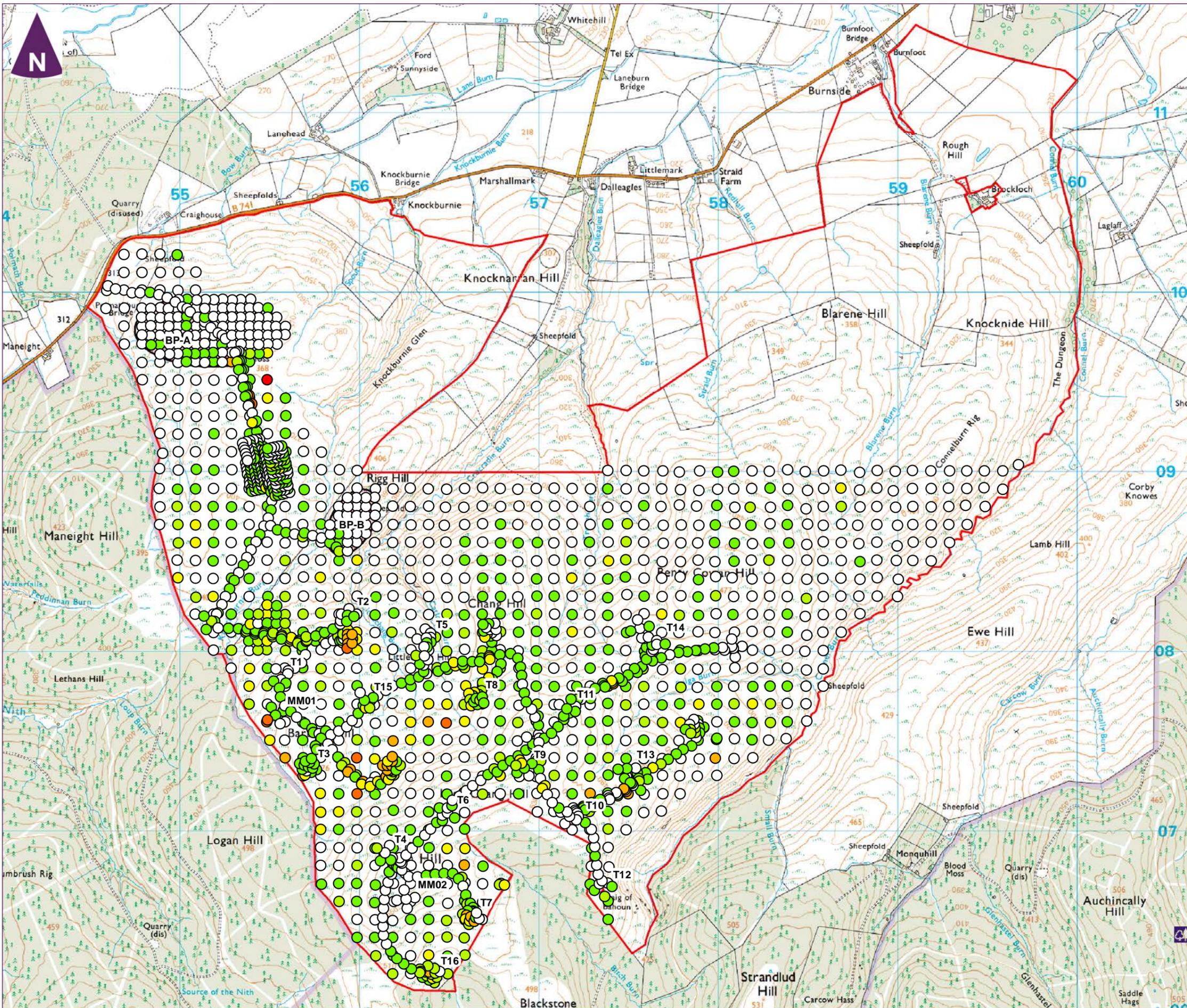
- Reduce extent of extraction area to approximately 22,000m² to minimise direct effects on the host landscape;
- Modify shape of extraction area and face to a more organic and less engineered form which is a better fit for the prevailing landform;
- Reduce length of worked face to approximately 200m to reduce visibility particularly for receptors to the north and west;
- Utilise a single access and egress point rather than two to reduce landscape effects.



