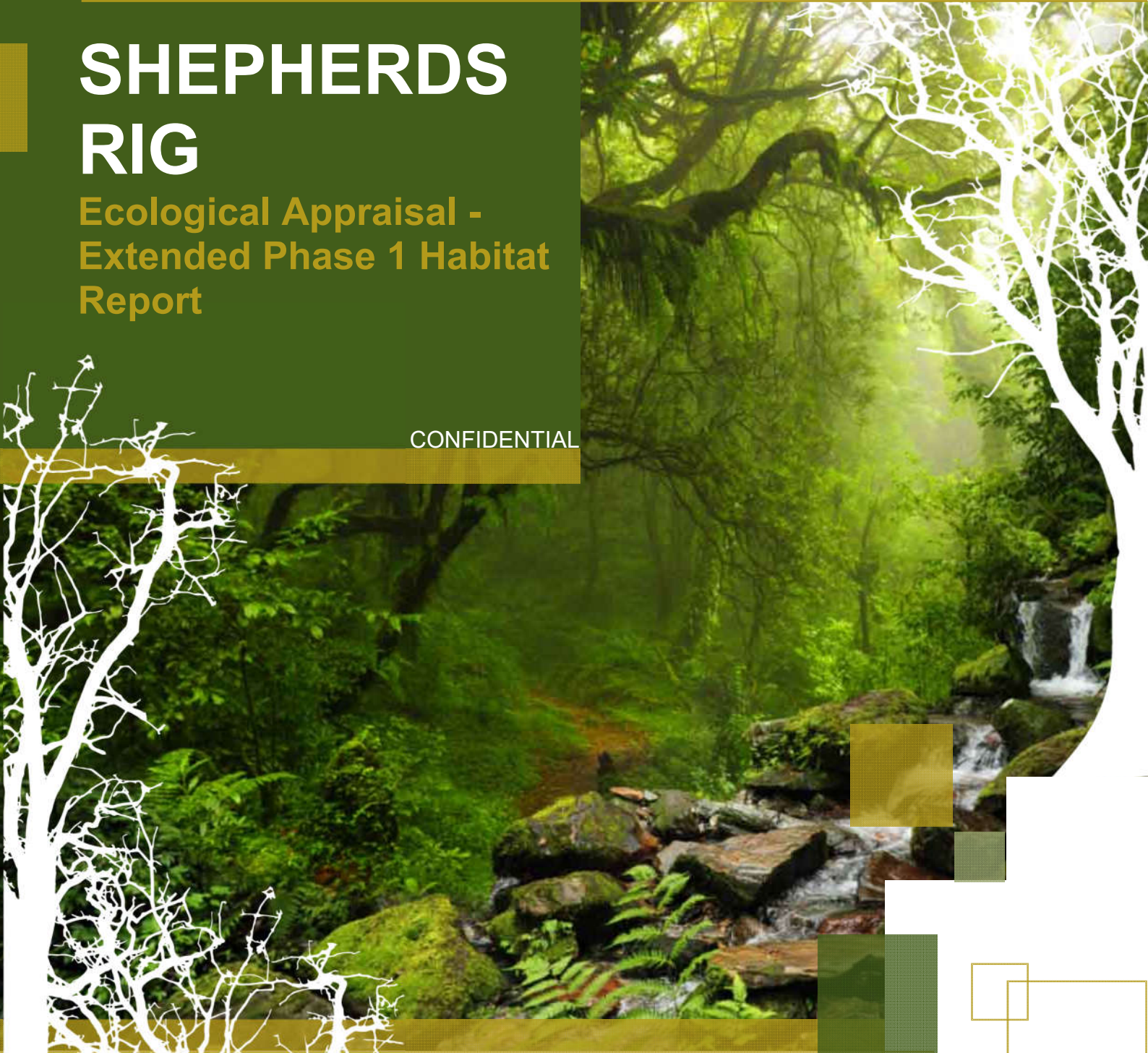


# SHEPHERDS RIG

## Ecological Appraisal - Extended Phase 1 Habitat Report

CONFIDENTIAL



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## Ecological Appraisal - Extended Phase 1 Habitat Report

ARCUS CONSULTANCY SERVICES  
LTD

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## EXECUTIVE SUMMARY

<b>Site Name</b>	Shepherds Rig, Dumfries and Galloway
<b>Site Location</b>	The Site is located 5 km east of Cairnsphairn, DG7 3UF. Central Ordnance Survey Grid Reference: NX 62661 93539
<b>Survey Type</b>	Extended Phase 1 Habitat Survey
<b>Survey Date</b>	13 <sup>th</sup> – 15 <sup>th</sup> April 2018
<b>Site Description</b>	The Site, centred on national grid reference NX 62661 93539, was situated within a rural setting covering an approximate area of 11km <sup>2</sup> . The surrounding area is dominated by grassland habitats (some utilised as grazing pasture) with coniferous plantation present. Marscalloch and Craigengillan Hill are located in the southern and northern halves of the Site respectively. The highest point on site is the cairn at the top of Craigengillan Hill at 401 m AOD.
<b>Potential Ecological Constraints</b>	No ecological constraints were recorded, however there is the potential for the following species:  Amphibian  Badger  Bat  Otter  Nesting birds  Pine marten  Red Squirrel
<b>Recommendations</b>	The Site was dominated by coniferous plantation woodland with a varied ground flora from species poor, marshy grassland, moss and blanket mire.  The Site did contain habitats of ecological value consistent with the 2013 surveys including small strips of heathland adjacent to the access track and blanket mire in the south-western corner of the northern section of the Site. Both habitats contained species that inferred these stands are examples of H12 and M17 communities consistent with the 2013 surveys. Both habitats are classed as UK Biodiversity Action Plan Priority habitats.  No new notable or sensitive habitats were recorded since the 2013 Phase 1 habitat surveys, and therefore no NVC survey was undertaken.  It is recommended that dedicated surveys be undertaken by an SQE for the following species, badger, pine marten, red squirrel, bird and amphibians.  It is also recommended that works associated with the proposed development be undertaken outwith the typical breeding bird

season (recognised as March to August inclusive). Should this not be possible and should works take place within this period then it will be necessary for a pre-works check of vegetation to be completed by a SQE in search of active bird nests. In the event that an active bird nest is observed, an exclusion buffer will be enforced around the nest within which no works can take place. This exclusion buffer will remain in place until such time that the nest has become inactive (i.e. until eggs have hatched and chicks fledged the nest) as deemed by a SQE.



