Gordonbush Wind Farm Extension

Appendix 9.4

Borrow Pit Assessment

SLR Ref : 405.00660.00025

June 2015

Version: Final

CONTENTS

TABLES

FIGURES

1.0 INTRODUCTION

1.1 Borrow Pit Selection Methodology

This report provides details of the proposed borrow pits, which would be necessary to provide the aggregates required to construct the Development, as described in Chapter 4: Description of the Development, of this ES. This report presents an assessment of the borrow pits and evaluates the selected locality's merit in the context of the construction requirements of the Development.

It is proposed to reuse two of the borrow pits from the construction of the operational Gordonbush Wind Farm. The proposed borrow pit locations have been selected because of their potential to be extended, their morphology, accessibility from existing access tracks, orientation and the expected proximity of rock to the surface. The borrow pits are in areas where the peat coverage is minimal and where bedrock outcrops and aggregate reserves are known to occur near the surface.

The Development is located on Gordonbush Estate, adjacent to the operational Gordonbush Wind Farm and approximately 9.5 kilometres (km) to the north-west of Brora. Access to the Site is gained via the existing wind farm access track constructed as part of Gordonbush Wind Farm.

The operational wind farm would include the following key components (full details provided in Chapter 4: Description of Development):

- 16 wind turbines in total comprising:
  - 13 wind turbines at up to 130m tip height; and
  - 3 wind turbines at up to 115m tip height;
- crane hardstanding area at each wind turbine location with a maximum area of 1900m^2;
- one permanent meteorological mast at up to 90m in height and associated hardstand with a maximum area of 840m^2;
- an operations building with parking for operational and maintenance staff;
- on site access tracks (of which approximately 7.96km are new access tracks and approximately 11km are existing tracks where upgrades may be undertaken to facilitate delivery of the wind turbine components);
- a network of underground cabling to connect each wind turbine to the existing onsite substation;
- Modifications to the existing on site control building and grid substation to accommodate additional cables and equipment; and
- Any associated ancillary works required.

In addition to the above components of the operational wind farm, the construction phase would comprise the following:

- a temporary concrete batching plant;
- temporary telecommunications infrastructure;
- a temporary meteorological mast;
- a temporary construction compound and storage area; and
- reopening and extension of two of the original borrow pits developed as part of the Gordonbush Wind Farm.

Existing infrastructure from the operational Gordonbush Wind Farm would be utilised for the proposed extension where possible and is therefore included within the site boundary. This includes the use of the existing operations building; control building and grid substation for the grid connection; existing access tracks and two of the original borrow pits during construction within the site boundary.

This report provides details of the proposed reopening of two of the original borrow pits to provide the aggregates required to construct the proposed Development. The site is located as shown on Figure 1. Figure 2 illustrates the proposed site layout for the Development.

The work undertaken so far has involved a review of all geological plans, including historic geological plans, topographic and slope plans and review of the available memoirs. Information from the site was also collected and a review and assessment of borrow pits used for the original site development was undertaken.

1.2 Sources of information

The following sources of information have been reviewed and assessed:

- British Geological Survey (BGS) Scotland Sheets 103W – Golspie - Solid and Drift Geology Edition. 1:50,000 series;
- The Macaulay Institute for Soil Research Soil Survey of Scotland Sheet 103 – Golspie, Land Capability for Agriculture Map. 1:250,000 scale, 1982;
- BGS Map and Map data viewers (www.bgs.ac.uk/data/mapViewers/home.html); and
- Scotland's Environment (www.environment.scotland.gov.uk).

2.0 REVIEW OF SITE GEOLOGY

The geology of the superficial deposits and bedrock at the site has been determined by a review of existing geological information published by the British Geological Society (BGS), and site inspection of the ground.

A search was also made of the BGS GeoIndex[1] for geological conditions and online boreholes. The database indicates that the BGS hold no borehole data for the site or its immediate surrounds.

The geological information presented in this report has been obtained from various sources. The area was originally mapped in 1925 and re-mapped in the 2002, by the BGS; the BGS Memoir Geology of the Golspie District (1925) is no longer published.