Enoch Hill Wind Farm
Environmental Statement



Figure 4.14c
Borrow Pit A - Design Iterations



- Key
- Application boundary
 - ▲ Turbine locations
 - Watercourse crossings
 - ⊕ Permanent meteorological masts
 - Proposed on site tracks
 - Borrow pit search areas
 - Turning head
 - Temporary construction compound
 - SPEN & EON substation compound
 - Crane pads

- All Peat Depth Data (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

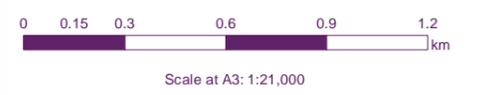
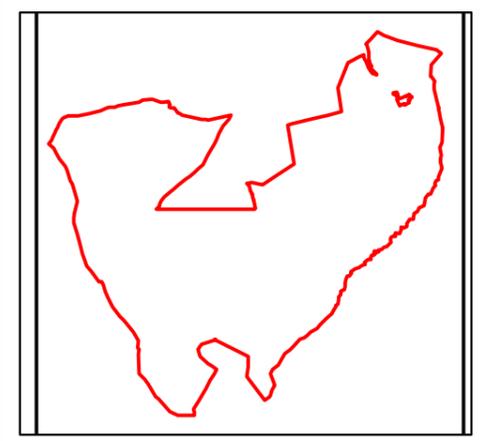
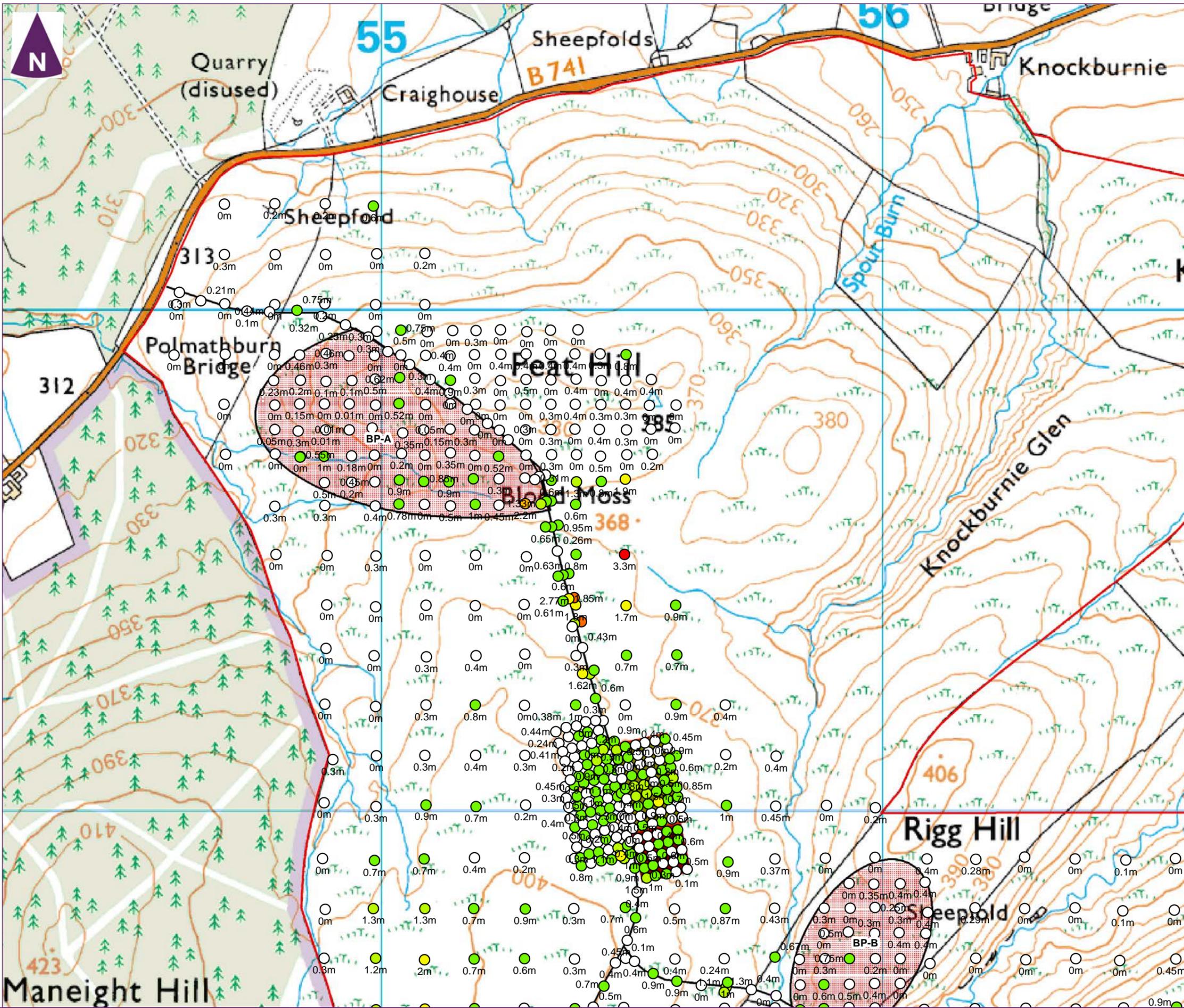