## 1. INTRODUCTION

- 1.1.1. Bear Environmental Ltd was commissioned by Arcus Consultancy Services Ltd (hereafter the 'Client') to undertake an ecological appraisal of a previously submitted Phase 1 habitat survey and an updated extended Phase 1 habitat survey of an area of land around Marscalloch Hill and Craigenjillan Hill known as Shepherd's Rig (hereafter the 'Site'). The Site is located 5 km east of Cairnsphairn at DG7 3UF and centred on national grid reference NX 62661 93539.
- 1.1.2. It is the intention of the Client to submit a planning application to develop a potential wind farm (hereafter the 'proposed development') at the Site. Phase 1 habitat surveys and National Vegetation Classification (NVC) surveys were undertaken in 2013 (Haycock, 2013) for the Site. Due to elapsed time the Client has commissioned Bear Environmental to undertake an ecological appraisal in the format of a standard extended Phase 1 habitat survey of the historic surveys against current ground conditions. Where the presence of notable or sensitive habitats may be recorded during the survey, such as peatlands or Ground Water Dependant Terrestrial Ecosystems, it was requested that an NVC survey be undertaken up to 200 m.
- 1.1.3. Due to the size of the Site (c.11km<sup>2</sup>) and for ease of comparison the Site has been split into two sections; the northern section referring to the area north of the juncture of Craigenjillan Burn and the Water of Ken and the southern section the area south of this juncture.
- 1.1.4. The extended Phase 1 habitat survey was requested in order to describe the nature and extent of the habitats present at the Site, the likely presence of protected or otherwise notable species on Site and to inform of constraints to the proposed development. This report subsequently provides methods, findings and recommendations.
- 1.1.5. The NVC survey was requested to identify and map the constituent plant communities (and subcommunities, where possible) to inform the design of the proposed development (by identifying any potential botanical constraints) and to provide the baseline for an Ecological Impact Assessment (EclA).

## 2. METHODOLOGY

### 2.1. DESK STUDY

- 2.1.1. A desk study was requested not to be undertaken as this will be completed as part of future baseline studies.

### 2.2. FIELD SURVEY

#### EXTENDED PHASE 1

- 2.2.1. An extended Phase 1 habitat survey of the Site was undertaken by Michael Stopa, Chartered Ecologist and Chartered Environmentalist (CEcol, CEnv and MCIEEM), between the 13<sup>th</sup> – 15<sup>th</sup> April 2018 following standard Joint Nature Conservation Committee (JNCC) survey methodology (JNCC, 2010). Phase 1 habitat survey is a standard technique for classifying and mapping British habitats. The survey was extended to include consideration of the likely presence of protected or otherwise notable species in line with CIEEM (2013).
- 2.2.2. Where applicable, dominant plant species were recorded, and habitats classified according to their vegetation types and structure. Habitats were mapped in the standard Phase 1 habitat survey format, with features of interest target noted using a handheld Geographical Positioning System (GPS) device. Figure 1 shows the habitats present on Site.

- 2.2.3. The DAFOR<sup>1</sup> scale was used to record the level of cover of plant species, although when possible the percentage cover of key plant species was also recorded. Plant species were identified and recorded using the keys and nomenclature of Stace (2010) for higher plants and Atherton *et al.* (2010) for bryophytes (mosses and liverworts).
- 2.2.4. Target notes (TN) were also taken where features presented suitable habitat to support protected species. Incidental records of animal species (including birds) were recorded where necessary. Full TN are presented at Appendix A and should be read in conjunction with Figure 1.

#### NVC

- 2.2.5. No NVC surveys were required to be undertaken on Site.

### 2.3. SURVEY CONSTRAINTS

- 2.3.1. An NVC survey was not completed during the survey, therefore when undertaking the ecological appraisal with previous surveys this was completed using the broader species and habits confirmed during the Phase 1.
- 2.3.2. Visibility on the 13<sup>th</sup> and 14<sup>th</sup> April 2018 was sub-optimal due to low lying cloud; therefore, broad habitat identification was difficult from distance. Due to the duration on Site this is not considered a significant issue as visibility improved over the course of the survey effort.
- 2.3.3. The Site was subject to heavy precipitation at the beginning of April and during the Site visit in general. Due to ground saturation and water logging the ground conditions were considered sub-optimal for flora identification in open habitats with no 'spring flush' of flowers recorded throughout the Site.
- 2.3.4. The surveys were carried out during spring (April), which is normally an optimum period. Dumfries and Galloway has however, been subject to extended winter conditions (with snow still present on higher ground in the wider environ) in early 2018. Early spring plant species were not considered to be in abundance and therefore could be missed or have been under recorded by the survey.
- 2.3.5. At the time of survey multiple burns within the Site were in spate; therefore, increasing the likelihood of mammal signs, especially of otter, (e.g. prints, spraints/scats) being lost or becoming unrecognisable. Despite the river levels being high it is considered that mammal burrows (e.g. setts or holts) would most likely of been recognisable.
- 2.3.6. Water flow levels in the survey area's watercourses were high at the time of the survey visits and these posed access issues. Areas that could not be accessed from a specific direction were either circumvented or not accessed altogether.
- 2.3.7. Windthrow was a concern when accessing woodland throughout the Site and any area considered inaccessible from a Health and Safety perspective was either circumvented or not accessed altogether.
- 2.3.8. The Health and Safety of surveyors when travelling across wet timber was a concern when accessing clear felling areas throughout Site and any area considered inaccessible from a Health and Safety perspective was either circumvented or not accessed altogether.
- 2.3.9. This extended Phase 1 habitat survey was undertaken to determine a 'snapshot' of the habitats present on Site. As such the Site was not walked in its entirety, rather specific areas within the Site were surveyed following aerial imagery reviewed in a desk study, taking cognisance of the

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<sup>1</sup> D – Dominant (>75% cover), A – Abundant (51-75% cover), F – Frequent (26-50% cover), O – Occasional (11-25% cover) and R – (locally) Rare (1-10% cover). The scale can be modified to indicate local abundance, e.g. Locally Frequent LF or Locally Abundant LA.



caveats and an assessment was made of the habitat area encountered in reference to that parcel as a whole.