2.1 Soils

Published soils mapping indicates that the western boundary and south-east of the site are underlain by peaty gleyed podzols of the Arkaig soil association, with parent material derived from schists, gneisses, granulites and quartzites principally of the Moine Series. The far north of the site is underlain by dystrophic deep blanket peat soils. The soil type across the centre of the site has not been recorded.

2.2 Superficial Geology

The BGS Sheet 103W (Golspie) confirms that the superficial geology at site is recorded as being predominantly Glacial Till of Late Devensian age. Peat is present over the Development site, overlying the Glacial Till predominantly in the flatter lying areas. Three areas have been identified from the BGS Geological Sheet as having peat present; to the north-west and south-east of Allt nan Nathraichean, and to the south-west of the site towards the existing access road. However, as a consequence of design iterations and detailed peat probing, the deepest areas of peat have been avoided where possible, although a couple of short lengths of new access track are proposed to 'float' over thicker peat, where it could not be avoided.

Superficial deposits are common throughout the region. The superficial deposits occur most often as Glacial Till which covers a large extent of the lower ground; however it is generally less prevalent on the hill tops, where shallow soils predominate over bedrock. Peat accumulations occur on both the site and regionally and are quite extensive occurring as flat lying deposits.

2.3 Solid Geology

The BGS 1:50,000 solid geology map indicates that the solid geology beneath the majority of the site comprises psammite and micaceous psammite of the Kildonan Psammite Formation, which is part of the Loch Eil Group and Moine Supergroup. The psammite is a metamorphosed sedimentary rock.

The psammite and pelites of the Loch Eil Group all occur in thick formations as well as in striped or banded units characterised by rapid alterations of lithology on centimetric scales. The area has been extensively glaciated with a general

[1] http://mapapps2.bgs.ac.uk/geoindex/home.html

movement of the ice to the north. Much of the higher ground consists of glacially rounded hills with intervening peat filled hollows. Solid rock is exposed sporadically on the hills and in the numerous streams. The lowermost ground along river channels is mostly underlain by fluvio-glacial gravelly sands and alluvium.

The Moine Supergroup consists of beds of psammite and pelite, commonly 0.02-0.3m thick intercalated with thinner layers of micaceous psammite. Sedimentary structures are often present in areas of tectonic strain, although cross bedding is still preserved, the original sedimentary grains have been completely recrystallised. Calc-silicates are the most prominent metamorphic mineral, which forms hornblende/plagioclase assemblages which are partially replaced by aggregates of white mica.

A granitic intrusive is recorded outcropping along the Allt nan Nathraichean, orientated in a north north-west to south south-east orientation.

The geological strata can is summarised in Table 2.1 (Site Stratigraphy) below.

Table 2-1: Site Stratigraphy

Age	Unit	Typical Description
Quaternary	Peat	Accumulations of wet, dark brown, partially decomposed vegetation.
	Glacial Till	Well consolidated deposits of silty clay or sandy clay, containing numerous rounded pebbles and boulders.
Moine	Loch Eil Group	Psammite and micaceous psammite of the Kildonan Psammite Formation

2.4 Rock Extraction History at the Site

The BGS GeoIndex website shows that there are no active mines or quarries within the vicinity of the Development boundary. There is no history of mining or quarrying within the site, other than the use of borrow pits associated with the construction of the operational Gordonbush Wind Farm.

2.5 Economic Geology

There is limited information of the economic uses of the rock types within the site. The rock has been previously used in the construction of the operational Gordonbush Wind Farm for both aggregate and tracks.

3.0 BORROW PIT SEARCH AREAS

There are limited options within the Development area for the potential to develop new borrow pits. On review and assessment of the borrow pits used during the construction of the operational Gordonbush Wind Farm, it has been established that there is potential to reopen borrow pits BP1 (Photo 1) and BP2 (Photo 2). Both these borrow pits are in good locations to assist in the development of the proposed extension and have the potential to be extended to provide adequate volumes of material. BP1 is located towards the south east of the proposed Development close to the proposed turbine T13, and BP2 is located towards the north west of the Development site close to the proposed T4 turbine. BP1 has a good established access track from their previous operation; the track at BP2 has been partially restored and will require reinstating.

The geological setting of the borrow pits comprises rocks of the Kildonan Psammite Formation. Each borrow pit has the potential to be extended to the west.

