Appendix 3.3 Cumberhead West Wind Farm Access Track Assessment

Contents

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Appendix 3.3 Cumberhead West Wind Farm Access Track Assessment

1 Introduction

1.1.1 As described in Chapter 3 of this EIA Report, access to the Proposed Development site will be taken from junction 11 of the M74 motorway, via an existing private haul road through the Douglas West Wind Farm site, then into the Cumberhead Forest via the proposed Douglas West Wind Farm Extension site (which is currently in planning). The Proposed Development access route then proposes to use a combination of existing access tracks and a new stretch of track (1.38 km in length) within the Forest which is planned to be created as part of the Douglas West Wind Farm Extension project. However it is noted that if the Douglas West Extension works do not go ahead in advance of the Proposed Development there will be a requirement for the Proposed Development works to include the construction of that new section of access track through the area of the Douglas West Extension site, as shown in Figure 3.3.1.1.

1.1.2 The proposed new section of access track located within the Douglas West Extension area, as per all other new access tracks, has been designed to avoid any sensitive environmental receptors and will be made of locally sourced stone (within South Lanarkshire), and have a typical running width of approximately 5 m, with an average stone thickness of 500 mm. An indicative cross section of all proposed access tracks is provided in Figure 3.9 of this EIA Report. The proposed new section of track will be around 1.38km long and will be located within an area of the existing Cumberhead Forest coniferous plantation.

1.1.3 This appendix sets out an assessment of the potential effects arising from the construction of this new section of track shown on Figure 3.3.1.1 in relation to the relevant environmental topics considered in the main chapters of the EIA Report. This should be read in combination with the relevant noted Volume 1 chapters of the Douglas West Extension Wind Farm EIA Report (2019).

2 Landscape and Visual

2.1.1 Access to the Proposed Development site would be via the existing tarmac road from Junction 11 of the M74, through the Douglas West Wind Farm site and then through the Cumberhead Forest plantation to the main development area of the Proposed Development. The existing road is sufficiently wide over its most part that there would be no need to undertake much (if any) road widening on the existing tracks and hence the access route would not result in any significant effect on any existing landscape features. The exception to this is a short stretch of track which would need to be created for the Proposed Development if the proposed Douglas West Extension Wind Farm is not built in advance.

2.1.2 This 1.38 km section of new track is situated within existing forestry plantation, and some trees would need to be felled to accommodate this. As the plantation forms the primary characteristic of the site, there would be a change in the appearance of the site as the trees are felled and removed to facilitate the development. However, the plantation is a commercial crop and would be felled in the future regardless of the Proposed Development and is therefore of low sensitivity. Beyond a short distance from the site, the new track which is a ground level component of the Proposed Development would not be perceptible.

2.1.3 Therefore, it is considered that there would be no significant effects on existing landscape character or visual amenity as a result of the section of new access track.

3 Ecology

3.1.1 The baseline ecological conditions in the vicinity of the 1.38 km stretch of proposed new access track through the Douglas West Extension wind farm are presented below, with an appraisal of the potential impacts on different ecological features that may result from its construction and operation.

Habitats

3.1.2 The new section of access track would mainly be located within Cumberhead Forest, managed as commercial forestry, with a short stretch between an existing road through Douglas West Wind Farm and the forest covering a mix of marshy grassland and wet modified bog (National Vegetation Classification, NVC types M23 and M25 respectively) (refer to Figure 3.3.3.1). As described in the Douglas West Wind Farm Extension EIA Report (2019), Chapter 7: Ecology and Nature Conservation, the conifer plantation is mature with no ground flora except some scattered mosses. The plantation area is floristically impoverished and therefore of negligible conservation value.

3.1.3 Open mire habitats surrounding the access track are common to the area and likely to be of relatively poor quality, being influenced by drying and drainage effects of the forestry, and therefore of low conservation value.

3.1.4 Overall, should the new access track require to be constructed as part of the Proposed Development, based on the low conservation value of the habitats affected and the small extent of habitat loss, the habitat assessment conclusions of Chapter 7: Ecology in the EIA Report would remain unchanged, with no significant effects predicted during the construction or operation periods.

Protected Species

3.1.5 Baseline protected species surveys for Douglas West Wind Farm Extension undertaken in 2018 did not record any signs of protected species within proximity of the section of proposed new access track, and in general the conifer plantation is of low suitability. No potential bat roost structures were identified within at least 200 m of the proposed access track.

3.1.6 A potential badger sett was located in open moorland approximately 150 m from where the start of the new proposed section of track would be required, but given that this is an existing road that would already have been upgraded (if required) as part of the Douglas West Wind Farm project, and that NatureScot's recommended disturbance buffer distances for badger are 30 m, or 100 m if blasting/piling[1], it is considered unlikely that this sett would be affected by the Proposed Development during the construction or operational periods.

3.1.7 Overall, should the new access track require to be constructed as part of the Proposed Development, based on the low suitability of habitats for protected species and the distance to the nearest potential protected species features, the assessment conclusions of Chapter 7: Ecology in this EIA Report would remain unchanged, with no significant effects predicted.

[1] *https://www.nature.scot/sites/default/files/2017-10/A2293028%20-%20Species%20Planning%20Advice%20Project%20-%20Badger.pdf*

4 Ornithology

4.1.1 The baseline ornithological conditions in the vicinity of the 1.38 km section of new access track through the Douglas West Extension wind farm are presented below, with an appraisal of the potential impacts on ornithological features that may result from its construction or operation.

4.1.2 No target species were recorded within at least 500 m of the access track section during baseline surveys for the Douglas West Wind Farm Extension undertaken in the 2018 breeding season, with the conifer plantation and adjacent marshy grassland/ wet modified bog habitats generally being of low suitability for sensitive species such as raptors or waders. An observation of a curlew within approximately 300 m of the new access track section was made during baseline surveys for Douglas West Wind Farm in 2015, but since this was in proximity to the operational access track for Hagshaw Hill Wind Farm and Cumberhead Forest, no additional disturbance-displacement impacts are predicted during the construction or operational periods.

4.1.3 As shown in Figure 8.8 of this EIA Report, although the new track would be within 100 m of the Hagshaw Hill Extension Habitat Management Plan Area for black grouse, there is limited evidence that black grouse have utilised this area. The closest historic lekking location, comprising one male in 2015, was approximately 375 m from the proposed new access track at its nearest point. Therefore, although no suitable black grouse habitat would be directly lost as a result of the stretch of new access track, it is possible that unmitigated construction could result in disturbance to lekking black grouse. As such, to avoid any disturbance effects during the construction phase, mitigation measures, including a Breeding Bird Protection Plan, as outlined in Chapter 8: Ornithology, Section 8.8 Mitigation of this EIA Report would cover the extent of the new access track. No additional adverse effects are predicted during the operational period, with infrequent maintenance vehicles, similar to the current activity levels along the Hagshaw Hill Wind Farm / Cumberhead Forest track, unlikely to disturb or displace any lekking activity.

4.1.4 Overall, should the new access track require to be constructed as part of the Proposed Development, based on the general low suitability of habitats for key bird species and the implementation of suitable mitigation measures during construction, the assessment conclusions of Chapter 8: Ornithology of this EIA Report would remain unchanged, with no significant effects predicted during the construction or operational periods.

5 Hydrology, Geology and Hydrogeology

5.1.1 The baseline hydrological, hydrogeological and geological conditions in the vicinity of the 1.38 km stretch of proposed new access track through the Douglas West Extension Wind Farm are presented below, with an appraisal of the potential impacts on relevant receptors that may result from its construction.

5.1.2 The proposed section of new access track through the Douglas West Extension Wind Farm does not cross any watercourses and therefore there are no proposed new water crossings associated with this stretch of proposed new track. However, the remaining stretch of existing track through the proposed Douglas West Extension Wind Farm site, which is proposed to be used to access the Proposed Development, includes four existing water crossings. These are discussed in the following sections.

Hydrology

5.1.3 The proposed new access track is shown on Figure 3.3.5.1 together with surface watercourses in the vicinity.

5.1.4 The proposed new access track is not within 50 m of any watercourses with the exception of a small drain that is already piped under the existing road that runs through Douglas West Wind Farm. Drainage from the area of the new stretch of track is anticipated to flow east/northeast to the Longhill Burn/ Alder Burn system, draining into the Poniel Water to the northeast of the site. The Poniel Water, which has a SEPA classification of moderate (2017), forms part of the wider catchment of the River Clyde.

5.1.5 The proposed new access track does not incorporate any water crossings. However, existing tracks through the Douglas West Extension site which are proposed to be used for access as part of the Proposed Development incorporate four existing crossings, as shown on Figure 3.3.5.1 and described below. Details of the four existing crossings are included in Annex 3.3.5.1.

- WC01 – Existing Longhill HDPE piped water under existing access track between drainage ditches. Crossing to be maintained. The existing HDPE pipe crossing will maintain the greenfield run-off in the area.
- WC02 – Existing HDPE piped water crossing northwest of Arkney Hill. Crossing to be maintained. The existing HDPE pipe crossing will maintain the existing greenfield run-off in the limited catchment area.
- WC04 – Existing HDPE water crossing north of Henry's Hill. Section of damaged HDPE pipe to be replaced and slope repairs to be undertaken to maintain greenfield run-off in the area. This work is proposed to be undertaken as part of the Douglas West Extension Wind Farm development, however if that project is not constructed in advance, then it would be carried out for the Proposed Development.
- WC06 – Existing HDPE water crossing north of Burnt Rig. Crossing to be maintained. The existing HDPE pipe will maintain the existing greenfield run-off in the area.