### 3. RESULTS

#### 3.1. DESK STUDY

3.1.1. A desk study was not undertaken; therefore, this will not be considered further.

#### 3.2. SITE DESCRIPTION

3.2.1. The Site, centred on national grid reference NX 62661 93539, was situated within a completely rural setting covering an approximate area of 11 km<sup>2</sup>. The surrounding area is dominated by grassland habitats (some utilised as grazing pasture) with coniferous plantation present. Marscalloch Hill is located in the southern half of the Site and Craigengillan Hill in the north. The highest point on site is the cairn at the top of Craigengillan Hill at 401 m Above Ordnance Datum (AOD).

3.2.2. The southern section of the Site is traversed by the B729 between Carsphairn in the west and Moniave in the east; and the A713 situated to the east and south. The Southern Upland Way is situated to the east of the Site orientated north to south.

3.2.3. Watercourses include The Water of Deugh (situated c.0.3 km to the south-west), the Water of Ken (situated parallel to the eastern boundary), Polifferie Burn (situated parallel to the north-eastern boundary) and Stroanfreggan Burn (situated c.0.5 km to the south-west). Black Burn and Craigengillan Burn are situated within the northern section of the Site.

#### 3.3. FIELD SURVEY

3.3.1. Weather conditions during the survey are outlined in Table 1 below.

**Table 1 – Weather Conditions**

Date	Weather
13 <sup>th</sup> April 2018	Temperature 5°C, 100% cloud cover (poor -moderate visibility), wind F0-1 (beaufort scale) and heavy rain.
14 <sup>th</sup> April 2018	Temperature 8°C, 100% cloud cover (poor visibility), wind F0-2 (beaufort scale) and heavy rain to dry conditions.
15 <sup>th</sup> April 2018	Temperature 7°C, 100% cloud cover (poor visibility in the am), wind F1-3 (beaufort scale) and light rain to dry conditions.

3.3.2. The results of the extended Phase 1 habitat survey are presented below and should be read in conjunction with Figure 2. Table 2 presents the habitat types identified within the Site in order of dominance. Target notes are presented in Appendix A, and a list of all species recorded are presented at Appendix B. Survey photographs are appended at Appendix C.

3.3.3. The following broad habitat types, along with their associated JNCC habitat codes, were recorded on Site during the field survey.

**Table 2 – Phase 1 Habitats**

HABITAT TYPE	JNCC CODE
Coniferous woodland – plantation (mature)	A1.2.2
Coniferous woodland – plantation (juvenile to semi-mature)	A1.2.2
Felled woodland	J5

HABITAT TYPE	JNCC CODE
Blanket mire	E1.6.1
Marsh/marshy grassland	B5
Dry heath/acid grassland	D5
Broadleaved woodland - plantation	A1.1.2
Hard standing – access tracks	J5
Running water	G2
Quarry	I2.1
Wall	J2.5

## PHASE 1 HABITAT DESCRIPTIONS

### Coniferous woodland – plantation

- 3.3.4. Coniferous woodland (Plate 1) is the most dominant habitat on Site with limited species diversity generally; Sitka spruce *Picea sitchensis* D and European larch *Larix decidua* F were recorded.
- 3.3.5. Extensive felling and re-planting has been undertaken throughout the Site; therefore, the age and understorey flora of this habitat varied significantly. For the purposes of comparison with previous reports (Haycock, 2013) Figure 2 has been separated into:
- Coniferous woodland – plantation (mature); and
  - Coniferous woodland – plantation (juvenile to semi-mature)
- 3.3.6. Mature plantation woodland generally contained either no ground flora, species poor or areas of moss *Bryophyta* spp. LD/LA.
- 3.3.7. For juvenile to semi mature woodland the ground flora varied depending on the time since felling had occurred. The dominant habitat was marshy grassland (see '*Marsh/marshy grassland*' below) with species poor ground flora, moss and blanket mire (see '*Blanket Mire*' below) also recorded. Younger plantation woodland recorded tufted hair-grass *Deschampsia cespitosa* LF/LA and soft rush *Juncus effuses* LF/LA.
- 3.3.8. Woodland rides throughout the Site recorded purple moor-grass *Molinia caerulea* D marshy grassland. TN1 was an isolated area of European larch enclosed within a dry-stone wall.

### Felled woodland

- 3.3.9. Felled woodland (Plate 2, TN2) was extensive throughout the Site and most prevalent in the northern section. Vegetation was limited in these areas and was dominated by wood brash; other areas of no ground flora, species poor ground flora or those dominated by species of marshy grassland habitats with soft rush, tufted hair-grass and bent grasses *Agrostis* spp. recorded.

### Blanket mire/bog

- 3.3.10. Blanket mire was present in the south-western corner of the northern section of the Site. This habitat was recorded where the water table was high. It should be noted that this habitat was intersected with areas that were not dominated by bog species with some ground flora noted as species poor where coniferous trees were more mature and dominant.
- 3.3.11. Hare's-tail cotton-grass *Eriophorum vaginatum* and deer-grass *Trichophorum germanicum* LD/LA were recorded; with ling heather *Calluna vulgaris* O also present.
- 3.3.12. Red bog moss *Sphagnum capillifolium*, papillose bog-moss *Sphagnum papillosum*, red-stemmed feathermoss *Pleurozium schreberi*, *Rhytidiadelphus* spp., bog haircap moss *Polytrichum strictum*, *Racomitrium lanuginosum*, red-stemmed feathermoss *Pleurozium schreberi* and magellanic bogmoss *Sphagnum magellanicum* were also recorded.