Photo 1 – Restored original Borrow Pit Site BP1 to the south-east of the proposed Development. Potential to extend towards the west.

Photo 2 – Restored original Borrow Pit Site BP2 to north-west of proposed Development. Potential to extend towards the west.

Photograph's 3 and 4 illustrates each borrow pit in its operational stage would suggest that the high wall is relatively vertical and therefore this allows a good estimation to be made of volumes of rock that could be extracted from each borrow pit.

Photo 3 – Borrow Pit BP1 in operational stage showing vertical high wall.

Photo 4 – Borrow Pit BP2 in operational stage showing vertical high wall.

To meet the requirements for the Development, construction aggregates would be sourced from reopening these two borrow pits. Prior to any extraction from the borrow pits it will be necessary to remove the restoration soils in order to expose the operational face within each pit. Full consideration of appropriate storage locations for the excavated restoration soils will need to be considered prior to any excavation. As shown in Photos 1 and 2, the nature of the restoration soils is a loose mixture of unsorted granular materials ranging from fine grained material to cobbles and also including silty material and peat. It is likely that in the region of 27,000m^3 to 36,000m^3 of restoration material would require removal from each borrow pit site prior to any extraction works. Table 3.1 and 3.2 give further detail of the restoration material that would require excavation at each borrow pit.

The borrow pit locations have been selected because of their morphology, accessibility from existing access tracks, orientation and the expected proximity of rock to the surface. The aggregate has already been proven to be suitable for construction purposes and both borrow pits are in areas where the peat coverage is minimal and where bedrock outcrops and aggregate reserves are expected to occur near the surface.

A preliminary assessment of each borrow pit has been undertaken to evaluate their merit in the context of the construction requirements of the Development.

3.1 Borrow Pit BP1 (NGR 284827, 912623)

The borrow pit is located on bedrock comprising Kildonan metasedimentary rocks. This proposed borrow pit extension is located on shallow bedrock and has a suitable profile for maximising extraction from the borrow pit once it is reopened. It is anticipated that once the restoration overburden is removed from the borrow pit, it

should offer a significant volume of material. The rock comprises primarily psammite. No significant peat cover exists at this location over the virgin excavation area (see Figure 3).

The rocks are from the Kildonan Psammite Formation, comprising Psammite and micaceous psammite of the Loch Eil Group and Moine Supergroup.

The general characteristics and indicative aggregate volumes estimated from the borrow pit is provided in Table 3.1.

Table 3-1: Borrow Pit BP1 (NGR 284827, 912623)	
Site Area	Maximum dimensions – Potential Excavation Area 100 m length, 60 m width
Height of Excavation	8 m maximum
Area of land impacted*	~6,600 m^2
Gradient of floor during construction	Slope increases to the east at 1 in 100
Details of Extraction	Combination of ripping and blasting
Overburden type and depth	Restoration soils present from former restoration works. Approximate volume of 27,000m^3 to be removed prior to any extraction. Within the virgin excavation area of the proposed excavation there is limited soil cover, peaty soil less than ~0.5 m but not an extensive cover.
Extent of Aggregate Extraction	An approximate volume of 48,000m^3 of rock depending on excavation depth.
Aggregate Composition	These rocks are described as psammite.

* assumes 10% additional land take for access tracks and any site preparation areas

3.2 Borrow Pit BP2 (NGR 285989, 913374)

The borrow pit is located on bedrock comprising Kildonan metasedimentary rocks. This borrow pit is the larger of the two. This proposed borrow pit extension is located on shallow bedrock and is situated on the eastern flank of slope and has a suitable profile for maximising extraction from the borrow pit once it is reopened. It is anticipated that once the restoration overburden is removed from the borrow pit, it should offer a significant volume of material and the largest volume of the two borrow pits. The rock comprises psammite. No significant peat cover exists at this location over the virgin excavation area (see Figure 3).

The rocks are from the Kildonan Psammite Formation, comprising Psammite and micaceous psammite of the Loch Eil Group and Moine Supergroup.

The general characteristics and indicative aggregate volumes estimated from the borrow pit is provided in Table 3.2.