5.1.6 Taking account of the moderate status of the watercourses local to the proposed new access track, and crossed by existing track, the sensitivity of baseline hydrological resources is considered to be medium.

Geology including Peat

5.1.7 BGS online mapping for the area shows that the bedrock geology underlying the proposed new track section comprises Swanshaw Sandstone Formation (refer to Figure 3.3.5.2). The proposed new access track is not within a coal mining risk area.

5.1.8 The bedrock is shown to be overlain by till (refer to Figure 3.3.5.3), which in this area would typically be expected to comprise clay with variable inclusions of sand, gravel and boulders.

5.1.9 The SNH Carbon and Peatlands Map 2016 shows no Class 1 or Class 2 peat at or in the vicinity of the proposed new access track. The area is indicated to be Class 4 peat (area unlikely to be associated with peatland habitats; unlikely to include carbon-rich soils).

5.1.10 A peat depth survey was undertaken as part of the Douglas West Extension EIA (2019), including probes advanced every 50 m along the proposed new access track, with additional probes offset 10 m to the northwest and southeast of each probe. None of these probes recorded any peat overlying mineral soils (refer to Figure 3.3.5.4).

5.1.11 The sensitivity of the baseline geological resources at the site of the proposed new access track is considered to be low.

Hydrogeology

5.1.12 The groundwater body beneath most of the site area is indicated by SEPA to comprise the Lesmahagow groundwater, classified by SEPA in 2017 as having an overall status of good. Hydrogeology mapping from the BGS shows the bedrock beneath the area to comprise a moderately productive aquifer in which flow is virtually all through fractures and other discontinuities. The overlying till is anticipated to be relatively low permeability, inhibiting groundwater flow.

5.1.13 Habitats indicative of potential groundwater dependency were identified during National Vegetation Classification survey work (see Figure 3.3.5.5 for a summary of potential Groundwater Dependent Terrestrial Ecosystems (GWDTE) in the vicinity of the proposed new access track). Such habitats were identified in close proximity to the proposed new access track to the south, bordering the forest edge.

5.1.14 As noted above, superficial geology in this area comprises till, anticipated to comprise a clay matrix with variable inclusions of sand, gravel and cobbles. Typically, such deposits would contain little groundwater, with groundwater flow limited to localised areas of higher sand and gravel content. With the bedrock underlying the area comprising a moderately productivity aquifer with flow restricted to fissures and discontinuities, this would suggest there is little groundwater present near the surface at this location.

5.1.15 The area in which habitats suggesting potential groundwater dependency have been identified is just outside the forest edge on the slopes of the hills to south of the proposed new access track. Given the nature of the commercial forestry land use and associated modified habitats, as well as the site geology and anticipated absence of substantial groundwater, it is considered that surface water flow along water features and shedding from the hillsides is likely to be sustaining the habitats identified.

5.1.16 Based on the above considerations, it is concluded that on-site and adjacent habitats identified as being potentially groundwater dependent, are in fact fed largely or entirely by surface water, and that GWDTE are not present.

5.1.17 No Private Water Supplies (PWS) have been identified within 500 m of the proposed new access track.

5.1.18 The sensitivity of the baseline hydrogeological resources at the site of the proposed new access track is considered to be medium.

Mitigation and Effects

5.1.19 The mitigation measures applicable to the construction and operation of the new access track, if it is not already constructed as part of the Douglas West Extension wind farm project, will (where applicable) be the same as those set out in Section 11.8 of the Proposed Development EIA Report. These measures include:

- Avoidance, by design, of deep peat and elevated peat landslide risk (the proposed new access track in fact avoids any identified peat);
- Avoidance, by design, of any part of the new access track being within a 50 m buffer of watercourses (apart from where water crossings are required);
- Re-use of existing water crossings on the existing track proposed to be used for the Proposed Development;
- The one replacement water crossing (DW04) to be regulated under the CAR licensing regime and all necessary licence to be sought from SEPA prior to construction;
- Pre-construction site investigation works;

- Implementation of a Construction Environmental Management Plan (CEMP); and
- Inclusion of the proposed new access track area within the detailed Drainage Strategy (DS) to be developed and agreed with SEPA and SLC.

5.1.20 Overall, should the new access track require to be constructed as part of the Proposed Development, based on the low to medium sensitivity of receptors, the minimal extent of the proposed works, the absence of identified peat at this location, and the inclusion of a 50 m buffer between the proposed new access track and any watercourses, the assessment conclusions of the Proposed Development EIA Report Chapter 11: Hydrology, Hydrogeology and Geology would remain unchanged, with no significant residual effects predicted.

6 Archaeology & Cultural Heritage

6.1 Assessment Methodology and Significance Criteria

6.1.1 The assessment methodology and significance criteria used for the assessment of the proposed new stretch of access track below are set out in full within Volume 1, Chapter 10 of the EIA Report.

6.2 Baseline Conditions

Heritage Assets in Proximity to Additional New Access Track (see Figure 3.3.6.1)

Post-medieval settlement

6.2.1 The recorded location of a post-medieval farmstead ('Erkney Hill' (**29**)), taken from historic 18th century maps, lies in proximity to the new proposed access track. 'Erkney Hill' is shown on Roy's 'Military Survey of Scotland' map (1747-55) at the approximate location shown on Figure 3.3.6.1, but it does not appear on any subsequent mapping. The recorded location is now covered with commercial forestry and it is unlikely that any remains survive undisturbed due to existing forestry operations. As the possible location of a historic farming settlement, any surviving remains of this asset are assessed as potentially having heritage value at the local level and to be of **low** sensitivity.

Sheepfolds/enclosures

6.2.2 A circular sheep ree (sheepfold) (**30**) is recorded in the HER as being shown on the Ordnance Survey 1st edition map (1864). Possible surviving remains of a rectangular sheepfold are visible on modern aerial photography. As a minor relict of 19th and 20th century stock management, the sheep ree is assessed as having as little or no heritage importance and to be of **negligible** sensitivity.

Historic Landscape Character

6.2.3 The proposed new access track is located along the south-east edge of the Cumberhead commercial forestry plantation. There are former opencast coal mines to the northeast, and rough grazing pasture and operational wind farms lie to the southeast. The rough grazing out with the commercial forestry, along the north side of the Adler Burn, contains relict rig and furrow cultivation and the area has been settled since at least the mid-18th century: farmsteads and cultivation being shown on Roy's 'Military Survey of Scotland' map (1747-55).

Archaeological Potential

6.2.4 Of the two heritage assets that have been identified in proximity to the new access track, 'Erkney Hill' farmstead (**29**) is of probable 18th century date; and the sheep ree (**30**) is likely to be of 19th or 20th century date. Both relate to pastoral farming activity and both now lie within commercial forestry. It is probable that forestry operations have had a detrimental impact upon the former

farmstead (**29**) and that any remains that may be present do not survive in undisturbed condition. A rectangular enclosure, measuring around 30 m by 17 m, which may relate to the location of the recorded sheep ree (**30**), is visible on modern aerial photographs.

6.2.5 Considering the current forestry land-use, it is assessed that there is a low or negligible probability for hitherto undiscovered archaeological remains to be present along the route of the proposed new access track. Although it cannot be ruled out that previously unrecorded archaeological remains will be present, it is probable that any that do survive are most likely to be of post-medieval date and associated with farming activities and to be of heritage value at no more than a local level and of **low** sensitivity.

6.3 Potential Effects

Construction

6.3.1 Any ground-breaking activities associated with the construction of the proposed new access track have the potential to disturb or destroy features of cultural heritage interest.

6.3.2 Neither of the heritage assets identified along the route of the proposed new access track are within the proposed footprint of the track and neither would therefore be directly affected by construction works.

6.3.3 Although both lie within the proposed micrositing allowance (100 m) it is unlikely that the proposed new track would intersect with any remains of the farmstead (**29**), which has in all probability been destroyed by forestry planting. Any remains of the sheep ree (**30**) can easily be avoided and most likely lie out with the site boundary.

- A direct impact resulting from construction of the proposed access track on any remains of the former farmstead (**29**), low sensitivity, that might survive are likely to be of no more than low magnitude, resulting in a potential effect of not more than minor significance (not significant in EIA terms).
- A direct impact resulting from micrositing of the proposed access track on any remains of the old sheep ree (**30**), negligible sensitivity, that might survive are likely to be of high magnitude, resulting in a potential effect of minor significance (not significant in EIA terms).
- A direct impact on any hitherto unknown, buried remains, most likely to be of no more than low sensitivity could potentially be of high magnitude, and to result in a potential effect of minor significance (not significant in EIA terms).

6.4 Mitigation

6.4.1 Whilst likely to be limited in this case, the scope of any archaeological works required under the terms of a planning condition (to be provided as a Written Scheme of Investigation) would be developed in consultation with (and subject to the agreement of) WoSAS acting on behalf of South Lanarkshire Council.

6.4.2 Any mitigation required would be in line with that set out in Volume 1, Chapter 10 of the EIA Report.

6.5 Residual Effects

Construction Effects

6.5.1 For heritage assets along the route of the proposed new access track, completion of any programme of archaeological mitigation required under a planning condition (Section 6.4 of this appendix) would avoid, or reduce and offset the loss of any archaeological remains that may occur as a result of the construction of the proposed new access track.