- 3.3.13. Mire dominated vegetation covers 18.99ha (Plate 3, TN3). Mires forming mosaics with grassland communities were noted along the woodland rides.
- 3.3.14. This is a UK Biodiversity Action Plan priority habitat.

#### Marsh/marshy grassland

- 3.3.15. The marshy grassland habitat was species-poor (Plate 4, TN4) with purple moor-grass D and soft rush D/O recorded.
- 3.3.16. Within the wetter areas around TN3 the rides recorded areas of marshy grassland with a mosaic of blanket mire with moss species becoming more prevalent (see 'Blanket Mire' above). Species including bracken *Pteridium aquilinum*, dock *Rumex* sp. and marsh thistle *Cirsium palustre*, were also recorded
- 3.3.17. The open areas associated with woodland rides, breaks and edge habitat contained this habitat type. Areas with soft rush LD/LA were recorded throughout the Site specifically in areas of felled plantation with this species colonising.

#### Dry heath/acid grassland

- 3.3.18. Dry heath was recorded on access track verges but was noted as being more prevalent adjacent to the circular forest track in the northern section of the Site. This habitat had been heavily affected since 2013 and did not display a continuous habitat swathe due to felling activities.
- 3.3.19. This habitat still best corresponds to H12 *Calluna vulgaris*–*Vaccinium myrtillus* heath (Plate 5, TN 5), as per the 2013 survey. Ling heather *Calluna vulgaris* D was the dominant species with blaeberry *Vaccinium myrtillus* F, pleurocarpous mosses *Hypnum jutlandicum* O, rush species *Juncaceae* spp., bog haircap moss, *Racomitrium lanuginosum*, red-stemmed feathermoss, *Sphagnum magellanicum* and scattered coniferous trees of semi mature age typically sitka spruce O.
- 3.3.20. This is a UK Biodiversity Action Plan priority habitat.

#### Broadleaved woodland - plantation

- 3.3.21. In the northern section three areas of recently planted broadleaf plantation were present (TN6 and 7). TN 7 (Plate 6) is situated to the west of the forestry track parallel with the Water of Ken and has been planted amongst juvenile to semi-mature coniferous woodland. This habitat consists of oak *Quercus* sp., common alder *Alnus glutinosa*, rowan *Sorbus aucuparia* and silver birch *Betula pendula*.
- 3.3.22. TN 6 was a rectangular planting in the middle of the same felled plantation area. Species planted include rowan and silver birch.

#### Hard standing – access tracks

- 3.3.23. Forestry roads were present throughout the Site; sporadic species on either side of the tracks included dock, marsh thistle, spear thistle *Cirsium vulgare*, bracken, broad-leaved plantain *Plantago major*, selfheal *Prunella vulgaris* and Ling heather (see 'Dry heath/acid grassland' above).

#### Running water

- 3.3.24. Multiple small burns other than the dominating Black and Craigengillan Burns were present across the Site, most notably in dense plantation woodland. Those burns situated under dense canopy specially in the south-western corner of the northern section were noted to contain individual

stands of moss species, and species-poor marshy grassland dominated by purple moor-grass or a mosaic of both.

#### Quarry

- 3.3.25. Two quarries were recorded on Site with negligible floral diversity and consisting entirely of bare rock.

#### Wall

- 3.3.26. Multiple dry-stone walls and sheep folds are situated throughout the Site, bryophytes recorded included rough-stalked feather-moss *Brachythecium rutabulum*.

### SITE SUITABILITY FOR PROTECTED SPECIES

#### BAT

- 3.3.27. No evidence of bat species was recorded during the survey.
- 3.3.28. Coniferous trees can support roosting bats and the woodland rides and breaks provide a suitable foraging and commuting resource. The Site does provide suitable roosting potential for bats, however there is high disturbance associated with felling activities which is likely to act as a deterrent.

#### NESTING BIRDS

- 3.3.29. Several common bird species were encountered during the survey including wood pigeon *Columba palumbus*, blackbird *Turdus merula*, corvid *Corvidae* spp. and buzzard *Buteo buteo*,
- 3.3.30. The grassland habitat of the Site, areas of scrub, woodland and edge habitats provide good potential habitat for nesting birds and are likely to support a wide range of breeding birds during spring and summer (March to August inclusive).

#### BADGER

- 3.3.31. No evidence of badger *Meles meles* was recorded during the survey effort.
- 3.3.32. The Site itself does not provide typically suitable habitat for badger as there is not a typical foraging resource. The Site does provide suitable sett making habitat due to the terrain, however, it is considered unlikely that a sett would be recorded. If a clan is situated within the wider area the Site would provide suitable cover for commuting to lowland areas where foraging may be more suitable.

#### OTTER

- 3.3.33. Evidence of otter *Lutra lutra* (Plate 7, TN 8) was recorded during the survey in the form of field signs (spraints).
- 3.3.34. The Site does provide a foraging resource in the various ephemeral pools and track side waterways suitable for spawning amphibians. The Water of Ken is likely to support foraging and commuting otter and the Site itself does provide suitable habitat for resting or natal holts considering the density of woodland. It should be noted that a high disturbance associated with human presence (woodland and felling activities) exists on Site that could act as a deterrent.
- 3.3.35. The banks of the Black and Craigengillan Burns does provide otter with suitable resting habitat (e.g. couches) but no areas of overhanging banks (for holts) were recorded. The riverine environment is suitable for foraging and commuting to the wider area also.

## RED SQUIRREL

- 3.3.36. No evidence of red squirrel *Sciurus vulgaris* was recorded during the survey effort.
- 3.3.37. The Site provides suitable habitat for foraging red squirrel and the potential for the development of dreys. A high disturbance associated with human presence (woodland and felling activities) exists on Site and due to the extensive felling recorded this would be considered a deterrent.