Table 3-2: Borrow Pit BP2 (NGR 285989, 913374)	
Site Area	Maximum dimensions – Potential Excavation Area 150 m length, 80 m width
Height of Excavation	8 m
Area of land impacted*	~13,200 m^2
Gradient of floor during	Slope increases to the east at 1 in 100

construction	
Details of Extraction	Combination of ripping and blasting
Overburden type and depth	Restoration soils present from former restoration works. Approximate volume of 36,000m^3 to be removed prior to any extraction. Within the virgin excavation area of the proposed excavation there is limited soil cover, peaty soil less than ~0.5 m but not an extensive cover.
Extent of Aggregate Extraction	An approximate volume of 96,000m^3 of rock.
Aggregate Composition	These rocks are described as psammite.

* assumes 10% additional land take for access tracks and any site preparation areas

As these borrow pits have been previously used, the rock has been proven as suitable for construction purposes for both aggregate and tracks.

3.3 Summary

Indicative aggregate volumes from each borrow pit are as follows:

Table 3-3: Combined Estimated Volumes from Borrow Pits

Borrow Pit	**Volume of gravel/rock m^3**	**Predominant Material**
BP1	30,000 – 48,000 m^3	Rock
BP2	60,000 – 96,000 m^3	Rock
Total	**90,000 – 144,000 m^3**	

Borrow Pit BP2 is anticipated to supply the majority of the aggregate for construction of the new access tracks, crane pads and bases for the northern portion of the Development, borrow pit BP1 would supply the aggregate for the southern portion of the Development.

Based on initial assessment there is sufficient rock to satisfy the demands for construction of the Development within these two borrow pits.

No account has been taken in the calculations for 'winning' rock during the construction phase. The calculations undertaken in this report assumes no rock or materials would be found on site during the construction programme. The extent of material sourced in this manner would therefore minimise the extraction of rock from the borrow pits.

4.0 CONSTRUCTION REQUIREMENTS

The proposed wind turbines and their subsequent maintenance would require the construction of a purpose built network of access tracks. These tracks would be single track and unbound. The total linear meterage of permanent new access track is estimated to be approximately 8 km. 1,522m of the new access track system will be floated with the remainder being a cut / fill construction. The floated tracks are based upon an estimated carriage width of up to 7m and an average fill thickness of 1.0m. The standard cut / fill construction roads are based upon an estimated carriage width of 5.5m and an average fill thickness of 1m. The construction of the track system itself, including the upgrade works and passing places would therefore require the provision of some ~65,000m^3 of processed aggegrate (based on acquiring no material along the route as part of the construction process). In addition a further ~32,000m^3 of aggregate would be required for the turbine bases and hard standing areas. The concrete requirements for the turbine bases would be produced at a temporary on-site concrete batching plant.

A total maximum volume of agregate required for the roads and turbine bases would be in the order of ~97,000m^3, which is accomodated within the volumes assessed from the two borrow pit sites. There would be no requirement to import material to upgrade tracks and initial infrastructure, including temporary construction compounds as aggregate can be sourced from reopening of the two borrow pits on site, which can be accessed off existing tracks constructed as part of the Development.

Temporary compounds and associated infrastructure will require approximately 19,000m^3, of materials.

In addition to the provision of aggregate for access track construction, approximately 5,600m^3 of processed aggregate is required in order to manufacture the concrete on site to cast the wind turbine bases. Unlike the road making material this category of aggregate is required to meet highly specified performance and engineering characteristics. It is presently assumed that the aggregate for the turbine bases will be imported from off-site, until the material in the borrow pit is tested.

A total maximum volume required will be in the order of 116,000m^3, which is consistent with the volumes assessed from the borrow pit sites.

4.1 Extraction Operations

The requirement to produce various grades of aggregate would necessitate the use of mobile plant and equipment. This operation would comprise of a number of different elements which are summarised below:

- **Drilling and Blasting** - It is envisaged that a major proportion of the proposed extraction materials would require drilling and blasting due to the relative strength and competency of the metasedimentary rocks. Safe operation, transportation and storage of the explosives would need to be considered in detail. The Contractor may also wish to re-evaluate any alternatives to the requirement for blasting on the basis of the available rock quality data.
- **Initial Stripping and Preparation** – As the borrow pits have been previously used, initial access routes to them are already in place. At BP1 the road will require a minimal element of upgrading but should still remain

in a useable condition. The road to BP2 has been partly restored and will require additional upgrading. Following access into each of the borrow pits the overburden / unsuitable material will need to be excavated prior to any extraction. It is anticipated that the removal of these soils would consist of a series of excavators and dump trucks to transport the material to a suitable stockpile area. BP2 would provide the most space to store excavated materials. It is anticipated that an area of approximately 10,000m^2 – 20,000m^2 would be required to store the restoration materials.

