Issue	Date	Revision Details
1238395A	10/02/2021	Released

Appendix 8.5

Borrow Pit Assessment

Contents

A8.1 INTRODUCTION

Background

A8.1.1 Natural Power has undertaken a Borrow Pit Assessment (BPA) for the proposed Daer Wind Farm project.

A8.1.2 The Proposed Development is located within South Lanarkshire and Dumfries & Galloway, Scotland, approximately 10 km west of the town of Moffat.

A8.1.3 On-site borrow pits are required to facilitate the wind farm BOP construction works. These will provide significant environmental and economic benefits compared to obtaining material from commercial quarries.

A8.1.4 The BPA is a technical appendix to the EIA report Chapter 8 and should be read in conjunction with the wider EIA documents.

Objectives

A8.1.5 The primary objectives of this study are to review the site conditions and present the best potential borrow pit search areas on the site, based on all pertinent information available at the time of writing.

A8.1.6 The proposed search areas will be subject to geotechnical investigation at post consent stage to confirm that they contain suitable quality and sufficient volume of rock materials for extraction to use mainly for the construction of the wind farm tracks, crane pads and compound hardstanding areas, and potentially also for on-site concrete batching.

Scope of Work

A8.1.7 The BPA utilises information on geology, geomorphology and peat data collected during on-site mapping and surveys. This data and information are combined with desk-based study and review of all published materials relevant to the Proposed Development, including slope data obtained from a DTM of the site, and the Peat Stability Assessment.

A8.1.8 This BPA report will present the following information:

- Section 8.2 – provides a site description
- Section 8.3 – explains the rationale behind the chosen borrow pit locations
- Section 8.4 – provides a high level information on the likely borrow pit design and working methodology

Proposed Development

A8.1.9 The Proposed Development comprises the construction of seventeen wind turbines and associated infrastructure. A detailed description of the proposed wind farm development is provided in the EIAR.

A8.1.10 The Proposed Development layout, including the proposed borrow pit locations identified by this study, is shown on the site layout map (EIAR Figure 1.1: Site Layout).

A8.1.11 Four temporary borrow pits are proposed (borrow pits BP1, BP2, BP3 and BP4) in order to meet the aggregate requirements for the wind farm construction. The number and location of the borrow pits are discussed further in Section 8.3 of this report. Borrow pits are temporary features, and following the construction works, the borrow pits would then be restored.

A8.1.12 The locations of the proposed borrow pit search areas are indicated below.

Table 8.1: Grid-coordinates of Borrow Pit Search Locations

Borrow Pit ID	Easting	Northing
Borrow Pit Search Area 1	299712	605765
Borrow Pit Search Area 2	298997	606884
Borrow Pit Search Area 3	298027	605288
Borrow Pit Search Area 4	298806	603434

Source: Natural Power

A8.1.13 With reference to the EIA report habitat survey map (EIAR Figure: 6.3 – Phase 1 Survey Results), the borrow pits would be located within the following habitats:

- BP1 – wet modified bog and blanket sphagnum bog.
- BP2 – marsh/marshy grassland.
- BP3 – acid grassland – unimproved.
- BP4 – blanket sphagnum bog.

A8.2 SITE DESCRIPTION

Location

A8.2.1 The centre of the Proposed Development Area is approximated to National Grid Reference (NGR): [298896, 605666]. Diagram 8.1 provides an overview of the Proposed Development Area.