## PINE MARTEN SPECIES

- 3.3.38. No evidence of pine marten *Martes martes* was recorded during the survey effort.
- 3.3.39. The Site provides suitable habitat for foraging due to the likely red squirrel population; various rocky outcrops and crags exist as den potential on Site most notably in the northern section. It should be noted that the woodland habitat surrounding the largest crag in the northern section has recently been felled.

## AMPHIBIANS

- 3.3.40. Evidence of amphibians (Plate 8, TN 9) was recorded during the survey, with records of a single common frog *Rana temporaria* and five unidentified newts *Salamandridae* spp.
- 3.3.41. The Site contains waterways, burns, ephemeral pools and track side waterways suitable for amphibians as well as suitable hibernating habitat associated with the woodland, crags and rocky outcrops present.

## INVASIVE SPECIES

- 3.3.42. No evidence of invasive species was recorded during the survey.

## 4. DISCUSSION AND RECCOMENDATIONS

- 4.1.1. The Site was dominated by coniferous plantation woodland with a varied ground flora from species poor, marshy grassland, moss and blanket mire.
- 4.1.2. The Site did contain habitats of ecological value consistent with the 2013 surveys including small strips of heathland adjacent to the access track and blanket mire in the south-western corner of the northern section of the Site. Both habitats contained species that inferred these stands are examples of H12 and M17 communities consistent with the 2013 surveys. Both habitats are classed as UK Biodiversity Action Plan Priority habitats.
- 4.1.3. No new notable or sensitive habitats were recorded since the 2013 Phase 1 habitat surveys, and therefore no NVC surveys were undertaken.
- 4.1.4. The Site and surrounding habitat, specifically the woodland and riverine environs provide suitable commuting, foraging and roosting habitat for bats. It is recommended that future developments take cognisance of the suitable woodland/riverine habitat.
- 4.1.5. The woodland on Site did provide suitable sett making conditions. Therefore, although no badger setts or field signs were recorded it is recommended that a precautionary pre-works check take place during suitable conditions by a suitably qualified ecologist (SQE) in search of active badger setts. This should be undertaken as part of a wider pre-works check for other species as a precaution.
- 4.1.6. The Site itself did provide suitable habitat for otter with field signs recorded. The riverine and woodland habitats provide suitable foraging, commuting and resting potential. Therefore, it is recommended that a dedicated ecological survey be undertaken by a SQE in search of an otter holt, couch or new field signs.

- 4.1.7. Opportunities for nesting birds were present within the woodland, areas of scrub and grassland within and adjacent to the Site boundary, however no bird nests were observed during the field survey. It is therefore recommended that a dedicated ornithological survey be undertaken to inform the EclA.
- 4.1.8. It is also recommended that works associated with the proposed development be undertaken outwith the typical breeding bird season (recognised as March to August inclusive). Should this not be possible and should works take place within this period then it will be necessary for a pre-works check of vegetation to be completed by a SQE in search of active bird nests. In the event that an active bird nest is observed, an exclusion buffer will be enforced around the nest within which no works can take place. This exclusion buffer will remain in place until such time that the nest has become inactive (i.e. until eggs have hatched and chicks fledged the nest) as deemed by a SQE.
- 4.1.9. Opportunities for red squirrel and pine marten were present within the woodland habitat within and adjacent to the Site boundary, however no field signs of either species were observed during the field survey. It is recommended that dedicated surveys be undertaken as part of the wider EclA associated with the proposed development. In the event that either species is confirmed on Site, an exclusion buffer will be advised and enforced by an SQE within which no works can take place.
- 4.1.10. Evidence of amphibians, most notably newts, were confirmed on Site. It is recommended that the Site (including the pool at TN9) be subject to a dedicated ecological survey to confirm the amphibian species present.
- 4.1.11. No other protected or otherwise notable species were considered likely to use the Site, with no further field signs noted.



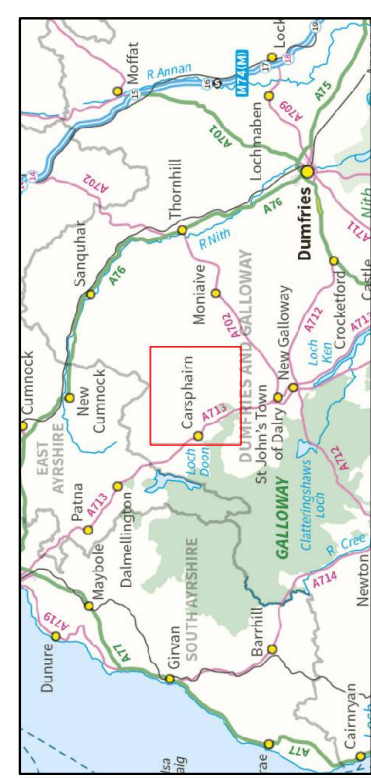
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Figure 1: Site Location