Figure 9.1
Peat Depth Survey Data



- Key
- Application boundary
 - ▲ Turbine locations
 - Watercourse crossings
 - ⊕ Permanent meteorological masts
 - Proposed on site tracks
 - Borrow pit search areas
 - Turning head
 - Temporary construction compound
 - SPEN & EON substation compound
 - Crane pads

- All Peat Depth Data (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

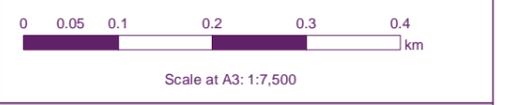
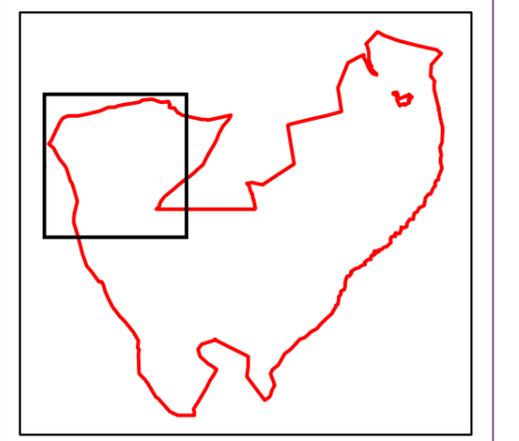
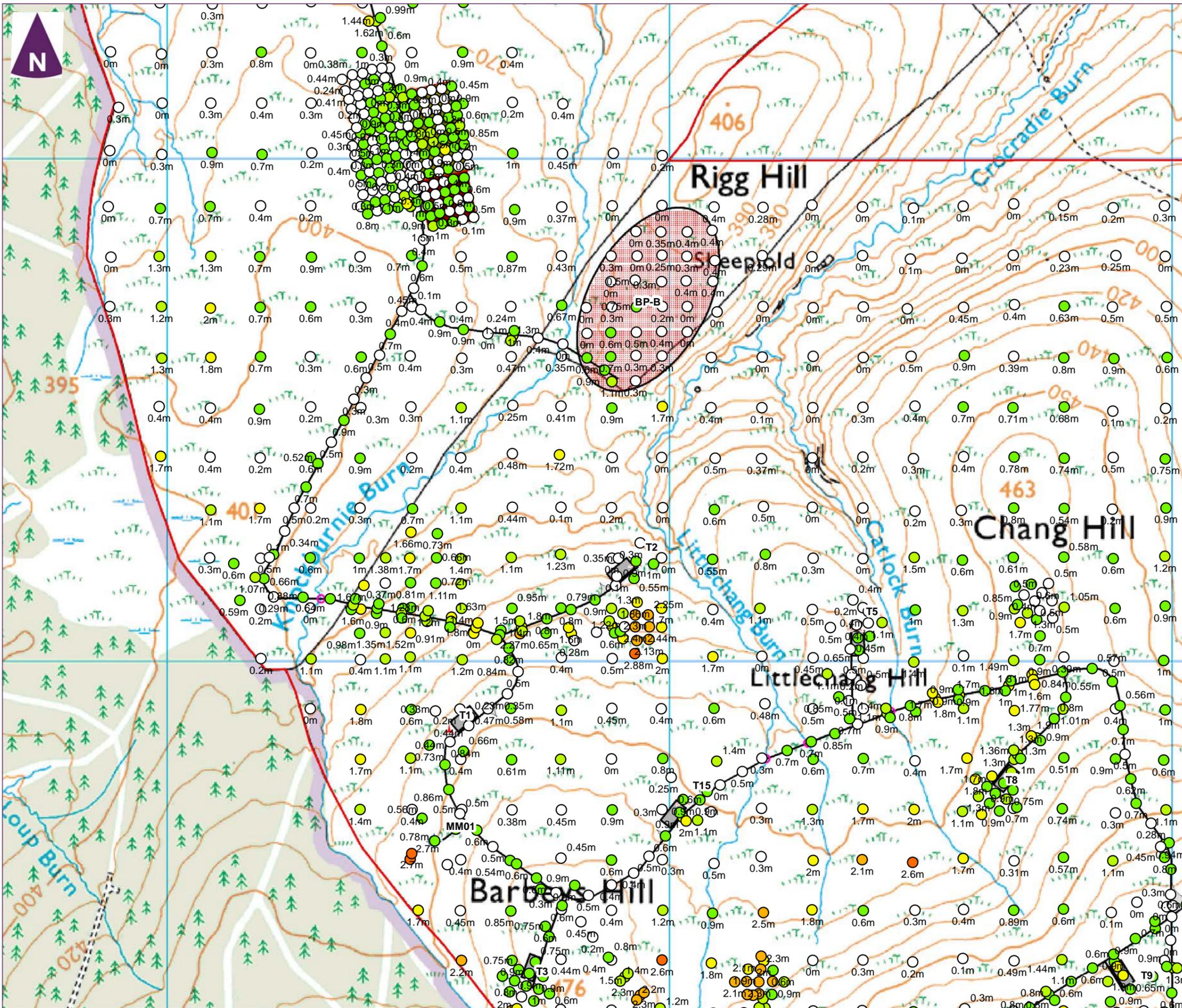