Source: Natural Power

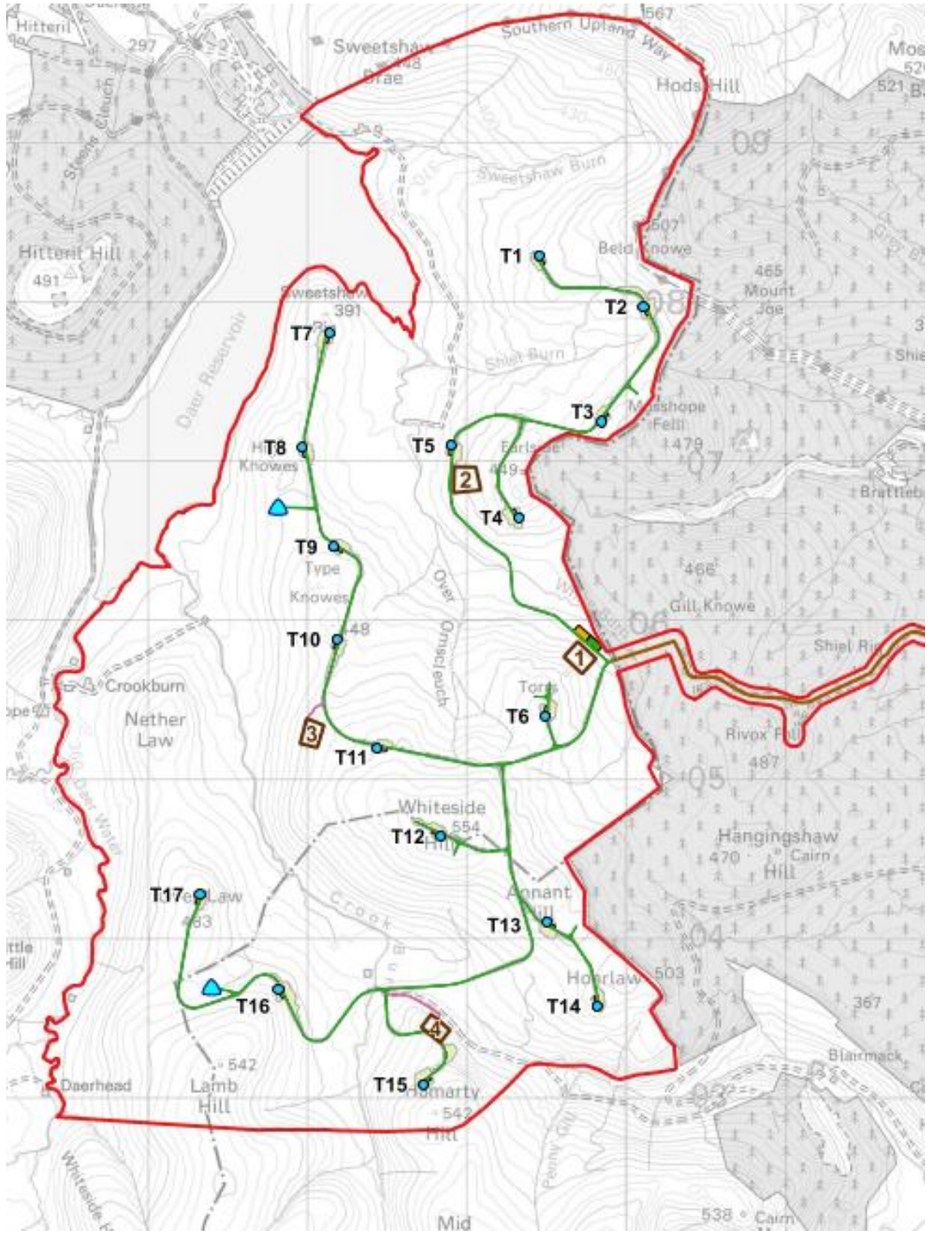

Diagram 8.1: Proposed Development Area (not to scale, extract from EIAR Figure 1.1: Site Layout)

Site Description

A8.2.2 The site description was informed by the site walkover survey and desk study material.

A8.2.3 The Proposed Development is located in an upland setting and comprises open moorland with hills forming a complex topography of plateaus, valleys and ridges. There are several watercourses on the site, including the Crook Burn, Black Burn, Shiel Burn and Sweetshaw Burn and their various tributaries.

A8.2.4 The maximum topographic height of the site approaching 600 m AOD around Earnscraig Hill, at the south of the Proposed Development Area, and several other peaks on site over 500 m AOD.

A8.2.5 Due to the upland setting, steep slopes are evident across much of the site, but are especially prevalent at the southern end of the Proposed Development Area. Elsewhere the slopes are typically undulating with the flatter tops of the ridge systems being selected for proposed wind farm infrastructure.

A8.2.6 The north western turbine array follows a broad ridge line stretching from Whiteside Hill to Type Knowes, High Knowes and Sweetshaw Rig.

A8.2.7 The north eastern turbine array skirts along the north eastern side of Torrs, and western side of Earlside, Mosshope Fell and Beld Knowe hills.

A8.2.8 The southern turbine array is located in the most variable topography which descends from the highest point at Whiteside Hill and crosses the wide Crook Burn valley before climbing up to the turbine locations further south, although again most of the turbines in this array are located on elevated plateau areas.

A8.2.9 A network of natural channels and cut artificial drainage ditches are present throughout the site, and are suspected as having a significant desiccating effect of the peat. The ditches are generally more concentrated in some areas, for example on the northern turbine arrays, and slightly less prevalent in the south of the site.

A8.2.10 Along some watershed areas discrete areas of peat hags have developed, however there are no signs of active mass movement. Rather a slower active erosion of the peat is evident in places. Peat hags was most prevalent on the tracks around turbines T16 and T17.

A8.2.11 There were no existing historical quarries or borrow pits on the wind farm site. There were no significant rock outcrops located on the site, except at the location of proposed borrow pit BP4 where some limited outcrops were seen.

A8.2.12 A selection of photographs taken during the site walkover survey which depict general environs of the site are shown below.

Source: Natural Power

Diagram 8.2: View from turbine T11 looking north west towards Daer Reservoir

Source: Natural Power

Diagram 8.3: View from turbine T16 looking south east towards T14 and T15

A8.3 RATIONALE FOR PROPOSED BORROW PITS

Site Selection

A8.3.1 The sites for the proposed borrow pits were identified based on a number of factors, including desk based information and visual inspections carried out during the site visits. The justification for the site selection is provided in this section.

A8.3.2 The proposed locations are based on a number of factors:

- Site geology – likelihood of encountering shallow rock/rock outcrops.
- Peat depth – located in areas of shallowest peat.
- Peat stability risk – located in areas of low or negligible peat stability risk ranking.
- Topography – sites on sloping ground should provide the best borrow pits.
- Geographical spread – a good spread across the site is desirable to minimise haul distances during construction.
- Site track layout – preferably located near proposed tracks.
- Environmental effects – avoiding sensitive areas of the water environment, flora and fauna. Minimising effects by utilising any existing quarries if present.

A8.3.3 Four borrow pit search areas were identified, and the locations were informed by the information available at the time of this study and professional judgement.

Geology

Superficial deposits

A8.3.4 The BGS map data indicated no superficial deposits are recorded over the majority of the development area. This implies that there is not expected to be a significant thickness of superficial deposits present within these areas.

A8.3.5 Peat deposits are indicated at the south of the site in the lower lying areas crossed by the proposed tracks between turbines T13 and T17.

A8.3.6 Small discrete areas of glacial deposits (including Devensian glacial till and hummocky glacial deposits) and alluvium (river deposits) are also indicated on parts of the site. These would be expected to comprise a mix of clay, silt, sand and gravel.

Site selection

A8.3.7 The borrow pit search areas were located in areas where superficial deposits were not recorded, thus giving the highest likelihood of encountering shallow bedrock, and minimal amount of overburden excavations needed to form the borrow pits.