6.5.2 Any residual effect arising from construction of the proposed new access track in relation to direct effects on cultural heritage assets would be of no more than **minor** or **negligible** significance (not significant in EIA terms).

7 Transport

7.1.1 Chapter 12: Transport of the EIA Report assesses the route to site in its entirety, and therefore the proposed new section of access track which would be required to be constructed for the Proposed Development if the proposed Douglas West Extension Wind Farm is not constructed has been assessed within Volume 1 of the EIA Report (refer to Chapter 12: Transport).

8 Forestry

8.1 Baseline Forest Plan Considerations

8.1.1 The following is a commentary of the forestry considerations associated with the proposed 1.38km of new access track if it were required to be constructed as part of the Proposed Development, in the case where the proposed Douglas West Extension Wind Farm is not constructed in advance.

8.1.2 The proposed new section of access track is located in the eastern-most section of the Cumberhead Forest, where the track will enter the forest and run south-west along the forest edge to join the existing forest road at Arkney Hill (see Figure 3.3.1.1). The proposed access route then utilises the existing forest road through the proposed Douglas West Extension site and beyond to the main development area of the Proposed Development.

8.1.3 This section of the report has considered any additional felling required in association with the new and existing access tracks through the proposed Douglas West Extension area and complements the assessment within Chapter 16 of the EIA Report. As per the main assessment methodology, this assumes the stretch of access track through the Douglas West Extension site will sit within a 20 m wide tree-free corridor. Reflecting this, of the 7.71 ha of gross area of the access track section shown on Figure 3.3.8.1, 4.02 ha is open ground associated with the existing forest road, while the other 3.70 ha currently consists of mature Sitka spruce crop (refer to Figure 3.3.8.1).

8.1.4 The Baseline Forest Plan details this eastern most section of Cumberhead Forest as part of the Phase 2 (2021-2025) felling programme, which would be in-line with the construction timescale for the Proposed Development. With the exception of the tree free areas required for the proposed new access track corridor, all other replanting would be carried out as per the Baseline Forest Plan.

8.1.5 On this basis, the proposed access is not considered to have a material impact on the wider forest design or landscaping.

8.2 Forest Residue Management Plan Considerations

8.2.1 The felling associated with the 20 m wide tree free corridor within which the proposed new access track would sit would generate 1,479 T of merchantable timber to be sold into existing timber markets.

8.2.2 The tree-free corridor will generate approximately 739 T of brash, while the physical road footprint will generate a further 197 T of stumps. This additional 936 T of material will be sold into existing biomass markets, such as Jenkinson's, 3R Energy, Land Energy and Estover Energy, with the most likely destination being the Dalquhandy CHP, 1.5 km to the northeast, which would be possible without using public roads.

8.3 Compensatory Planting

8.3.1 Of the 3.70 ha of mature Sitka spruce crop required to be felled to accommodate the proposed access track section, 3.65 ha is detailed for replanting under the Baseline Forest Plan, primarily with commercial conifers. On this basis, the Compensatory Planting Obligation arising from this stretch of access track would be an additional 3.65 ha to be delivered as part of the wider obligation arising from the Proposed Development (refer to Figure 3.3.8.2).

8.3.2 In summary, the proposed access route will require the following:

- Felling of 3.70 ha of mature Sitka spruce crops;
- The generation of 1,479T of merchantable timber;
- The generation of 936T of brash and stump residues to be sold into biomass markets;
- An additional Compensatory Planting Obligation of 3.65 ha of commercial conifer dominated crop

8.3.3 It is noted that this additional Compensatory Planting Obligation would only be delivered as part of the Proposed Development if the proposed Douglas West Extension Wind Farm is not constructed in advance.

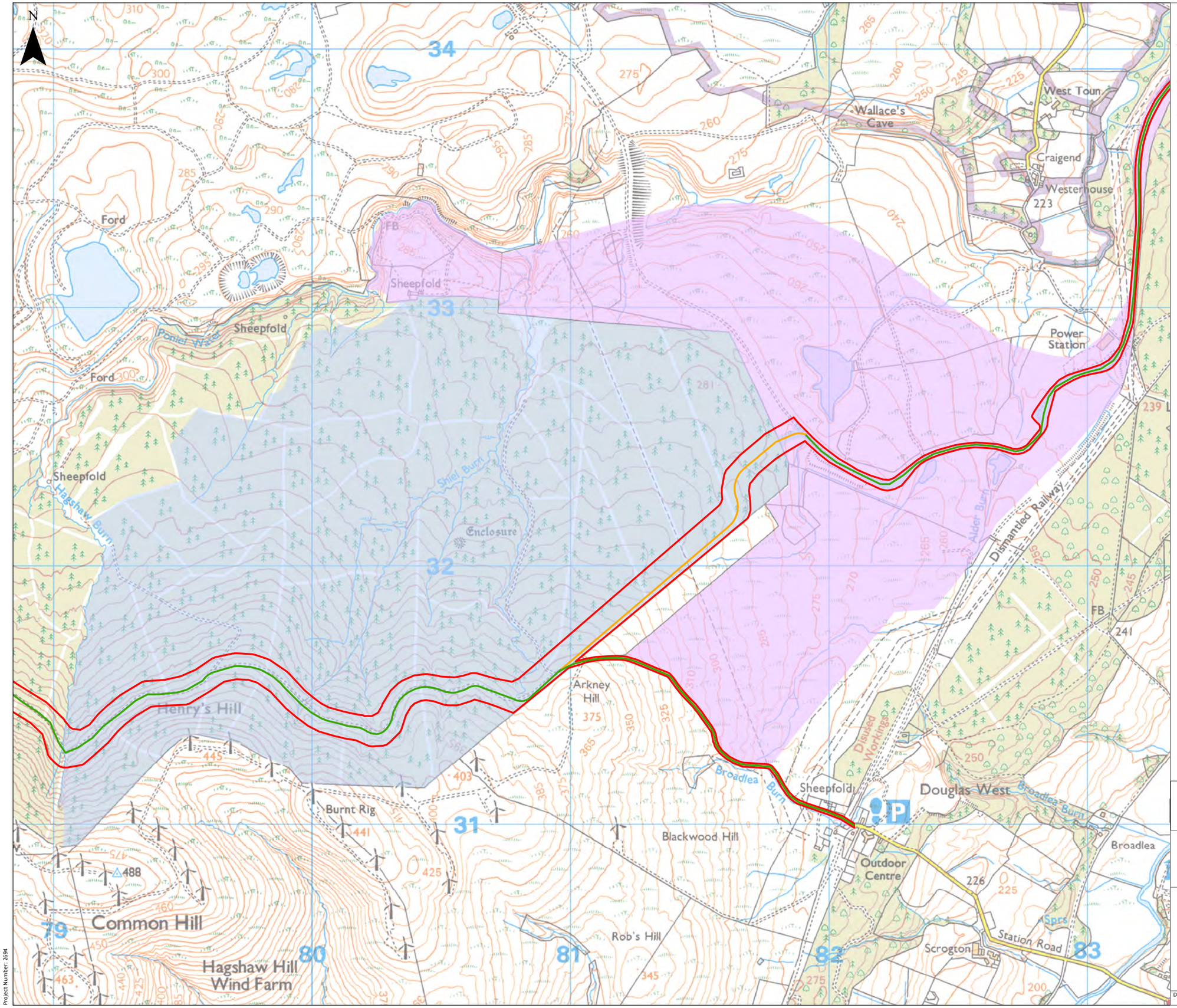
9 Conclusion

9.1.1 It is anticipated that the section of new access track would be constructed as set out within the Douglas West Extension EIA Report, however should this not be the case (e.g. if Douglas West Extension works do not go ahead in advance of the Proposed Development), the construction of this section of track would be undertaken as part of the Proposed Development.

9.1.2 As detailed in the technical sections above, it is considered that there would be no significant effects as a result of the construction of this stretch of track as part of the Proposed Development.

9.1.3 These works would be carried out as per the new access tracks within the main development area of the Proposed Development, as described within Volume 1, Chapter 3 of this EIA Report. The works would likewise be covered by all relevant mitigation measures and best practice guidance as set out within the EIA Report, including implementation of a Construction Environment Management Plan (CEMP) and a Written Scheme of Investigation (WSI). Therefore, it is considered that the additional works associated with this stretch of access track are acceptable in the terms of the Proposed Development and no significant effects are predicted.

FIGURES



KEY

- Site Boundary
- Existing Access Track to be Utilised
- Proposed New Access Track
- Douglas West Extension Site Area
- Douglas West Wind Farm Site Area

Note: Please refer to Figure 1.1 for the full extent of the red line boundary.