Figure 2: Extended Phase 1 Habitat Survey Map





**Survey Information**

Site boundary



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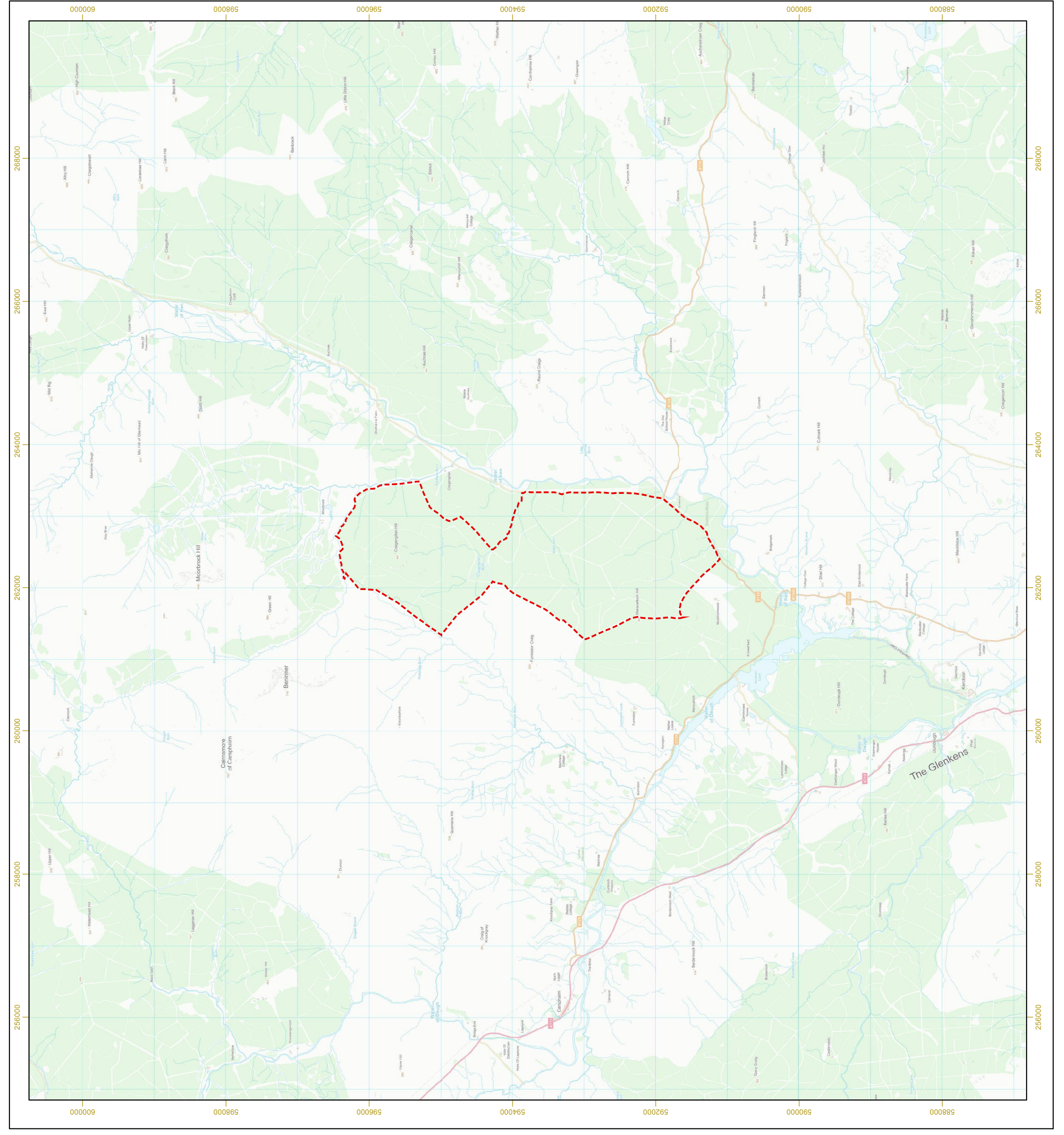


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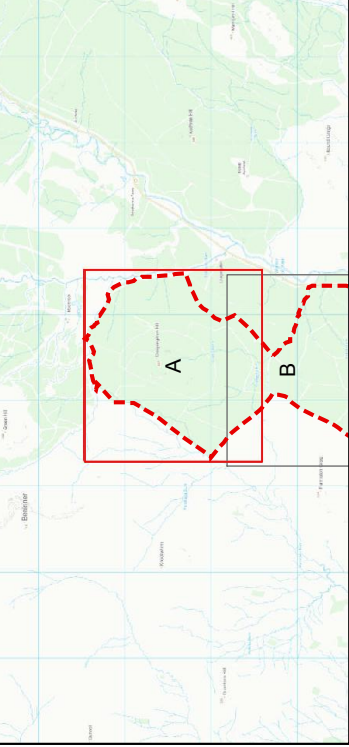
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**Figure 1: Site Location Plan**

CLIENT		Arcus Consultancy Services Ltd	
VER	DATE	COMMENTS	Drawn
1.1	20/04/18	Location	MP
DRAWING NUMBER:		Checked	
BearEnvironmental.td/1001-117/Location		MS	
SCALE	1:50,000	PLOT SIZE	A3
DATUM	OSGB	PROJECTION	BNG







**Survey Information**

	Survey extent
	Proposed turbine location
Extended Phase 1 Habitat Survey	
	A1.1.2 - Broadleaved woodland - plantation
	A1.2.2 - Coniferous woodland – plantation (juvenile to semi-mature)
	A1.2.2 - Coniferous woodland – plantation (mature)
	B5 - Marsh/marshy grassland
	D5 - Dry heath/acid grassland
	E1.6.1 - Blanket bog
	G2 - Running water
	I2.1 - Quarry
	J5 - Felled woodland
	J5 - Hardstanding
	Target note

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PROJECT TITLE  
**SHEPHERDS RIG**