- In addition the area of the plant site and the materials storage area would require to be stripped of the superficial material including any soil which lies above bedrock. This material would need to be carefully lifted and placed in storage mounds within the appropriate storage area.
- **Crushing and Screening** - The primary component of this operation would consist of a mobile crushing and screening system. Modern mobile crushing plants are available in a number of different formats and are usually available complete with screening capability. The contractor would need to provide a plant setup that meets the project requirements in terms of the ability to process the raw material, the quantities of the material required and the quality and size gradings of the product.
- **Drainage -** It is likely that a drainage and surface water management system would be required in order to control surface water run-off. Due to the relatively small size of any proposed excavation together with the associated plant site it is thought that the system would comprise of a peripheral cut-off ditch together with minor attenuation features or soakaways.

4.2 Environmental Management

There are a number of general pollution prevention measures that could be employed to ensure that both ground and surface waters are not contaminated at any stage of the development. The Development would be designed, constructed, operated and decommissioned in line with relevant Pollution Prevention Guidelines (PPGs) and other codes of best practice, to ensure that both ground and surface waters are not contaminated. These should include:

- PPG2 – Above Ground Oil Storage Tanks;
- PPG3 – Use and Design of Oil Separators in Surface Water Drainage Systems;
- PPG4 – Treatment and Disposal of Sewage Where Foul Sewer is Available;
- PPG5 – Works and Maintenance in or near Water;
- PPG6 – Working at Construction and Demolition Sites;
- PPG18 – Managing Fire water and Major Spillages;
- PPG21 – Pollution Incident Response Planning;
- PPG22 – Dealing with Spillages on Highways; and

All of the above PPG Notes are jointly produced by SEPA, the Environment Agency for England and Wales and the Environment and Heritage Service in Northern Ireland and are available via SEPA's website (www.sepa.org.uk). In addition, the other relevant codes of best practice and Planning Advice Notes relevant to the site include:

- Controlling the Environmental Effects of Surface Mineral Workings, Planning Advice Note PAN50
- Code of Practice for Site Investigations, BS5930;
- Control of Water Pollution from Construction Sites; and
- Environmental Good Practice on Site.

5.0 PROPOSED BORROW PIT DESIGN

The indicative borrow pit reuse designs are shown in Figures 4 & 5. The indicative borrow pit profiles have been designed to best utilise the borrow pits based on the previous excavation profiles. Following removal of the overburden material, excavation will commence on the historical high wall, continuing the previous excavation operation. A rectangular shaped excavation has been proposed within each of the borrow pits in order to meet the estimated requirements for construction materials. Based upon the indicative borrow pit profiles a total maximum in situ excavation volume of 144,000m^3 could be achieved by the two pits combined.

As discussed in Section 4, the total required volume of material is ~116,000m^3. The current borrow pit profile for the larger of the two borrow pits BP2 is based on a cut of 150m x 80m by a cut depth of 8m, giving a volume of 96,000m^3 as described in Table 3.2.

Other primary details and features of the proposed excavation areas include the following:

- The footprint area of each excavation is outlined in Figure 4 & 5 for each proposed borrow pit;
- The proposed individual faces do not exceed a gradient of 2 (V) in 1 (H);
- The borrow pit floor is excavated to a nominal depth but would in practice be inclined gently down slope into the pit;
- The maximum height of any single face would be no more than 12.5m; however, based on the current design the maximum total cut will only be ~8m; and
- Drainage would be managed using a peripheral cut off ditch.

Following completion of excavation within each borrow pit a suitable restoration profile should be adopted. The profiles will utilise the stockpiled restoration soils that are to be excavated in order to reopen each pit, to create slopes with the excavation at an approximate gradient of 1 (V) in 2 (H). The crest of the slopes would intersect the uppermost rock face at a position which partially obscures the lower part of the faces. The toe of the restoration faces would be blended in to the borrow pit floor, which itself would be reprofiled on a small scale basis to allow drainage and the re-introduction of appropriate cover. The upper part of the borrow pit faces would remain exposed and would be allowed to become weathered. It is envisaged that this face would acquire an appearance similar to that of other natural rock exposures in the locality.