Bedrock geology

A8.3.8 The BGS map data indicated the site is underlain by Silurian age sedimentary bedrock.

A8.3.9 The majority of the site is underlain with Queensberry Formation - Sandstone, Mudstone, Siltstone and Conglomerate.

A8.3.10 BGS lithological description for this formation is Sandstone, typically medium- to coarse-grained but ranging from fine- to very coarse-grained, locally pebbly. Generally medium- to very thick-bedded or massive over thicknesses of tens of metres, units up to few metres thin-bedded. Interbedded siltstone or silty mudstone generally thin to medium beds but siltstone units range up to several tens of metres locally. Rare conglomerate and intraclast-rich sandstone occur locally. Sandstone siltstone typically bluish grey when fresh, darker grey when weathered. Although of similar facies, the mid-Llandovery Queensberry Formation is younger than the adjacent early Llandovery Mindork Formation. Sandstone in both formations is predominantly quartzo-feldspathic, but is distinguished by accompanying volcanic debris; the Mindork Formation sandstone commonly contains sparse intermediate volcanic lithic debris and associated mafic crystal material (typically pyroxene); volcanic debris may be more common in the Queensberry Formation and tends to be more basic (spilitic) in character, mafic crystal material occurs locally but is relatively rare

A8.3.11 At the north western side of the site the bedrock comprises Gala Unit 4 - Wacke.

A8.3.12 BGS lithological description for this formation is Graded beds that may include wacke sandstone, siltstone and mudstone in variable proportions, interpreted as turbidites. Conglomeratic beds are a feature of this unit. Siltstone interbeds yielded fauna of the cyphus to triangulatus Biozones.

A8.3.13 The BGS data indicates several regional fault structures intersecting the bedrock geology, with a number of faults crossing the southern end of the site. These faults are predominately NE-SW trending thrust faults. The faults are likely to be associated with fracture zones and smaller local scale faulting and rock shatter zones.

Site selection

A8.3.14 The bedrock geology is expected to be broadly similar across the site with the two rock formations identified likely to have similar rock characteristics and engineering properties, so this was not a major decisive factor in the site selection. The majority of the borrow pit search areas were located within the Queensberry Formation bedrock area, since this rock formation covers the largest area

A8.3.15 As an aggregate source, the expected rock formations are likely to be suitable as a selected granular fill if care is taken in the selection, abstraction and grading process. Detailed mechanical and chemical analysis will be required on rock sources which may be identified for concrete batching. This analytical work would normally be undertaken post consent during pre-construction detailed ground investigation works.

A8.3.16 It would be of critical importance for any future ground investigation, to determine spacing, orientation and nature of discontinuities, and the depth and properties of weathered zone materials.