0 0.4 0.8 km

Scale 1:14,000 @ A3

3R Energy | SCOTTISHPOWER RENEWABLES | ITP ENERGISED

Cumberhead West Wind Farm
Environmental Impact Assessment Report

Figure 3.3.1.1
Existing and New Access Tracks Proposed Development, Douglas West Extension and Douglas West Wind Farm

Date:	Drawn by:	Checked by:	Version:
23/11/2020	JY	TP	V1

Project Number: 2694

N

KEY

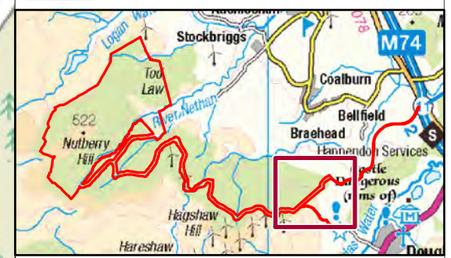
Site Boundary

Existing Access Track to be Utilised

Proposed New Access Track

Phase 1 Habitat

- Broad-Leaved Semi-Natural Woodland (A1.1.1)
- Broad-Leaved Plantation Woodland (A1.1.2)
- Coniferous Plantation Woodland (A1.2.2)
- Unimproved Acid Grassland (B1.1)
- Unimproved Neutral Grassland (B2.1)
- Improved Grassland (B4)
- Marsh/Marshy Grassland (B5)
- Continuous Bracken (C1.1)
- Acid Dry Dwarf Shrub Heath (D1.1)
- Wet Dwarf Shrub Heath (D2)
- Dry Heath/Acid Grassland Mosiac (D5)
- Wet Modified Bog (E1.7)
- Acid Neutral Flush (E2.1)
- Swamp (F1)
- Standing Water (G1)
- Building (J3.6)
- Bare Ground (J4)



0 100 200 300 400 Metres

Scale 1:7,500 @ A3

3R Energy

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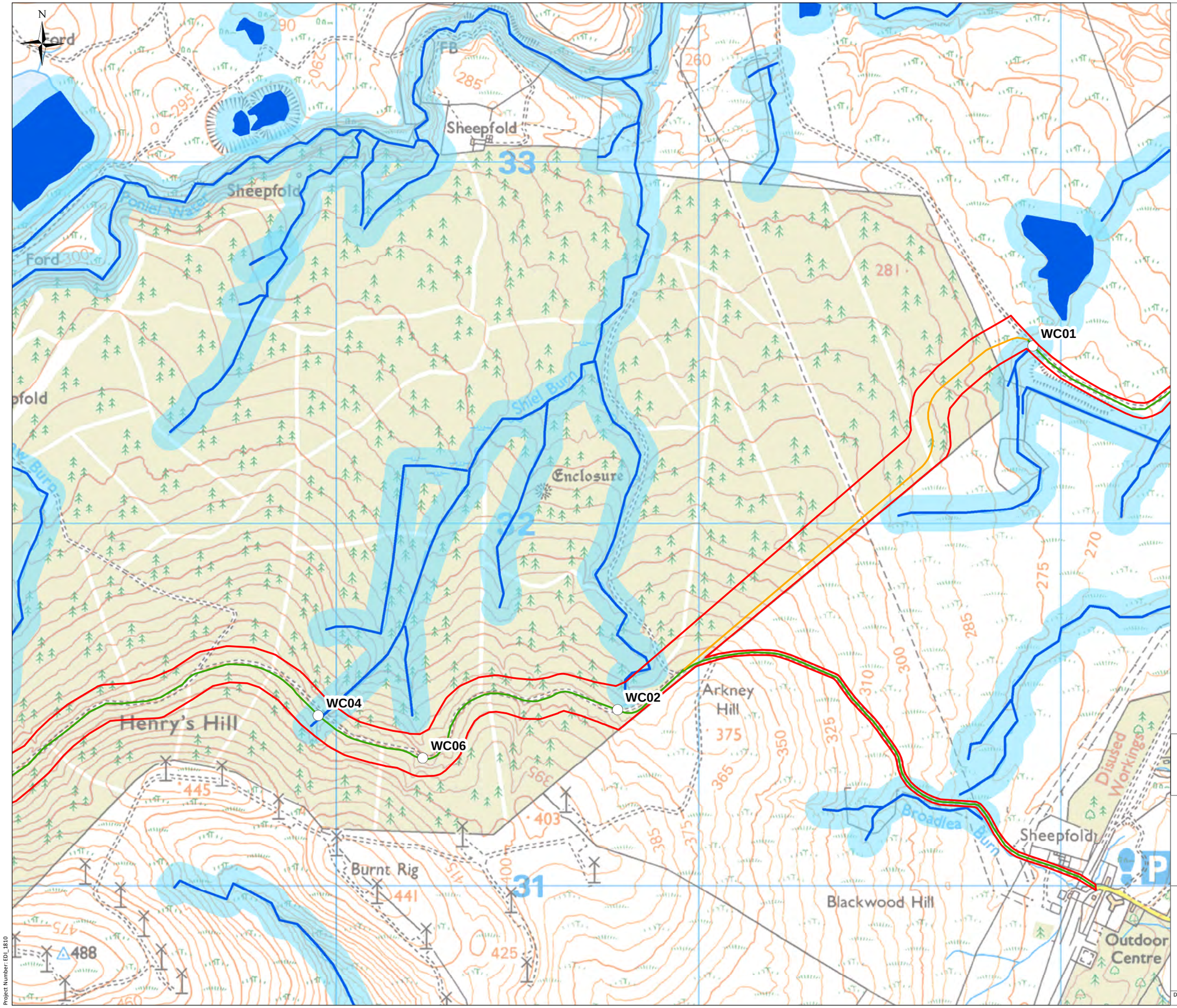
MacArthur Green

Cumberhead West Wind Farm
Environmental Impact Assessment Report

Figure 3.3.3.1
Phase 1 Habitats and Proposed New Access Track

Date:	Drawn by:	Checked by:	Version:
17/11/2020	LNF	RD	Rev0

Project Number: 2694



KEY

- Site Boundary
- Existing Access Track to be Utilised
- Proposed New Access Track
- Watercourse
- Waterbody
- Watercourse/Waterbody 50m Buffer
- DW01 Existing Water Crossing

0 0.25 0.5 km

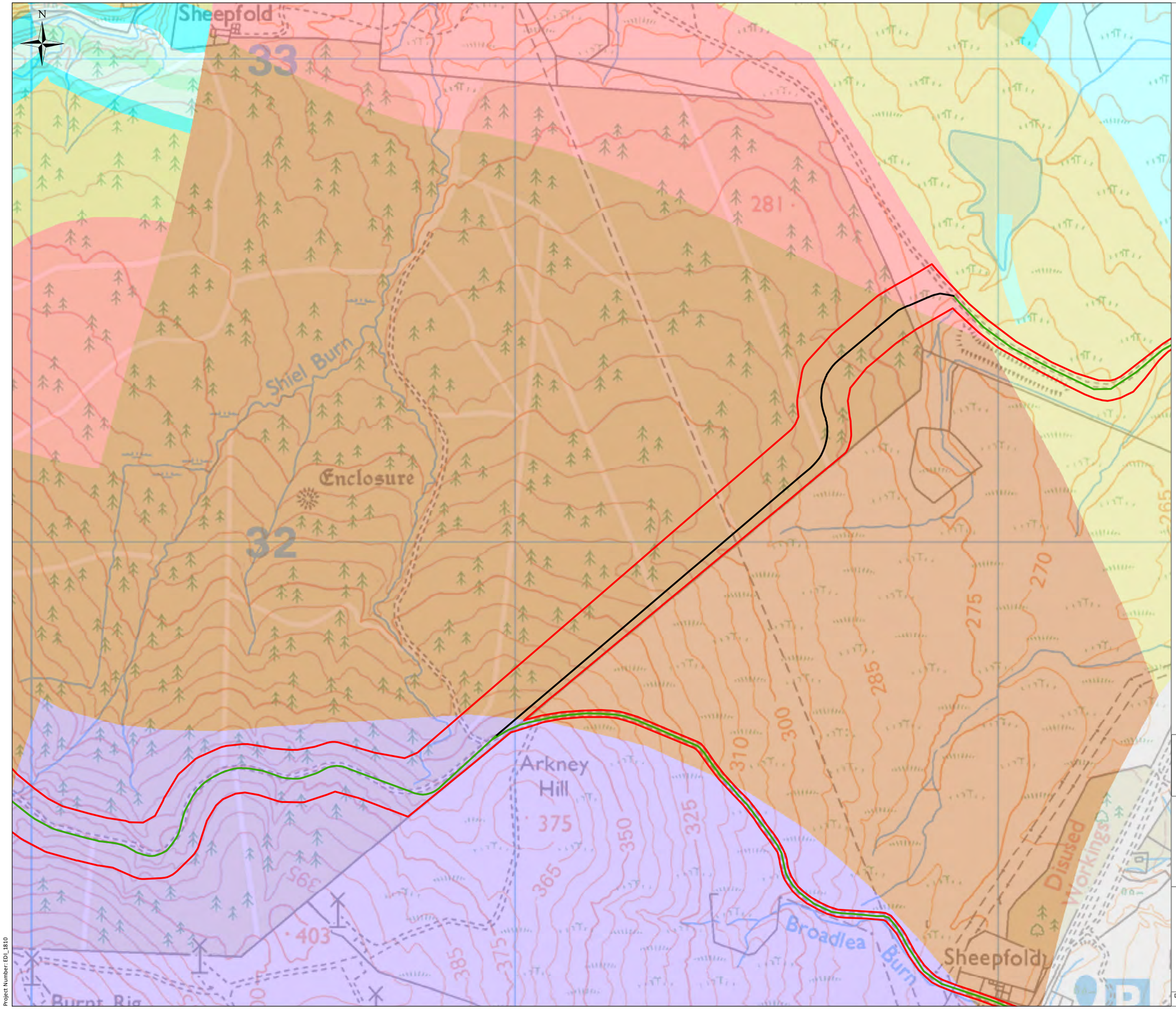
Scale 1:10,000 @ A3

Cumberhead West Wind Farm
Environmental Impact Assessment Report

Figure 3.3.5.1
Watercourses and Water Crossings - Additional New Access Track

Date:	Drawn by:	Checked by:	Version:
20/11/2020	ST	JY	V1

Project Number: EDI_1810



KEY

- Site Boundary
- Existing Access Road to be Utilised
- Proposed New Access Track
- Upper Limestone Formation
- Hurlet Limestone
- Lawmuir Formation
- Kinnesswood Formation - Sandstone
- Swanshaw Sandstone
- Glenbuck Group and Monks Water Group
- Scottish Lower Coal Measures