5.1 Summary

In summary, two borrow pits used during the construction of Gordonbush Wind Farm have been selected to be reopened for construction of the Development. Assessment of each borrow pit has identified that there is sufficient volume of aggregate available that would be required for the Development. Reopening existing borrow pits would cause minimal impact to the ground conditions and water environment. Additional aggregate would be required for the wind turbine bases, and this material would be sourced off-site.

The proposed borrow pits are located in sensitive areas due to the locality of water courses; comprehensive design standards and mitigation measures would be enforced to ensure that there are no negative impacts on these receptors. The implementation of the draft Construction Environment Management Plan (Appendix 4.1: draft CEMP) and following best practice guidelines would provide adequate mitigation to prevent impact to the water environment.

FIGURES

N

W E

S

LEGEND

SITE BOUNDARY

PROPOSED TURBINE

sse

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GORDONBUSH EXTENSION WIND FARM

APPENDIX 9.4

SITE LOCATION

1

Scale 1:75,000 @ A3

Date MARCH 2015

00660.00025.9.1 Site Location

N
W E
S

LEGEND

- SITE BOUNDARY
- PROPOSED TURBINE
- EXISTING TRACK
- PROPOSED NEW TRACK
- PERMANENT MET MAST
- PROPOSED TEMPORARY CONSTRUCTION COMPOUND AND OPERATIONS BUILDING
- CONTROL BUILDING
- POTENTIAL BORROW PIT
- BATCHING PLANT

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GORDONBUSH EXTENSION WIND FARM

APPENDIX 9.4

SITE LAYOUT

2

Scale 1:20,000 @ A3

Date MARCH 2015

00660.00025.9.2 Site Layout

N
W E
S

NOTES

1. PEAT INTERPOLATED TO A DISTANCE OF 100m FROM PEAT PROBE POINT.

LEGEND

- SITE BOUNDARY
- PROPOSED TURBINE
- EXISTING TRACK
- PROPOSED NEW TRACK
- PERMANENT MET MAST
- PROPOSED TEMPORARY CONSTRUCTION COMPOUND AND OPERATIONS BUILDING
- CONTROL BUILDING
- POTENTIAL BORROW PIT
- BATCHING PLANT
- SLR PEAT PROBE LOCATION
- URS PEAT PROBE LOCATION

PEAT DEPTH (m)

	0		1.5 - 2
	0 - 0.5		2 - 2.5
	0.5 - 1		2.5 - 3
	1 - 1.5		> 3

sse

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GORDONBUSH EXTENSION WIND FARM