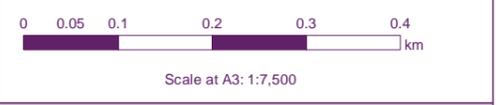
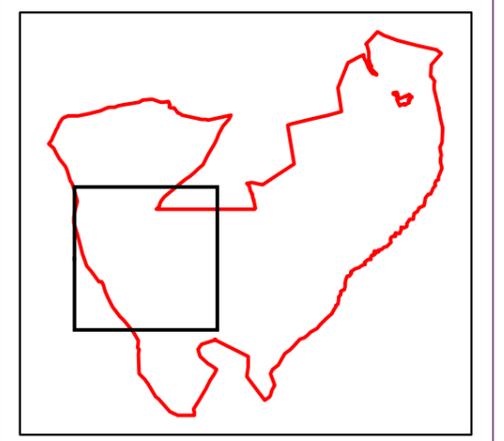
Figure 9.2
Peat Depth Survey Data

file: \\G:\MIDATA\PROJECT\32965 Enoch Hill Wind Farm EIA SUB\040 Design\ARC\Peat\SPRA\32965-Gla360a.mxd



- Key
- Application boundary
 - ▲ Turbine locations
 - Watercourse crossings
 - ⊕ Permanent meteorological masts
 - Proposed on site tracks
 - Borrow pit search areas
 - Turning head
 - Temporary construction compound
 - SPEN & EON substation compound
 - Crane pads