Source: Natural Power/British Geological Survey

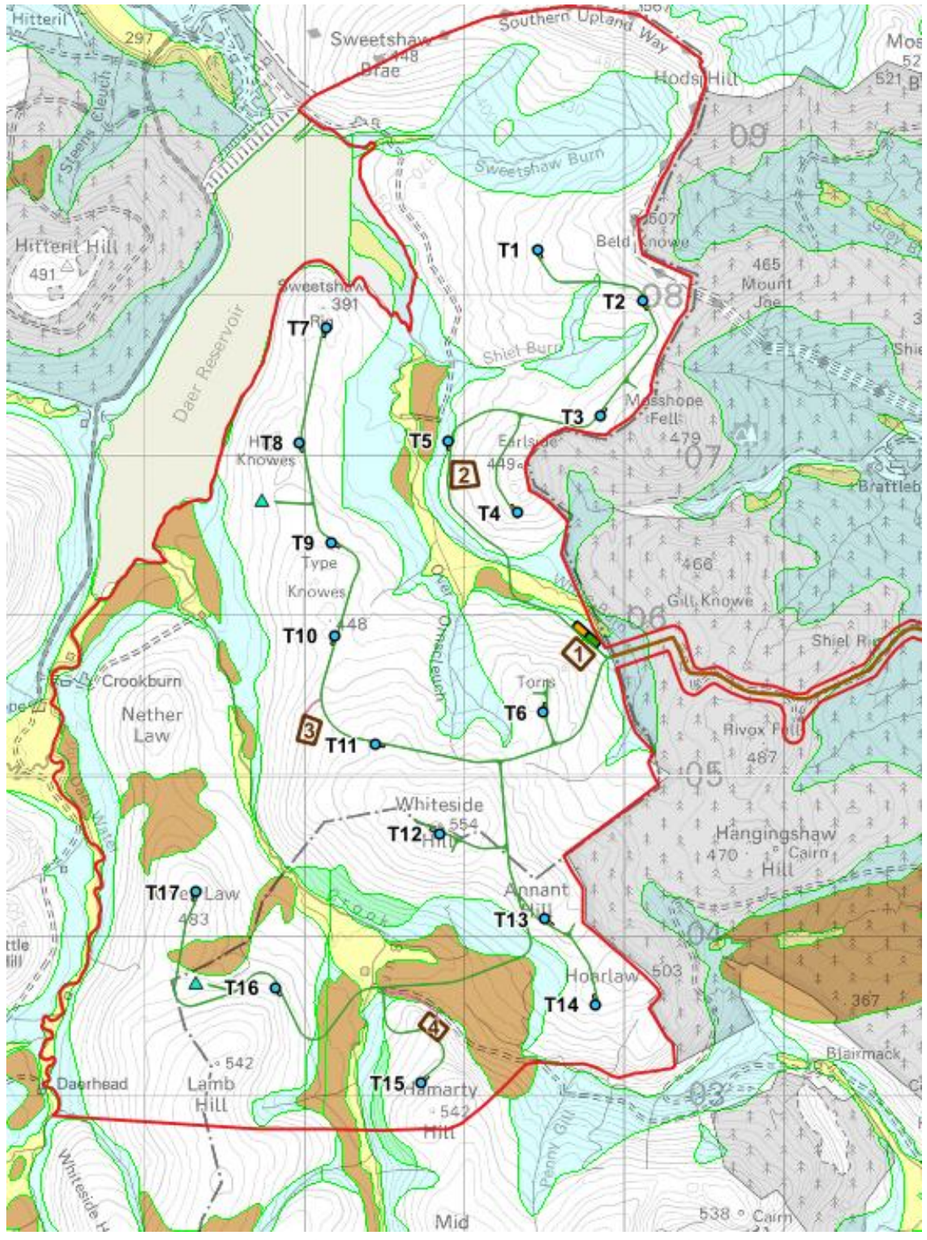

Diagram 8.4: Superficial Geology (not to scale, extract from EIAR Figure: 8.3)

Source: Natural Power/British Geological Survey

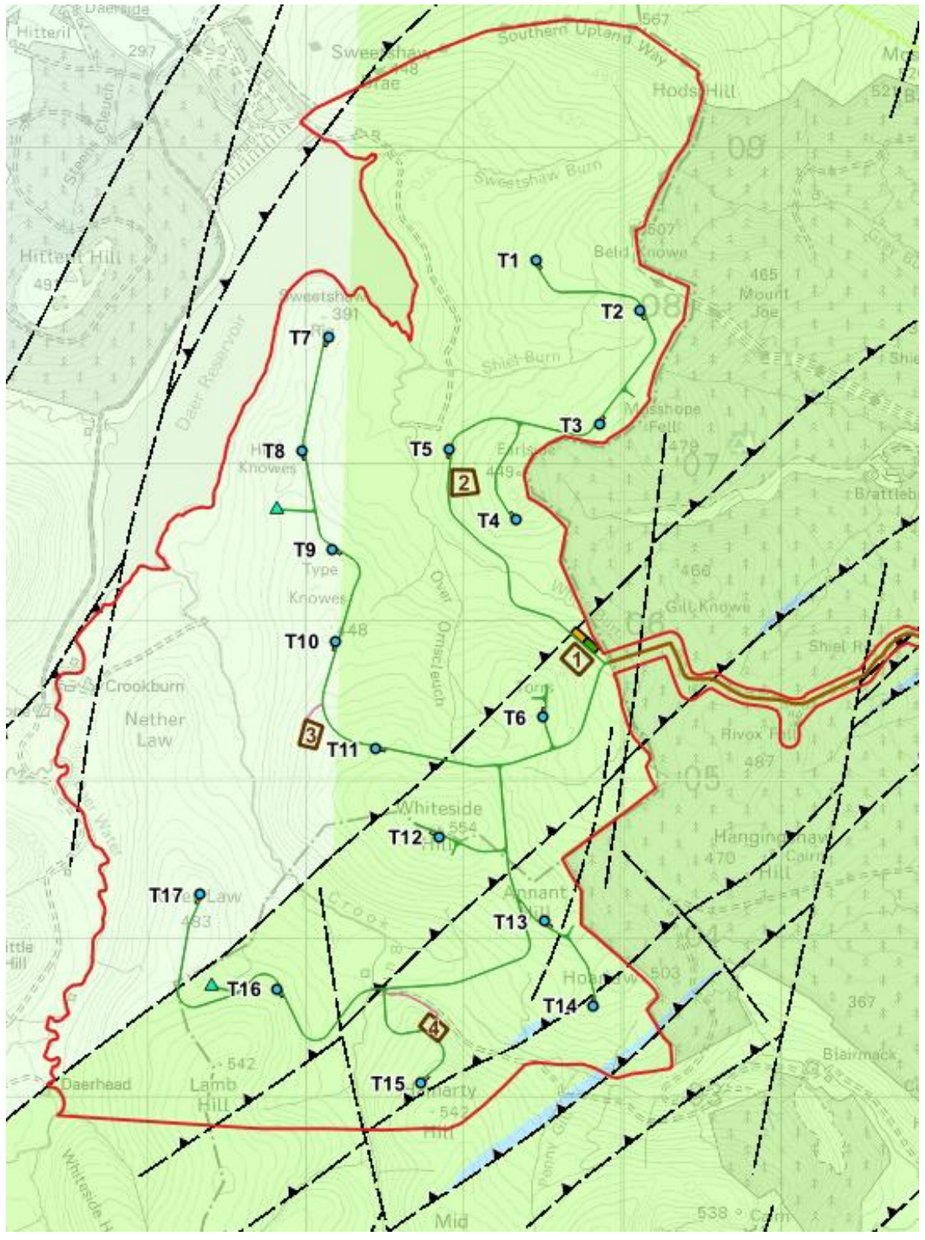

Diagram 8.5: Bedrock Geology (not to scale, extract from EIAR Figure: 8.2)

Peat depth

A8.3.17 A detailed peat depth survey and analysis was carried out as part of the Peat Stability Assessment (Technical Appendix 8.2 to the EIA report Chapter 8).

A8.3.18 An interpolated peat depth map (EIAR Figure 8.6: Peat Depth Interpolation) shows the distribution of peat depths in relation to infrastructure elements.

Site selection

A8.3.19 The borrow pit search areas were located in areas of shallowest peat to minimise the volume of excess peat generated by peat stripping excavations during initial opening of the borrow pits.