0 0.2 0.4 km

Scale 1:7,500 @ A3

ITPENERGISED

3R Energy

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Cumberhead West Wind Farm
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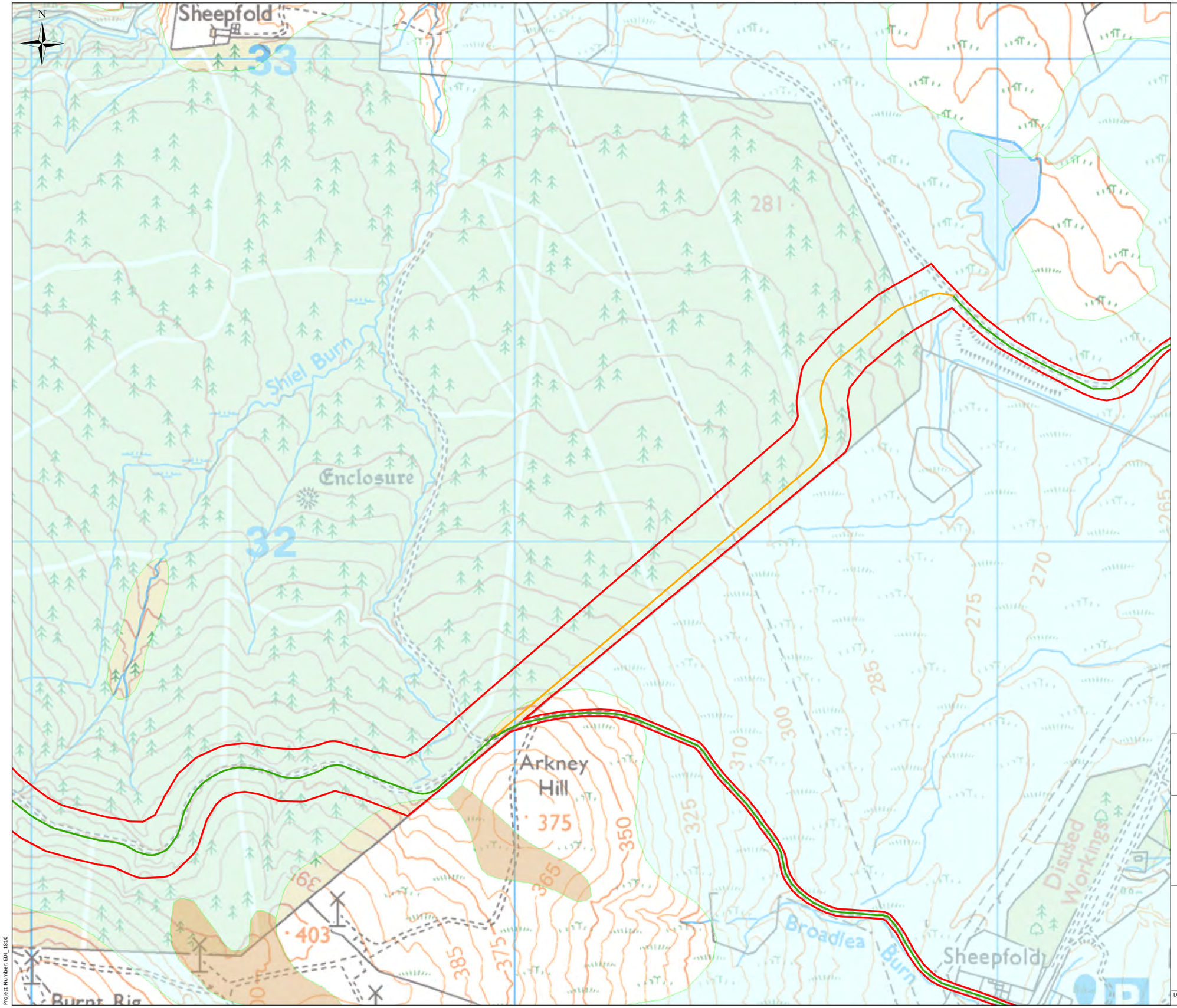
Figure 3.3.5.2

Solid Geology - Additional New Access Track

Date:	Drawn by:	Checked by:	Version:
20/11/2020	ST	JY	V1

Project Number: ED1_1810



KEY

- Site Boundary
- Existing Access Road to be Utilised
- Proposed New Access Track
- Till
- Peat

0 0.2 0.4 km

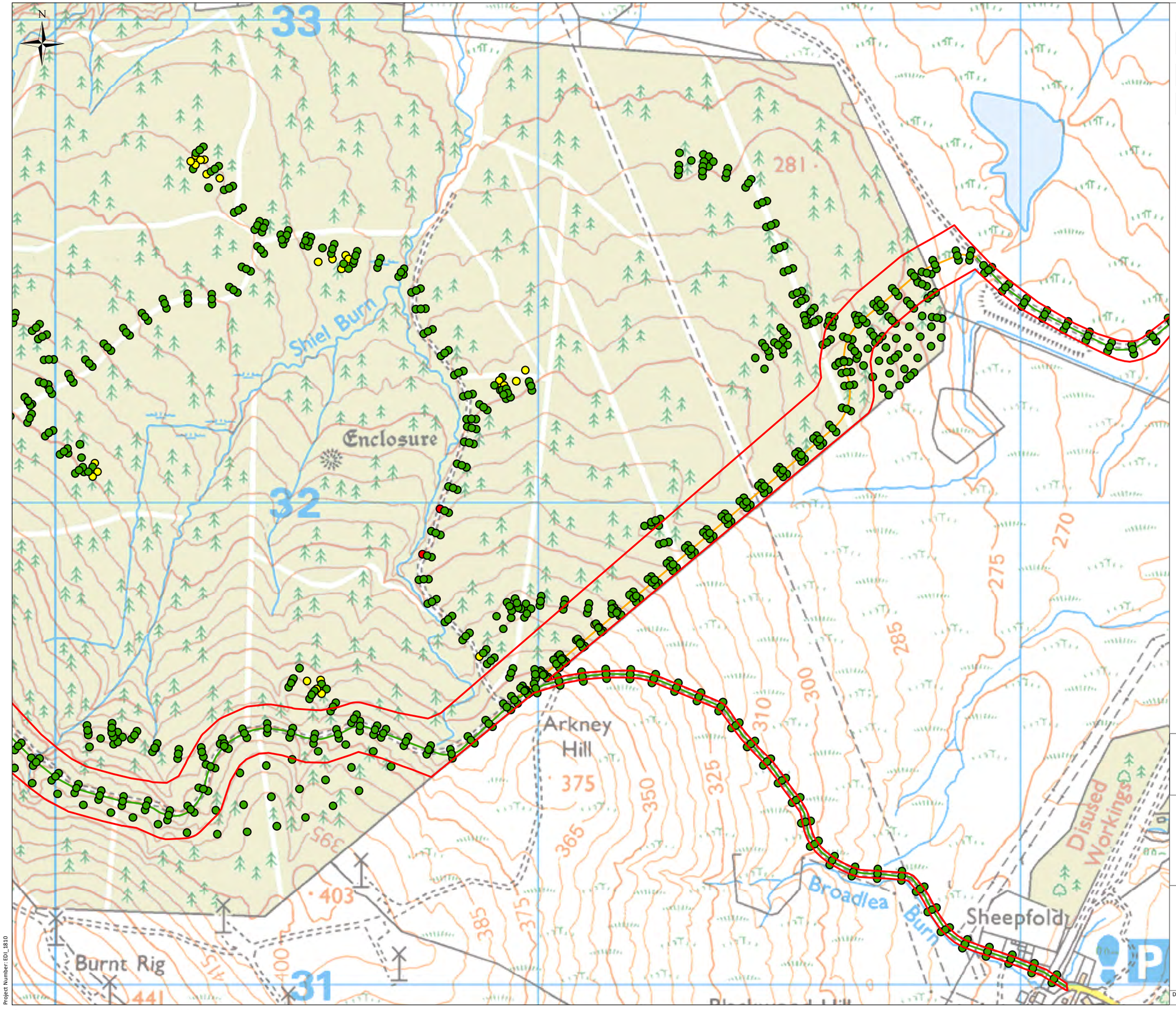
Scale 1:7,500 @ A3

Cumberhead West Wind Farm
Environmental Impact Assessment Report

Figure 3.3.5.3
Superficial Geology - Additional New Access Track

Date:	Drawn by:	Checked by:	Version:
20/11/2020	ST	JY	V1

Project Number: EDL_1810



KEY

- Site Boundary
- Existing Access Road to be Utilised
- Proposed New Access Track

Peat Depth (cm)