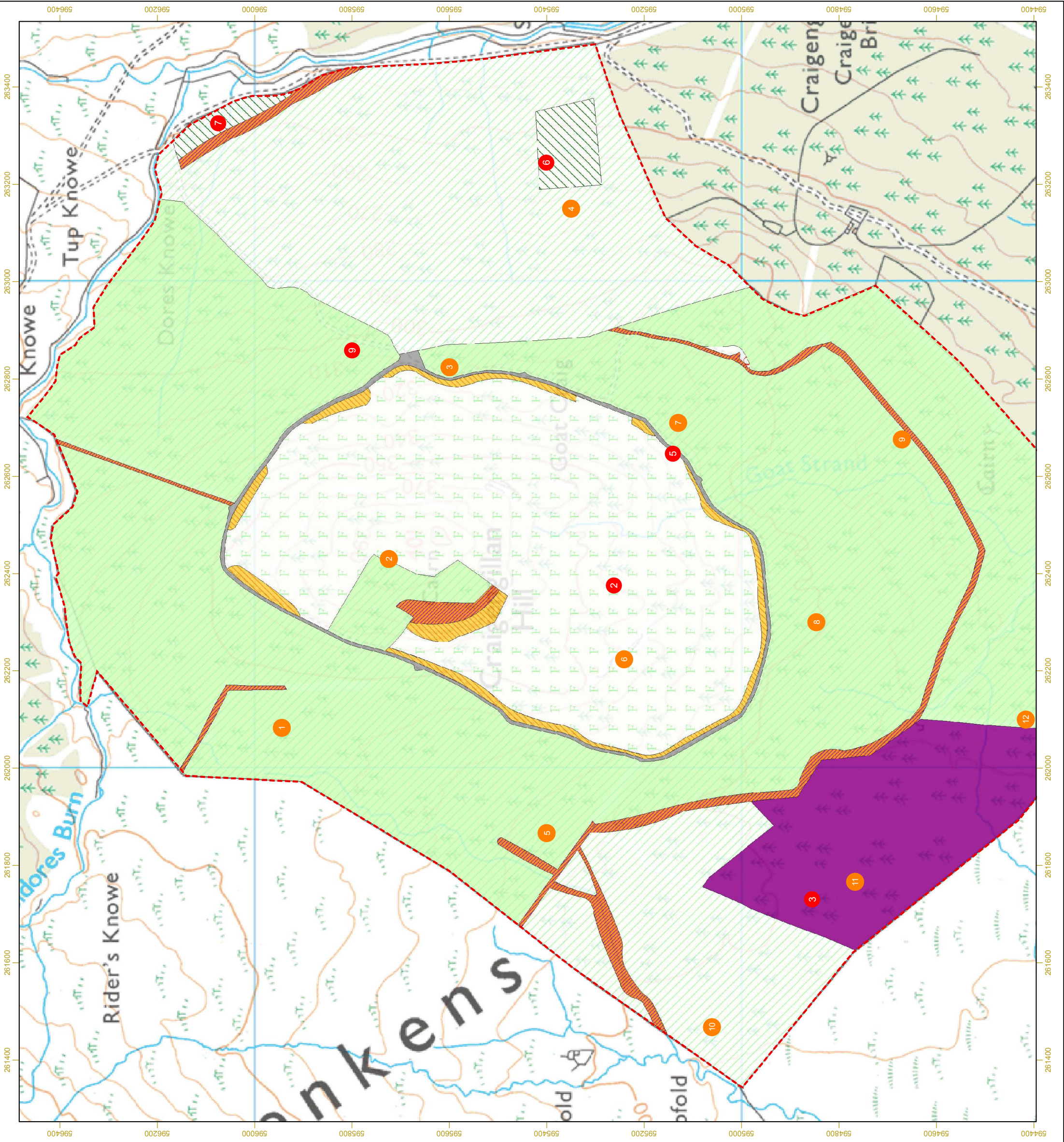
DRAWING TITLE  
**Figure 2A: Extended Phase 1 Habitat Survey - April**

CLIENT  
Arcus Consultancy Services Ltd

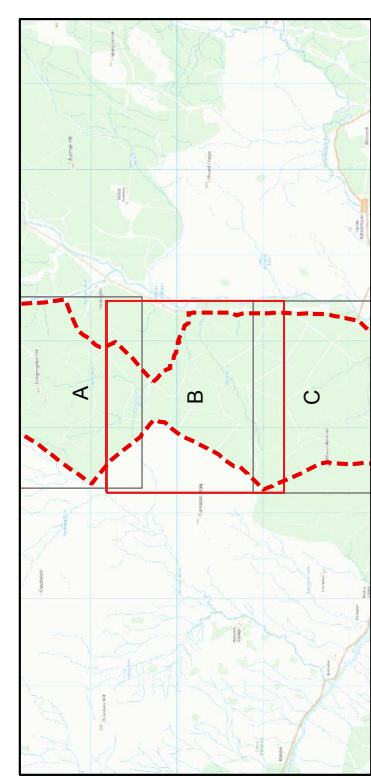
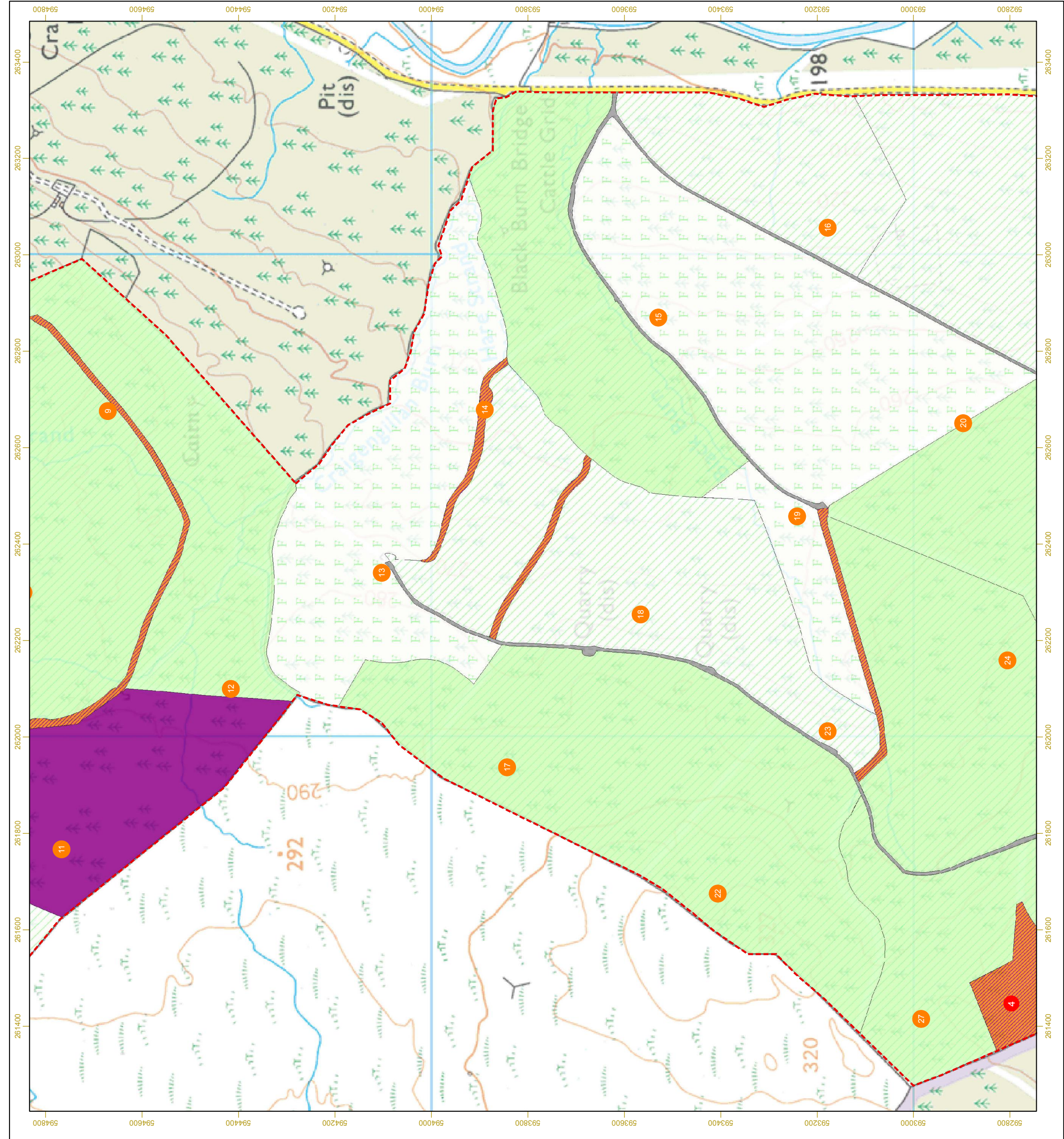
VER	DATE	COMMENTS	Drawn	Checked
1.2	26/04/18	Ex Phase 1 - Map A	MP	MS