Peat stability risk

A8.3.20 A detailed peat stability assessment was carried out for the Proposed Development, and is reported separately (EIAR Technical Appendix 8.2).

Site selection

A8.3.21 All four borrow pit areas were located within areas of low or negligible peat stability risk ranking.

Topography

A8.3.22 The site topography is varied with a complex distribution of plateaus, valleys and ridges.

A8.3.23 An Ordnance Survey 'OS Terrain5' digital terrain model (DTM) data file with ground surface elevations across a 5 m grid for the whole development was obtained to provide an accurate representation of the site topography. This was reviewed in detail in conjunction with the site based surveys to identify areas of steeper sloping topography which would provide the best geometry to develop the borrow pits.

Site selection

A8.3.24 The borrow pit search areas were located in areas of steeper sloping ground in order to allow a simple form of workings into the hillside. The sloping locations will maximise rock yield and may allow for a smaller overall borrow pit excavation and impact, compared to lower angle terrains.

Site layout and construction logistics

A8.3.25 The Proposed Development layout is a key driver in determining the best borrow pit locations. A good geographical spread is highly desirable to minimise stone hauling distances and associated environmental effects during construction works. It is also beneficial to locate borrow pits as close as possible to proposed site tracks to negate the need for construction of lengthy temporary link tracks.

Site selection

A8.3.26 The borrow pit search areas were located in strategic positions intended to provide sources of stone where they are most needed during the constitution works. Generally, a number of smaller borrow pit excavations are normally preferred over a larger single extraction location. It is assumed at this stage that the construction of the Proposed Development will progress in a zoned way that would benefit from well spread out stone sources.

A8.3.27 Considering volume requirements and the construction needs, four borrow pits are proposed.

A8.3.28 The potential borrow pit locations are distributed across the development to allow for phased build out of the proposed infrastructure and in order to reduce the effects of adopting one larger centralised borrow pit excavation

A8.3.29 It is possible that not all of the borrow pit search areas may be concluded as viable following the detailed ground investigation which would be carried out post consent.

A8.3.30 The final location and design of the borrow pit working areas, within the search areas, will need to be established following detailed intrusive ground investigation. It should therefore be accepted that the indicated borrow pit search areas represent larger areas than the final worked area.

Environmental effects

A8.3.31 Another key driver of the site selection is the intention to avoiding siting borrow pit search areas on or in close proximity to sensitive areas such as: ecology habitats, watercourses, high sensitivity GWDTE's, SSSI's, heritage sites, etc.

A8.3.32 Any suitable pre-existing historical quarries or borrow pits should be considered for expansion where possible, to reduce effects of the Proposed Development.

Site selection

A8.3.33 The borrow pit search areas were located in areas outwith any known environmentally sensitive areas, and were all greater than 100 m from watercourses.

A8.3.34 There were no pre-existing historical quarries or borrow pits on the site.

Rock Volume Requirement

A8.3.35 An initial estimate of the required rock volumes has been made in order to give an indication of the scale of on-site rock extraction required for the development, and the number of borrow pits required. The volume estimate is based on the predicted cut and fill quantities required to fulfil the outline earthworks design for the project.

A8.3.36 The Civil 3D outline design cut/fill assessment indicated that between approximately 500,000 m^3 to 600,000 m^3 of rock fill aggregate is likely to be required to meet the construction needs of the project.

A8.3.37 It should be noted that this volume estimate is considered to be highly conservative, and it is expected there will be a reduction in the volume required after it is reassessed at detailed design and optimisation stage. However, for the purposes of this report, the borrow pit search areas have been designed to ensure the full volume identified by the outline design can be met.

A8.3.38 Based on the initial volumes, it is considered that a minimum of four borrow pits would be needed to ensure sufficient volume of stone aggregate is available for the construction works.

A8.3.39 The table below summarises the indicative borrow pit working areas and indicative rock yields.

Table 8.2: Indicative borrow pit rock volumes

Borrow Pit ID	Search Area (Ha)	Indicative Rock Yield (m3)*	Mean Peat Depth (m)	Maximum Working Area (Ha)*	% Indicative Working Area of Search Area
Borrow Pit Search Area 1	2.0	160,000	0.48	1.6	80%
Borrow Pit Search Area 2	2.4	185,000	0.30	1.9	80%
Borrow Pit Search Area 3	1.7	135,000	0.12	1.4	80%
Borrow Pit Search Area 4	1.5	120,000	0.26	1.2	80%

*assuming an average excavation depth of 10 m of rock and 75% suitability rate

Source: Natural Power

A8.3.40 At this stage it is not expected that there will be any requirement to import significant volume of aggregates to site. A limited volume may be required to construct initial temporary tracks to allow access for construction plant to open the on site borrow pits, however it is likely that any import of aggregates onto site would be minimal.

A8.3.41 It would be the aim to utilise site won rock aggregate for the base and capping layers of access tracks and hardstand infrastructure. However, the final determination on this would be taken post consent, once detailed site investigation and geotechnical testing and assessment of the quality of the aggregate sources has been completed.

Proposed Borrow Pit Locations

A8.3.42 Considering the desk study information, rock volume requirements and the construction needs, four borrow pits are proposed:

- BP1 is located at the site entrance, adjacent to access track, to serve the initial site establishment and work in the central area including compounds. The intention is to work into the hillside from the north east.
- BP2 is located in the centre of the north eastern spur to serve the construction works in that part of the site, and is also adjacent to the access track. The intention is to work into the hillside from the west.
- BP3 is located at the base of the north western spur to serve the construction works in that part of the site. It would require a short track approximately 100 m along the 450 m contour line to access. The intention is to work into the hillside from the west.
- BP4 is located on the southern spur to serve the construction works in that part of the site. The intention is to work into the hillside from an existing track at the north east, and exploit some small existing rock outcrops.