APPENDIX 9.4

PEAT PLAN

3

Scale 1:20,000 @ A3

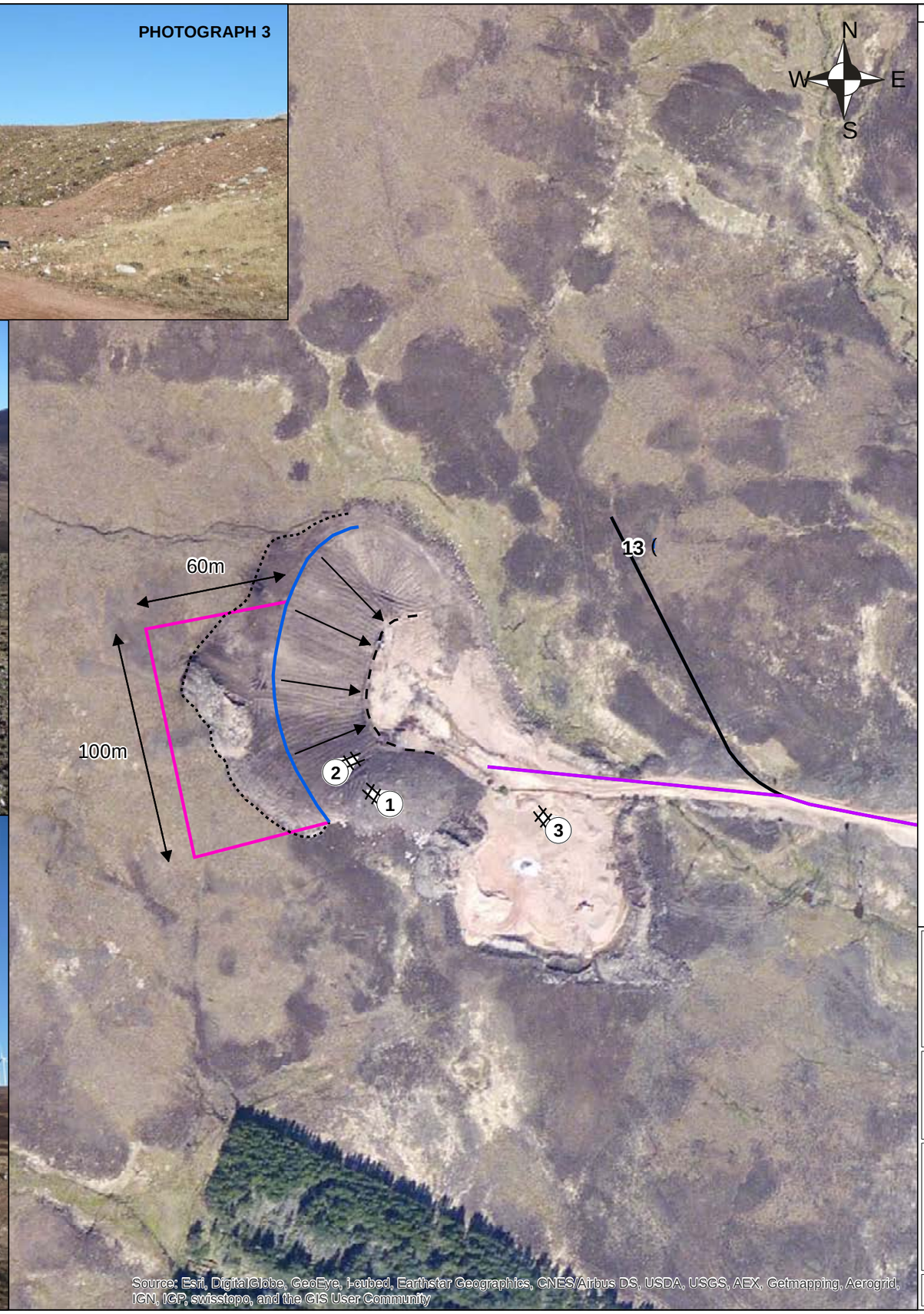
Date MARCH 2015

00660.00025.9.3 Peat Plan

PHOTOGRAPH 3

PHOTOGRAPH 2

PHOTOGRAPH 1



LEGEND

- PROPOSED TURBINE
- EXISTING TRACK
- PROPOSED NEW TRACK
- PHOTOGRAPH LOCATION AND DIRECTION
- HIGH WALL
- FILL / OVERBURDEN
- SLOPE
- BOTTOM BREAK OF SLOPE
- POTENTIAL EXCAVATION AREA

DIMENSIONS

100m x 60m x 5m = 30,000m^3
(ASSUMING 5m DEPTH)

100m x 60m x 8m = 48,000m^3
(ASSUMING 8m DEPTH)

sse

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GORDONBUSH EXTENSION WIND FARM