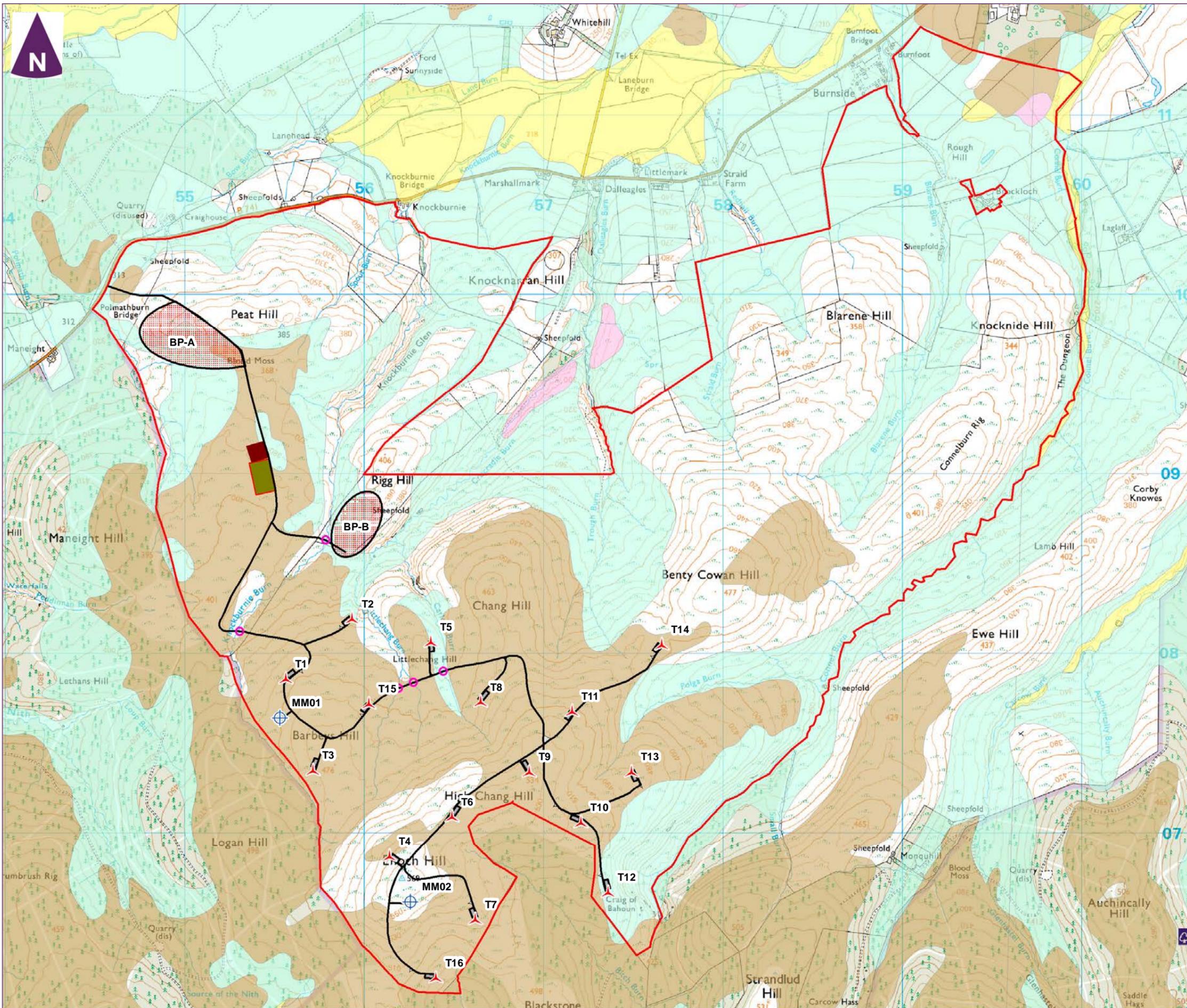
- All Peat Depth Data (m)**
- 0.00 - 0.50
 - 0.50 - 1.00
 - 1.00 - 1.50
 - 1.50 - 2.00
 - 2.00 - 2.50
 - 2.50 - 3.00
 - 3.00 - 3.50