A8.3.43 Aerial photographs of the four proposed borrow pit search areas in the context of the Proposed Development are shown below:

Source: Natural Power

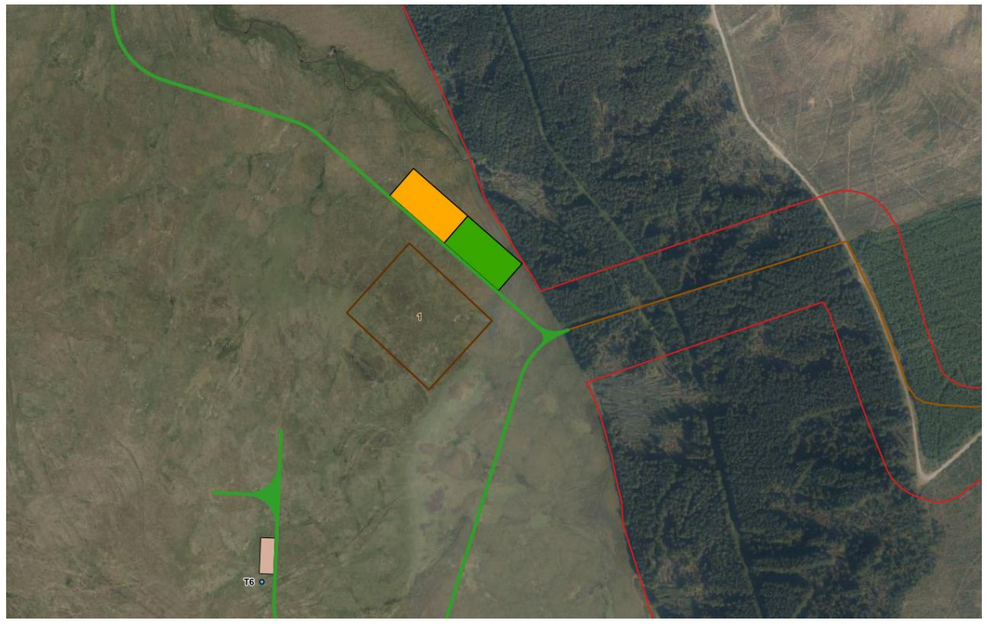

Diagram A8.6: BP1 aerial

Source: Natural Power

Diagram A8.7: BP2 aerial

Source: Natural Power

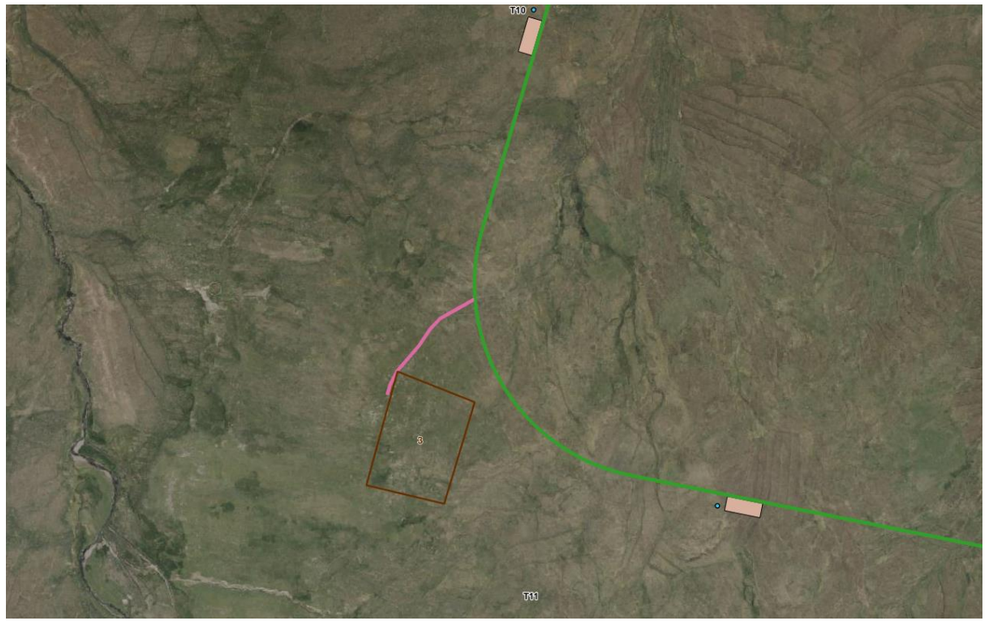

Diagram A8.8: BP3 aerial

Source: Natural Power

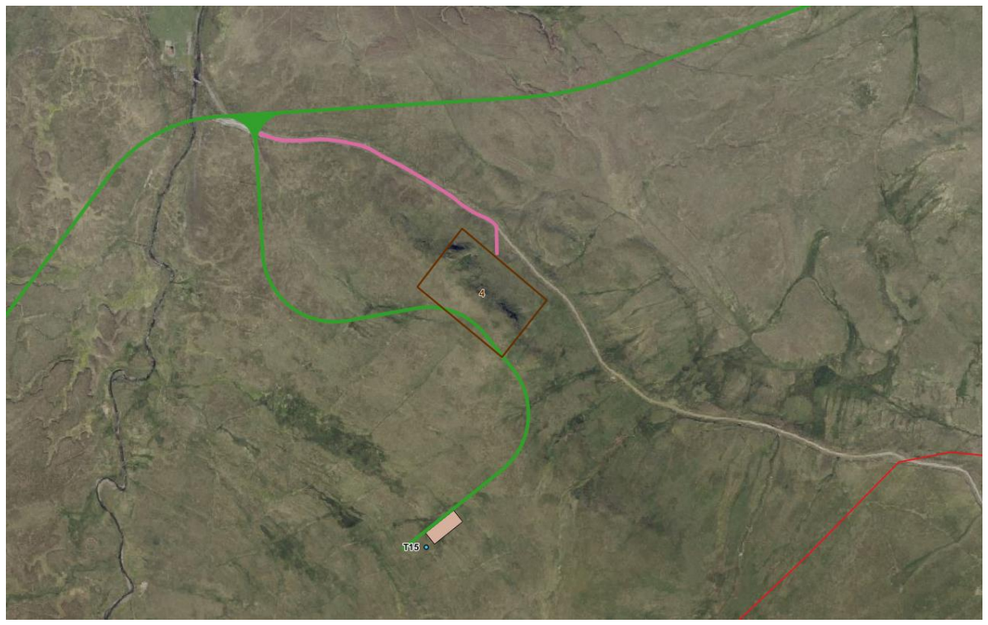

Diagram A8.9: BP4 aerial

A8.4 OUTLINE DESIGN AND WORKING METHODOLOGY

Borrow Pit Design

A8.4.1 It is highlighted that the exact size and geometry of the borrow pits will be defined post consent following completion of a comprehensive pre-construction intrusive geotechnical site investigation and assessment. The site investigation will be carried out to ascertain the quantity and quality (suitability) of the rock for use in the construction of the Proposed Development.

A8.4.2 The proposed search areas represent the anticipated scale of borrow pit excavation required to meet the minimum yield rock fill requirements. The actual working areas are likely to be smaller than the initially defined search areas, and it is expected there will be an optimisation of the borrow pit design within the confines of the identified search area at pre-construction stage.

A8.4.3 The following general design assumptions and criteria would be expected to apply to the proposed borrow pit developments:

- Overburden shall be stored in peripheral bunds at a safe distance from the working area. Bunds shall normally be no more than 1 m in height with 1in1.5 slope batters. The final location and geometry of temporary storage bunds shall be confirmed by a qualified geotechnical engineer during construction.
- Cut rock faces shall not generally exceed 80° and may need to be shallower where weathered material or unfavourable discontinuity orientations are encountered.
- Cut rock faces shall not exceed 10m height without a horizontal bench 5 m wide.
- The slope stability of borrow pit workings (cut faces, storage bunds and backfilled materials) would be verified and monitored by a qualified geotechnical engineer during opening, working and restoration phases.
- The perimeter of the borrow pit shall incorporate appropriate edge protection suitable personnel and vehicles when adjacent or downslope from access tracks.
- The floor of the borrow pit shall slope away from the working face at a grade of 1in100.
- The indicative restoration profile shall comprise an undulating slope of 10-15°, leaving no more than about 1 m exposed rock faces visible around the margins of the working area. The restoration profile will be controlled by the depth of superficial overburden encountered and the geotechnical suitability of the backfill material. On site earthworks shall be monitored and placed in accordance with a suitable earth work specification.
- Initial backfilling shall be completed using superficial overburden (mixed glacial sub-soils). This material would be used to raise the base of the borrow pit working to an adequate level & geometry onto which topsoil/peat can be placed to achieve a final restoration profile.