- Nil
- Less than 20
- 20 to 50

0 0.2 0.4 km

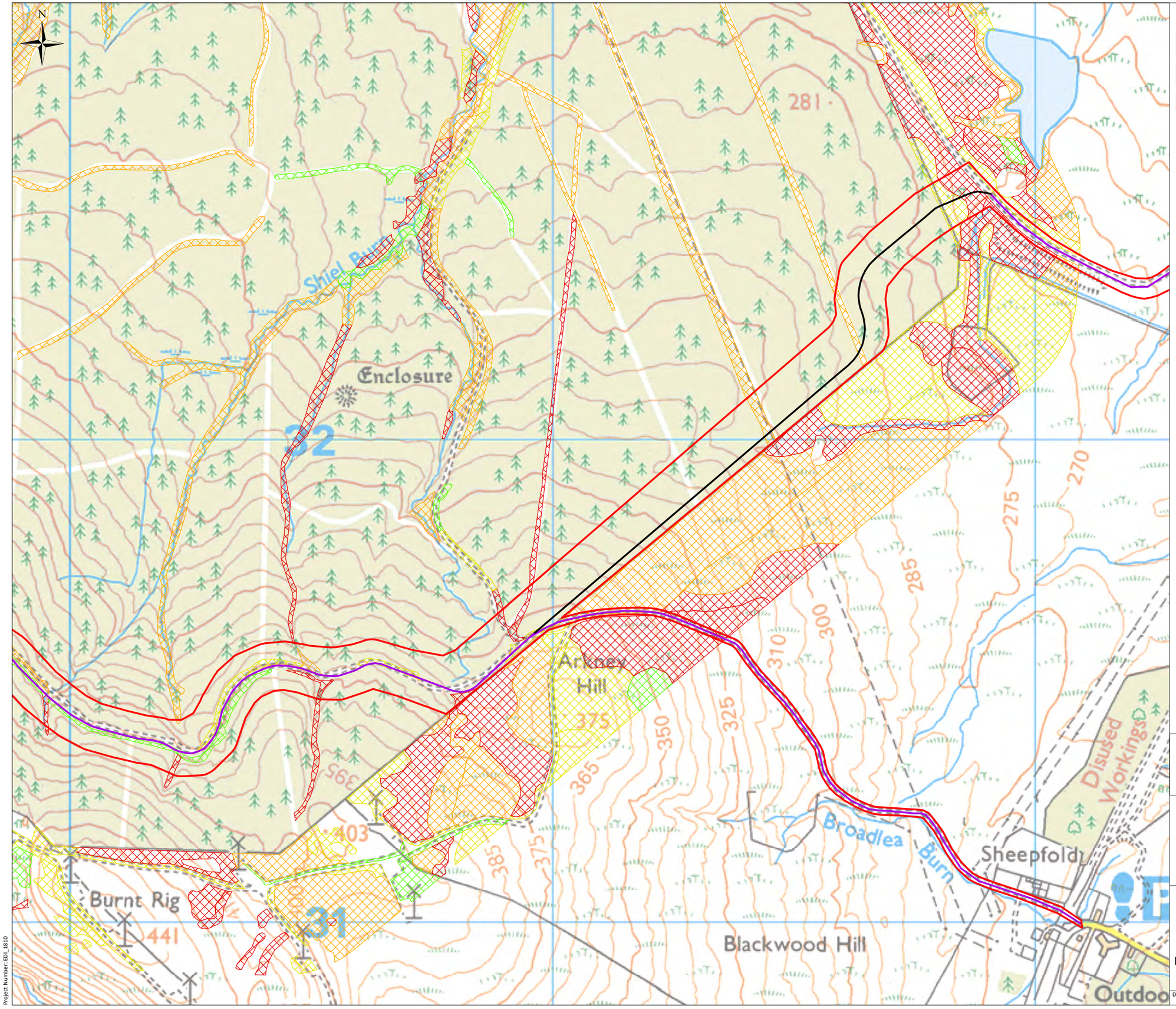
Scale 1:7,500 @ A3

Cumberhead West Wind Farm
Environmental Impact Assessment Report

Figure 3.3.5.4
Peat Depth Survey - Additional New Access Track

Date:	Drawn by:	Checked by:	Version:
20/11/2020	ST	JY	V1

Project Number: EDL_1810



KEY

- Site Boundary
- Existing Access Road to be Utilised
- Proposed New Access Track

Potential GWDTE Based on NVC Survey

- Highly (dominant)
- Highly (sub-dominant)
- Moderately (sub-dominant)
- Moderately (sub-dominant)

0 0.2 0.4 km

Scale 1:7,500 @ A3

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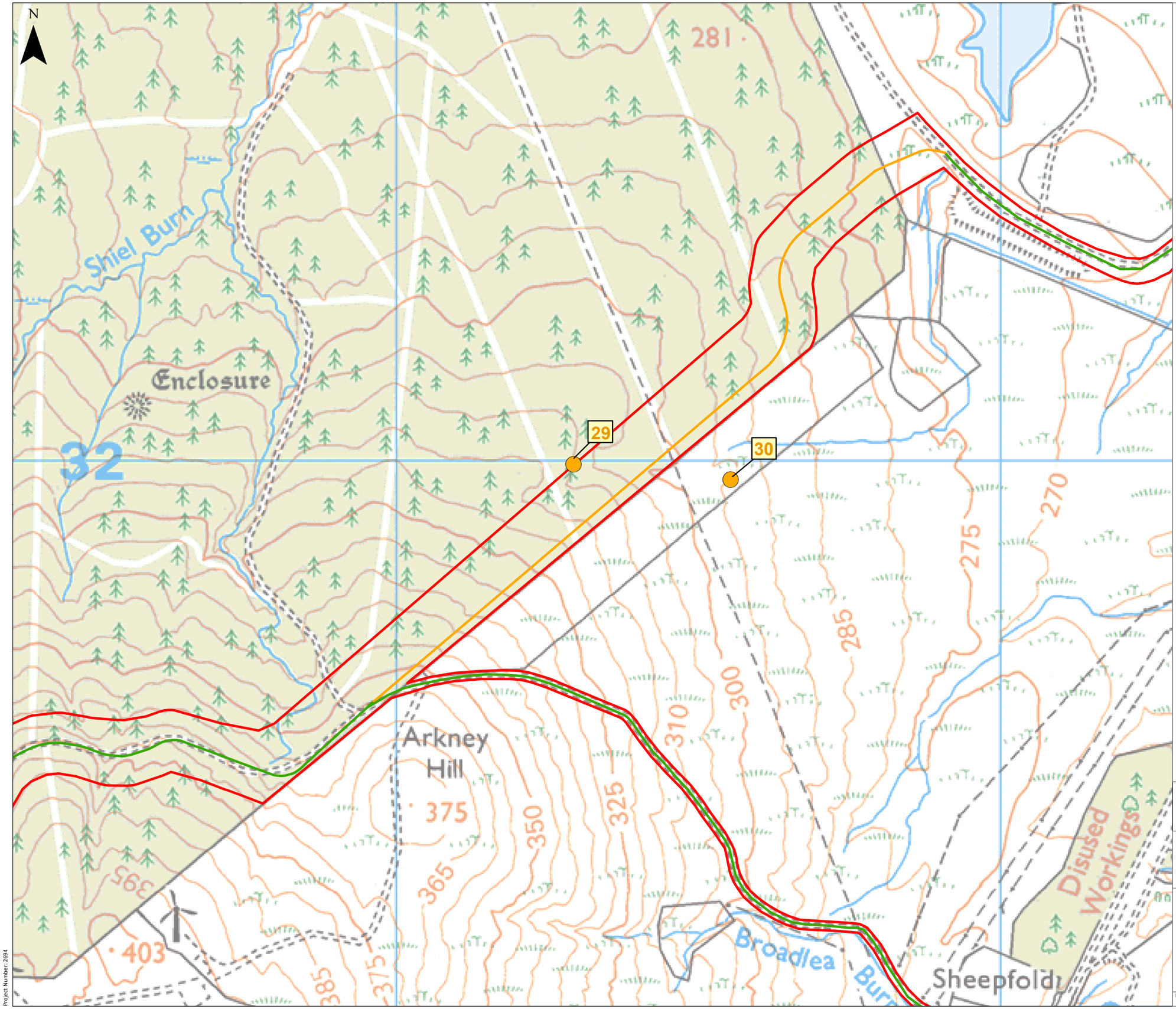
Environmental Impact Assessment Report

Figure 3.3.5.5
Potential Groundwater-Dependent Terrestrial Ecosystems - Additional New Access Track

Date:	Drawn by:	Checked by:	Version:
20/11/2020	ST	JY	V1

Project Number: EDJ_1810



KEY

- Site Boundary
- Existing Access Track to be Utilised
- Proposed New Access Track
- Cultural Heritage Site