Enoch Hill Wind Farm
Peatside Hazard and Risk
Assessment

Figure 9.3
Peat Depth Survey Data

file: \\G:\MIDATA\PROJECT\32965 Enoch Hill Wind Farm EIA_SUB\040 Design\ARC\Peat\SPRA\32965-Gla360a.mxd

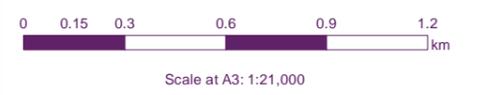


Key

- Application boundary
- ▲ Turbine locations
- Watercourse crossings
- ⊕ Permanent meteorological masts
- Proposed on site tracks
- Borrow pit search areas
- Turning head
- Temporary construction compound
- SPEN & EON substation compound
- Crane pads

BGS Superficial Geology

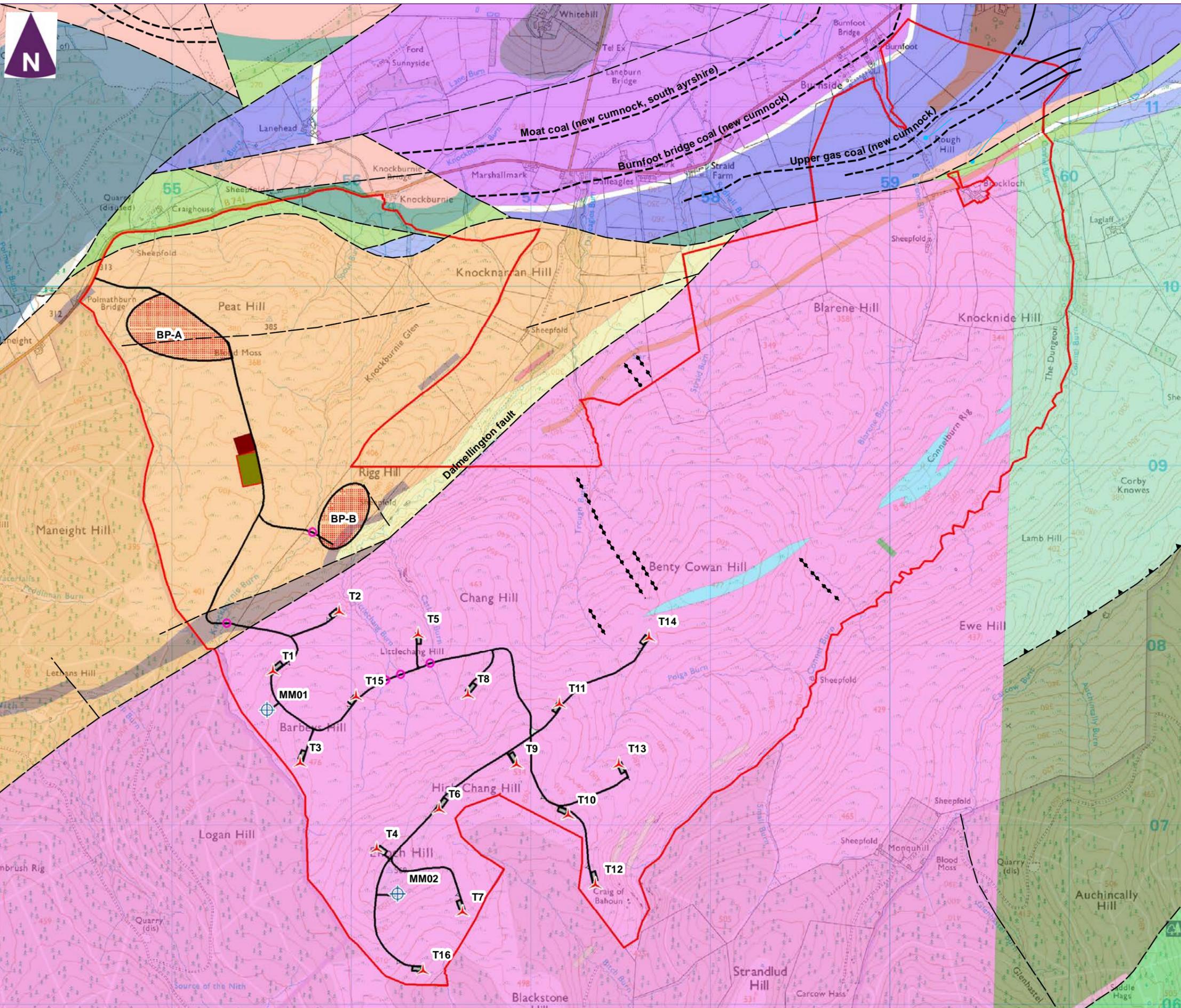
- Alluvium
- Glaciofluvial Deposits
- Peat
- Glacial Till