Example Borrow Pit Working Methodology

A8.4.4 The following provides an example sequenced process for establishing a working borrow pit.

Site Preparation and Overburden Handling

A8.4.5 Preparatory works associated with the borrow pits would likely commence at the start of the construction for the Proposed Development.

A8.4.6 A perimeter cut off drain shall be excavated ca.10 m away from the proposed working face prior to overburden stripping. This shall reduce the surface water accumulation within the borrow pit excavation and safeguard against sediment loaded run-off.

A8.4.7 Vegetated turves will be stripped from the excavation in a progressive movement up the slope as the excavation extends and stored separately.

A8.4.8 Topsoil/peat and other overburden materials would be excavated separately and stockpiled in a suitable location near the borrow pit.

A8.4.9 Stripped overburden will be placed in a temporary storage bund around the borrow pit area to provide a barrier to prevent access and prevent surface run off/provide a cut off for water coming down the slope to be diverted to ensure no ingress of additional water into the excavation area. Any excess overburden shall be stockpiled separately.

A8.4.10 The stability of all stockpiles including peat should be monitored with no storage onto in-situ peat deposits deeper than 1.0 m. The storage locations and bund heights should be reviewed by an experienced geotechnical engineer throughout the construction of the borrow pit.

A8.4.11 Excavated peat will be placed in temporary storage bunds of up to 1.0 m high, and on relatively flat ground, to prevent the possibility of peat slide. All peat storage shall be in accordance with the project Peat Management Plan. As indicated previously, it is not expected to encounter large quantities of peat at the borrow pit locations.

A8.4.12 All stockpiles shall be stored in a secure area until the borrow pit excavation is complete and the overburden soils can be utilised for the restoration of the borrow pit area.

A8.4.13 A suitable fence and/or protection barrier may be installed around the proposed borrow pit excavation area to provide an additional physical barrier to ensure the safety of both people working within the excavation area and anyone who may be within the Proposed Development area. Full details should be provided as part of the project Construction Method Statement.

Drainage

A8.4.14 Prior to commencement of construction works a drainage system incorporating adequate mitigation measures would be installed to prevent silt pollution.

A8.4.15 Where appropriate temporary interception bunds and drainage ditches shall be constructed upslope of the borrow pit to prevent surface run-off into the excavation. These cut off ditches shall be of minimal length, depth and gradient, and silt traps and buffer strips shall be utilised to minimise erosion, sedimentation and peak flows.