0 0.1 0.2 km

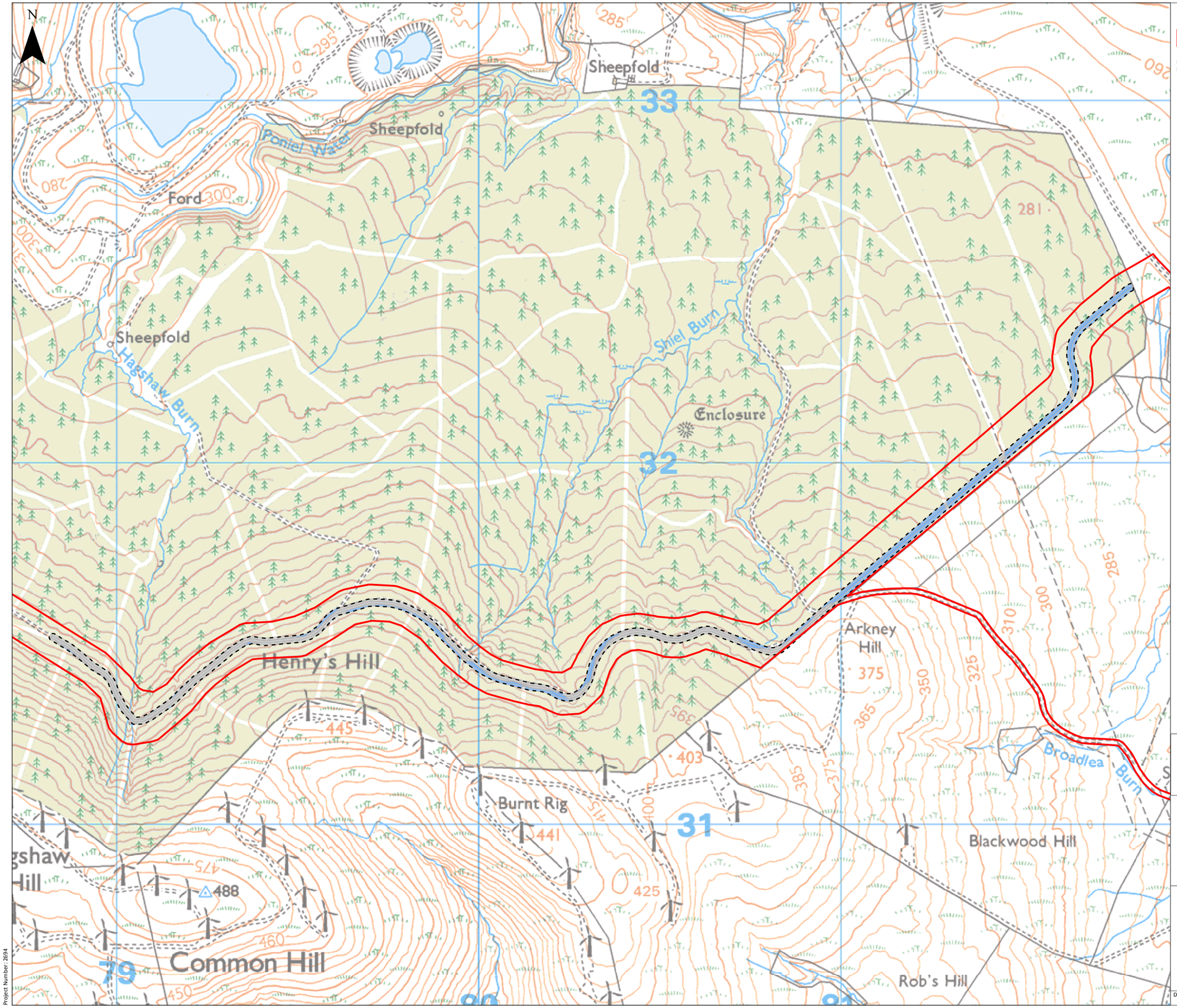
Scale 1:6,000 @ A3

Cumberhead West Wind Farm
Environmental Impact Assessment Report

Figure 3.3.6.1
Cultural Heritage
Additional New Access Track

Date:	Drawn by:	Checked by:	Version:
20/11/2020	JY	TP	V1

Project Number: 2694



KEY

- Site Boundary
- Tree Free Buffer Zone
- Sitka Spruce (SS)
- Open Ground (OG)

0 0.25 0.5 km

Scale 1:10,000 @ A3

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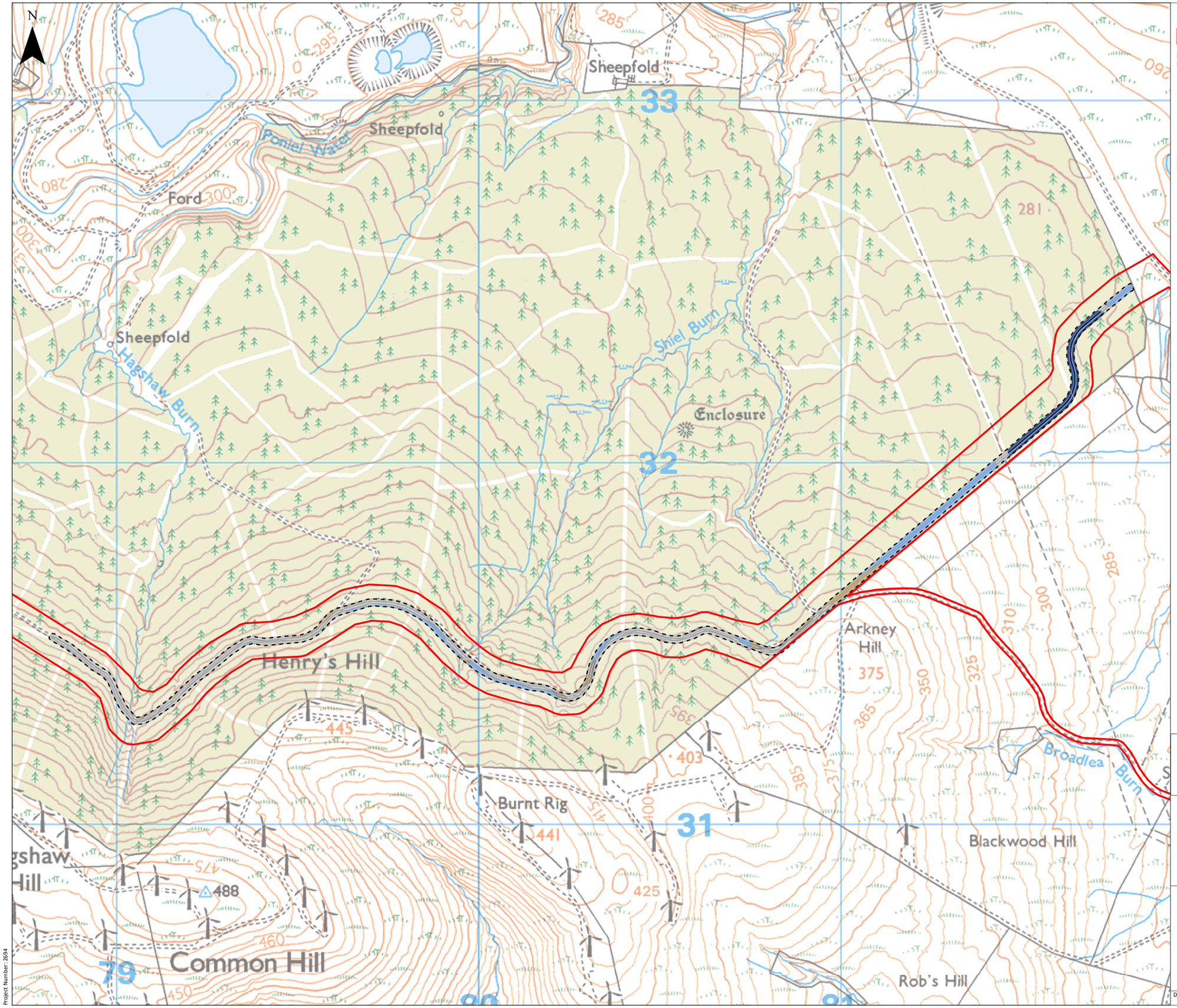
Cumberhead West Wind Farm
Environmental Impact Assessment Report
Figure 3.3.8.1

Access Track Felling Plan

Date:	Drawn by:	Checked by:	Version:
16/11/2020	ST	JY	V1

Project Number: 2694



Project Number: 2694

Cumberhead West Wind Farm
Environmental Impact Assessment Report
Figure 3.3.8.2

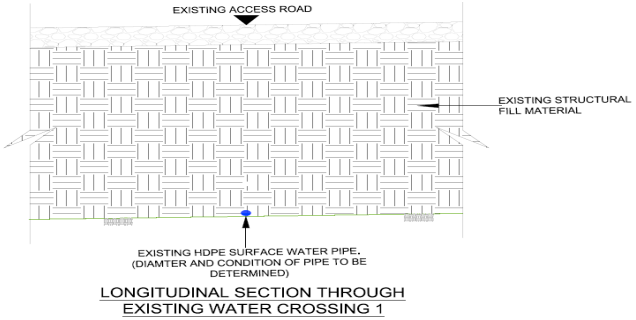
Access Track Compensatory Planting Obligations

Date:	Drawn by:	Checked by:	Version:
16/11/2020	ST	JY	V1

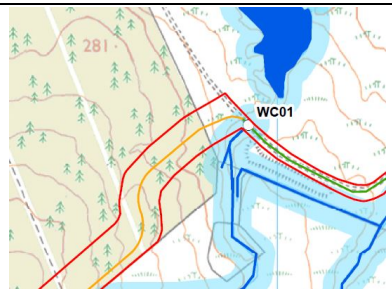
ANNEX 3.3.5.1 WATERCOURSE CROSSING SCHEDULE

Douglas West Extension - Water Crossing Details

Crossing:	Douglas West Extension – Watercourse crossing 1
Location:	Proposed windfarm site entrance south west of Longhill pond.
Watercourse:	Existing Longhill HDPE piped water under existing access tack between drainage ditches.
NGR:	NS 81920 32492
Description:	Piped water crossing to be maintained between existing drainage ditches to Longhill pond. The existing HDPE pipe crossing will maintain the greenfield run off in the area.
Catchment Area:	22 hectares (0.22km2)
Crossing Type:	Existing HDPE piped watercourse crossing