**Enoch Hill Wind Farm
Peatside Hazard and Risk
Assessment**

**Figure 4
BGS Superficial Geology**

file: W:\GWMIDATA\PROJECT\32965 Enoch Hill Wind Farm EIA SUB\040 Design\ARC\Peat\SPRA\32965-Gla356a.mxd



Key

- Application boundary
- ▲ Turbine locations
- Watercourse crossings
- ⊕ Permanent meteorological masts
- Proposed on site tracks
- Borrow pit search areas
- Turning head
- Temporary construction compound
- SPEN & EON substation compound
- Crane pads

BGS Bedrock Geology

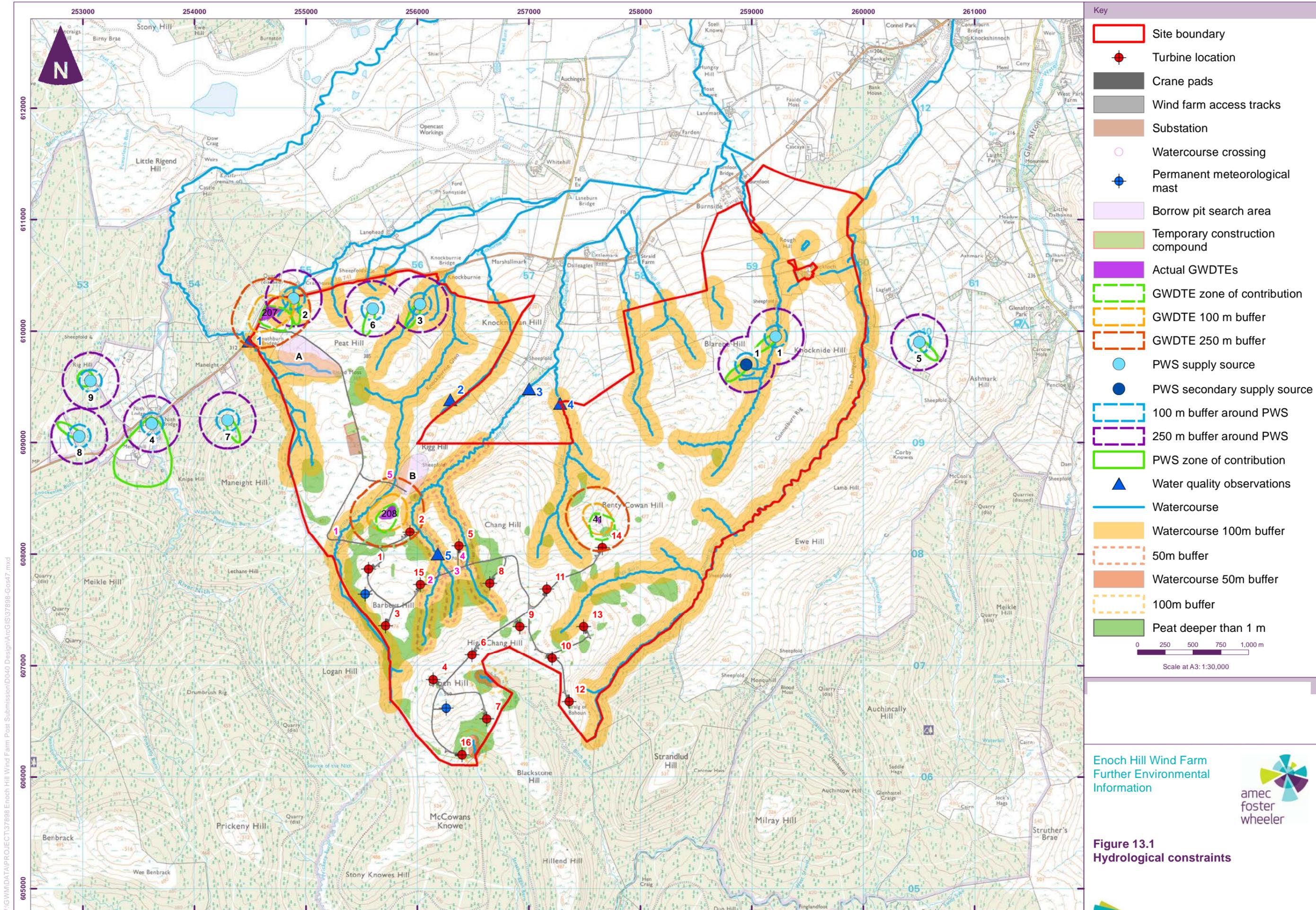
- Ayrshire Basaltic and Foiditic Plugs and Vents
- Blackraig Formation
- Carrick Volcanic Formation
- Crawford Formation
- Cumbræ-Stevenston Dyke
- Kirkholm Formation
- Lanark Group
- Leadhills Formation
- Limestone Coal Formation
- Limestone Coal Formation and Upper Limestone Formation (Undifferentiated)
- Marchburn Formation
- North Britain Siluro-Devonian Calc-Alkaline Dyke Suite
- Passage Formation
- Scottish Lower Coal Measures Formation
- Scottish Middle Coal Measures Formation
- Scottish Upper Coal Measures Formation
- Southern Midland Valley Felsite Sills
- Unamed Igneous Intrusion of unknown age
- Upper Limestone Formation
- Western Midland Valley Westphalian to early Permian Sills
- Coal seam, inferred