A8.4.16 Rainfall, surface and groundwater ingress shall be contained in a temporary sump situated in the lowest floor level of the excavation. A pit floor gradient not exceeding 1:100 shall be used to direct accumulated water to this point. At the sump, an oil interceptor shall be installed at the overflow.

A8.4.17 Excess water would be pumped or drained into a settlement lagoon with a suitable sediment trap (silt trap/silt fences and/or straw bales) to capture suspended solids, prior to discharging to an agreed location. A SEPA discharge consent should be sought with respect to this element of the borrow pit development. All on-site surface water discharges from excavations should be undertaken with a suitable SEPA discharge license and carried out in an environmentally compliant manner.

Rock Extraction (primary fragmentation)

A8.4.18 Rock extraction would commence after soils and overburden are removed from the whole borrow pit area.

A8.4.19 All workings should conform to relevant legislations including PAN 50[1], the principles of The Quarries Regulations 1999, the Groundwater Regulations 1998, HSE and Scottish Environment Protection Agency (SEPA) codes of practices and guidelines.

A8.4.20 Due to the nature of the rock the excavation is likely to be achieved through ripping, hydraulic breaking and possible blasting. If blasting is required, the blast design should consider effects of blast induced vibrations.

[1] Planning Advice Note PAN 50, Controlling the Environmental Effects of Surface Mineral Workings

A8.4.21 Once the rock material has been excavated forming a working face the borrow pit can be extended by continued advancing face excavation. This would usually be at approximately 80 degrees to the horizontal to maintain a stable working face whilst maximising rock recovery. This angle may need to be changed if unstable rock is encountered or alternatively if the rock is of good stability and the face can be made steeper.

A8.4.22 If excavations exceed 10 m a mid face bench may be required to ensure long term slope stability. The final design may require stability assessment by a geotechnical engineer as the excavation progresses. If the excavation is assessed as stable the bench widths and wall face angle can be amended to the most optimum design whilst ensuring the area is safe and stable.

Processing (Load and Haulage Operations)

A8.4.23 The extracted rock is likely to require crushing for secondary fragmentation and screening to gain a suitable aggregate size for use in the construction works, and to prevent weathered material from sterilizing the pay rock. Mobile crushing and screening plant will be used to achieve a suitable material size. In this way the effects of a processing plant may be minimised.

A8.4.24 Load and haul methodology shall then be used to transport the stone to the required point of use.

Restoration

A8.4.25 Following completion of the borrow pits, they would be restored to ensure the post-excavation landform is sympathetic to the surrounding topography.

A8.4.26 The proposed borrow pits restoration would be to generate a rough vegetated slope profile grading into the existing ground level of the surrounding terrain and made safe.

A8.4.27 Restoration blasting or hydraulic breakers may be implemented if required, usually leaving no more than about 1 m sub-vertical exposed rock faces visible around the margins. Restoration blasting may also include inclined blasting at the borrow pit face edges to achieve a shallower restoration rock face profile to a stable slope angle.

A8.4.28 Loosened rock from the restoration blasts may be used to partially buttress against the lower few metres of the resultant rock face to form a gentler transition with the borrow pit floor.

A8.4.29 Backfilling would be completed using the superficial overburden extracted from the borrow pit areas, placed to an adequate level and geometry onto which topsoil/peat and excavated turves can be restored to achieve the final profile.

A8.4.30 Spoil from other working areas such as turbine bases may also be used to achieve the restoration profile.

A8.4.31 The reinstatement may not take place immediately following completion on the borrow pit, but this should be completed within the construction period of the wind farm. All restoration works should be carried out to the approval of an appointed Environmental Clerk of Works (ECoW).

A8.4.32 The geological interest of potential bedrock exposures should not be discounted. Where possible opportunities for local and national bodies with interest in the geological setting of the site should be provided with access to study and document any significant features uncovered by the borrow pit workings.

A8.5 SUMMARY AND CONCLUSIONS

A8.5.1 Natural Power has undertaken a Borrow Pit Assessment for the Proposed Development.

A8.5.2 The assessment has taken account of site conditions, peat, site geology, construction requirements and environmental sensitivities gained from desk-based information and visual inspections carried out during the site visits.

A8.5.3 Rock fill requirements have been indicated based on the proposed scale of construction and earthworks requirements.

A8.5.4 There were no existing historical quarries or borrow pits on the wind farm site, so four new borrow pit search areas are proposed in order to meet the aggregate requirements for the wind farm construction.

A8.5.5 The borrow pit search areas have been selected to minimise effects on the site. The borrow pit search areas were located in areas of shallowest peat and overburden, located away from sensitive environmental receptors, and at strategic locations to make best use of site topography and intended to provide sources of stone where they are most needed during the constitution works.

A8.5.6 It is highlighted that the final location and size of borrow pit working areas (within the wider search areas) should be confirmed following detailed intrusive geotechnical site investigation carried out during the post consent phase of development. These investigations should seek to determine the thickness of overburden and quantify the underlying rock mass quality and suitability for the proposed end use.

A8.5.7 There are a number of benefits from the proposed on site borrow pits. These include reduced transport impacts compared with alternatives such as importing large quantities from commercial off-site quarries, including a reduction in construction traffic and vehicle movements on local road networks. The rock would also be used close to the point of extraction, thereby minimising on-site haulage distances and associated risk to the environment (including reduced noise, reduced dust, lower air emissions and reduced fuel use).

A8.5.8 An outline borrow pit design and working methodology is provided, however this should be developed into a detailed working methodology as part of the CMS.