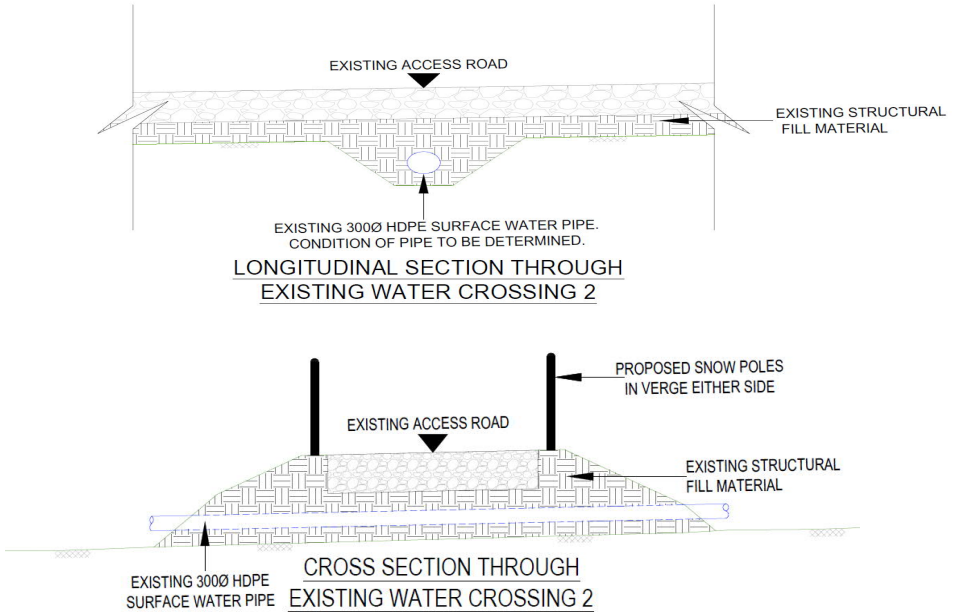
Existing Longhill HDPE pipe crossing

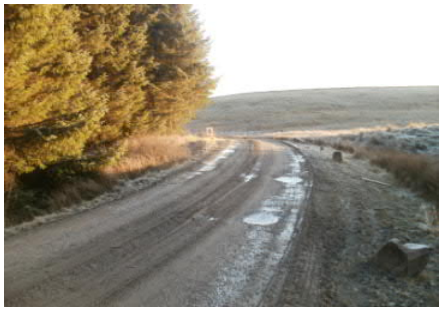


Location Plan

Douglas West Extension - Water Crossing Details

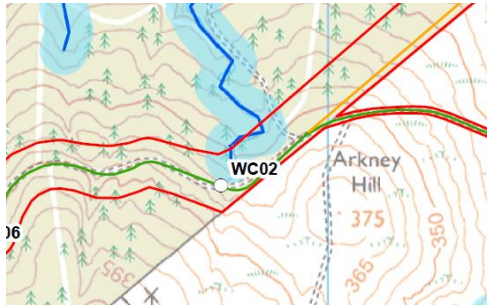
Crossing:	Douglas West Extension – Watercourse crossing 2
Location:	Existing HDPE piped water crossing north west of Arkney Hill
Watercourse:	Arkney Hill HDPE piped water crossing between drainage ditches with downstream outfall to Shiel Burn.
NGR:	NS 80794 31479
Description:	Existing 300Ø HDPE piped water crossing north west of Arkney Hill. The existing 300Ø HDPE pipe crossing will maintain existing greenfield run off in limited catchment area.
Catchment Area:	2 Hectares (0.02km2)
Crossing Type:	Existing 300Ø HDPE piped water crossing under forestry track to be maintained




Arkney Hill water crossing location


300Ø HDPE pipe outlet

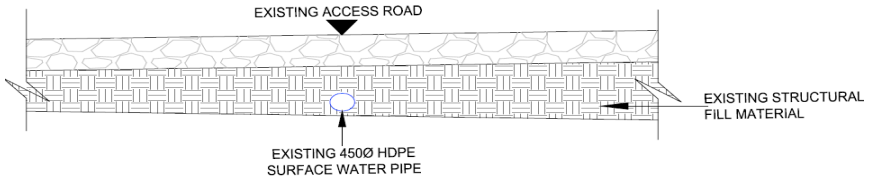

300Ø HDPE pipe inlet



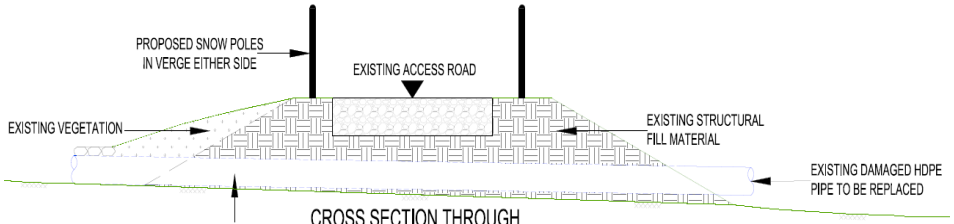
Location Plan

Douglas West Extension - Water Crossing Details

Crossing:	Douglas West Extension – Watercourse crossing 4
Location:	Existing water crossing north of Henry's Hill between proposed turbines 1 & 4.
Watercourse:	Existing 450Ø HDPE replacement piped water crossing to Shiel Burn, north east of Henry's Hill
NGR:	NS 79964 31469
Description:	Well pronounced watercourse with existing damaged 450ø HDPE pipe under existing forestry track. Replacement section of 450ø HDPE pipe and slope repairs required to maintain greenfield run off in area.
Catchment Area:	8 hectares (0.08km2)
Crossing Type:	450ø HDPE replacement pipe crossing to Shiel Burn



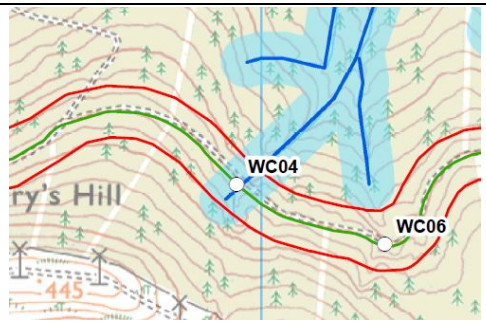
LONGITUDINAL SECTION THROUGH EXISTING WATER CROSSING 4



CROSS SECTION THROUGH EXISTING WATER CROSSING 4

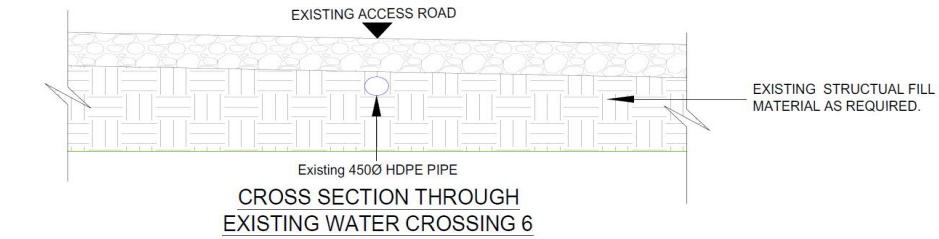

Existing 450ø HDPE pipe inlet

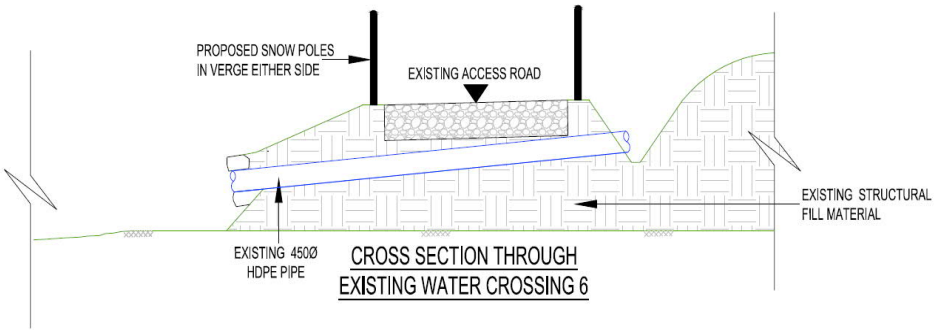

Damaged 450ø HDPE pipe outlet to be replaced



Location Plan

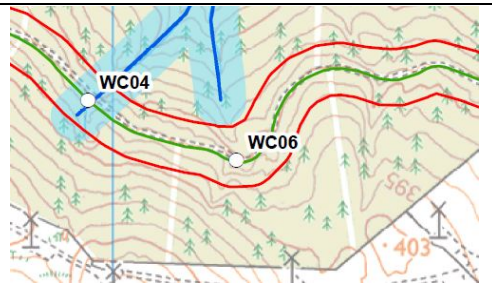
Douglas West Extension - Water Crossing Details	
Crossing:	Douglas West Extension – Watercourse crossing 6
Location:	Existing 450Ø HDPE piped crossing between proposed turbine 1 and proposed turbine 4 junction.
Watercourse:	Existing 450Ø HDPE piped water crossing north of Burnt Rig.
NGR:	NS 80238 31354
Description:	Existing 450Ø HDPE piped water crossing under existing forestry access track between small localised drainage ditches to maintain existing greenfield run off in area.
Catchment Area:	7 hectares (0.07km2)
Crossing Type:	Existing 450Ø HDPE piped water crossing between localised drainage ditches





Existing 450Ø HDPE pipe outlet

Existing 450Ø HDPE pipe inlet



Location Plan