APPENDIX 9.4

POTENTIAL BORROW PIT REUSE - BP1

4

Scale 1:2,000 @ A3

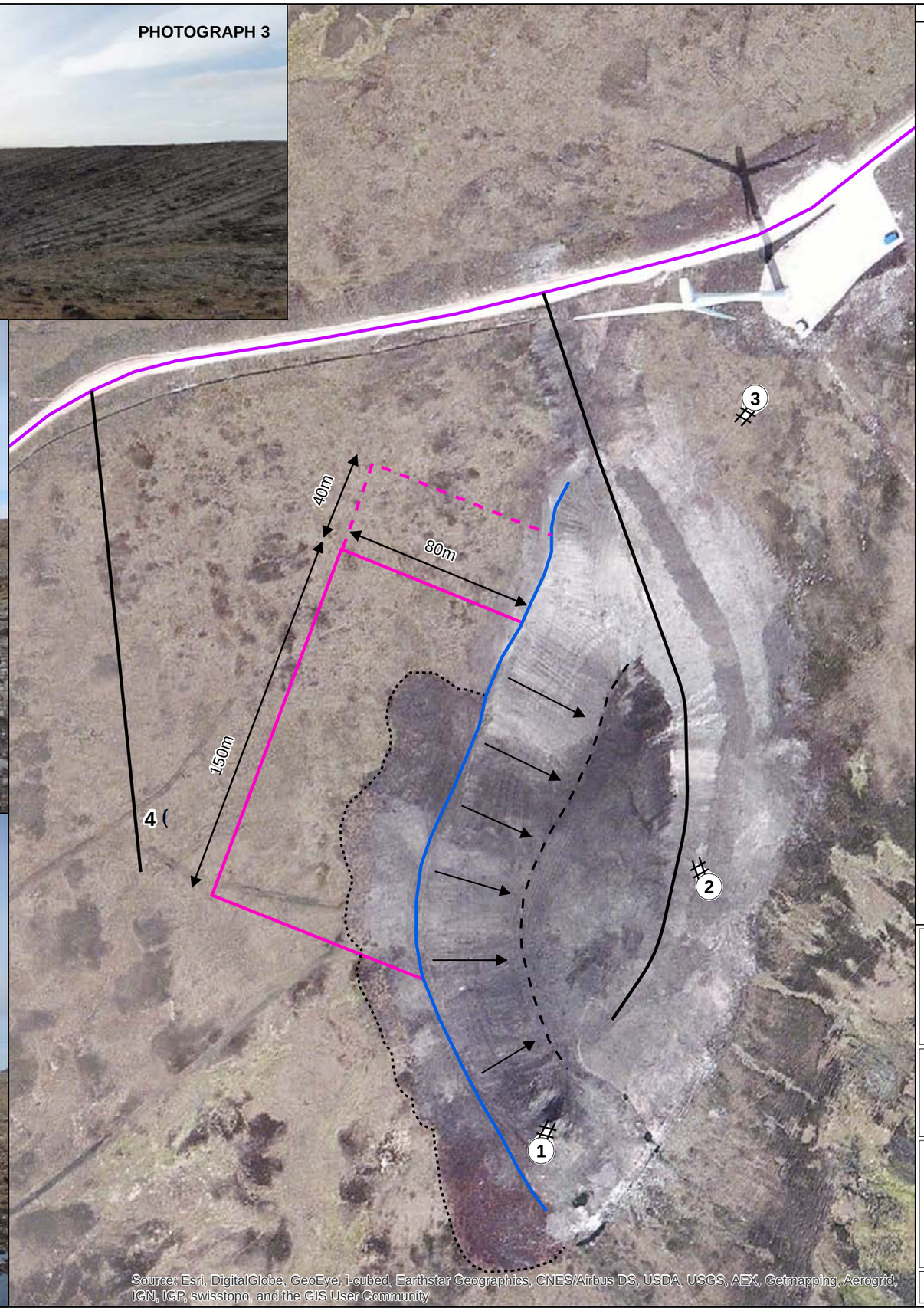
Date MARCH 2015

00660.00025.9.4 Borrow Pit Layout - BP1

PHOTOGRAPH 3

PHOTOGRAPH 2

PHOTOGRAPH 1



Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

LEGEND

- PROPOSED TURBINE
- EXISTING TRACK
- PROPOSED NEW TRACK
- PHOTOGRAPH LOCATION AND DIRECTION
- HIGH WALL
- FILL / OVERBURDEN
- SLOPE
- BOTTOM BREAK OF SLOPE
- POTENTIAL EXCAVATION AREA
- POTENTIAL TO EXTEND EXCAVATION AREA

DIMENSIONS

150m x 80m x 5m = 60,000m^3
(ASSUMING 5m DEPTH)

150m x 80m x 8m = 96,000m^3
(ASSUMING 8m DEPTH)

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GORDONBUSH EXTENSION WIND FARM

APPENDIX 9.4

POTENTIAL BORROW PIT REUSE - BP2

5

Scale 1:2,000 @ A3

Date MARCH 2014

00660.00025.9.5 Borrow Pit Layout - BP2