- Coal seam, observed
- v Drumlin, form line at base
- Fault, inferred, displacement unknown
- Reverse or thrust fault, inferred, barbs on hanging wall side, throw in metres
- Glacial meltwater channel centre line, undifferentiated
- Mineral vein, inferred

0 0.15 0.3 0.6 0.9 1.2 km
Scale at A3: 1:21,000

**Enoch Hill Wind Farm
Peatside Hazard and Risk
Assessment**

**Figure 5
BGS Bedrock Geology**

file: W:\GWMIDATA\PROJECT\32965 Enoch Hill Wind Farm EIA SUB\040 Design\ARC\Peat\SPRA\32965-Gla357a.mxd



- Key**
- Site boundary
 - Turbine location
 - Crane pads
 - Wind farm access tracks
 - Substation
 - Watercourse crossing
 - + Permanent meteorological mast
 - Borrow pit search area
 - Temporary construction compound
 - Actual GWDTEs
 - GWDTE zone of contribution
 - GWDTE 100 m buffer
 - GWDTE 250 m buffer
 - PWS supply source
 - PWS secondary supply source
 - 100 m buffer around PWS
 - 250 m buffer around PWS
 - PWS zone of contribution
 - ▲ Water quality observations
 - Watercourse
 - Watercourse 100m buffer
 - 50m buffer
 - Watercourse 50m buffer
 - 100m buffer
 - Peat deeper than 1 m
- 0 250 500 750 1,000 m
Scale at A3: 1:30,000

Enoch Hill Wind Farm
Further Environmental
Information



Figure 13.1
Hydrological constraints