DRAWING NUMBER:  
Bear/Environmental/td/1001-117/ExtendedPhase1/A

SCALE	1:7,500	PLOT SIZE	A3	DATUM	OSGB	PROJECTION	BNG
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Survey Information	
Survey extent	
Proposed turbine location	
Extended Phase 1 Habitat Survey	
A1.1.2 - Broadleaved woodland - plantation	
A1.2.2 - Coniferous woodland – plantation (juvenile to semi-mature)	
A1.2.2 - Coniferous woodland – plantation (mature)	
B5 - Marsh/marshy grassland	
D5 - Dry heath/acid grassland	
E1.6.1 - Blanket bog	
G2 - Running water	
I2.1 - Quarry	
J5 - Felled woodland	
J5 - Hardstanding	
Target note	

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PROJECT TITLE: **SHEPHERDS RIG**

DRAWING TITLE: **Figure 2B: Extended Phase 1 Habitat Survey - April**

CLIENT: Arcus Consultancy Services Ltd

VER	DATE	COMMENTS	Drawn	Checked
1.2	26/04/18	Ex Phase 1 - Map B	MP	MS

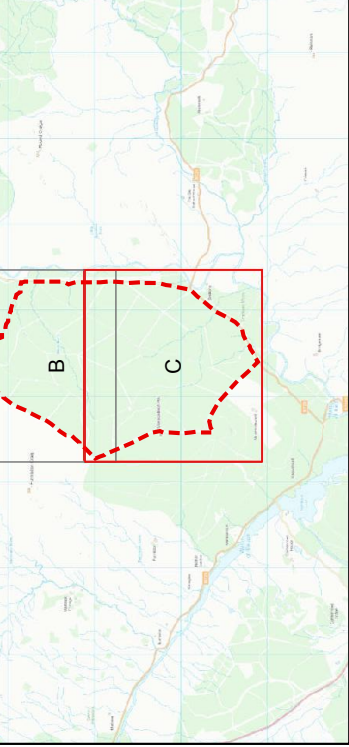
DRAWING NUMBER: Bear/Environmental/td/1001-117/ExtendedPhase1/B

SCALE: 1:7,500 | PLOT SIZE: A3 | DATUM: OSGB | PROJECTION: BNG

W: [www.bear-environmental.co.uk](http://www.bear-environmental.co.uk)  
 E: [info@bear-environmental.co.uk](mailto:info@bear-environmental.co.uk)  
 T: 07749 707856







Survey Information	
Survey extent	
Proposed turbine location	
Extended Phase 1 Habitat Survey	
A1.1.2 - Broadleaved woodland - plantation	
A1.2.2 - Coniferous woodland – plantation (juvenile to semi-mature)	
A1.2.2 - Coniferous woodland – plantation (mature)	
B5 - Marsh/marshy grassland	
D5 - Dry heath/acid grassland	
E1.6.1 - Blanket bog	
G2 - Running water	
I2.1 - Quarry	
J5 - Felled woodland	
J5 - Hardstanding	
Target note	

Survey Information	
Survey extent	
Proposed turbine location	
Extended Phase 1 Habitat Survey	
A1.1.2 - Broadleaved woodland - plantation	
A1.2.2 - Coniferous woodland – plantation (juvenile to semi-mature)	
A1.2.2 - Coniferous woodland – plantation (mature)	
B5 - Marsh/marshy grassland	
D5 - Dry heath/acid grassland	
E1.6.1 - Blanket bog	
G2 - Running water	
I2.1 - Quarry	
J5 - Felled woodland	
J5 - Hardstanding	
Target note	

Survey Information	
Survey extent	
Proposed turbine location	
Extended Phase 1 Habitat Survey	
A1.1.2 - Broadleaved woodland - plantation	
A1.2.2 - Coniferous woodland – plantation (juvenile to semi-mature)	
A1.2.2 - Coniferous woodland – plantation (mature)	
B5 - Marsh/marshy grassland	
D5 - Dry heath/acid grassland	
E1.6.1 - Blanket bog	
G2 - Running water	
I2.1 - Quarry	
J5 - Felled woodland	
J5 - Hardstanding	
Target note	

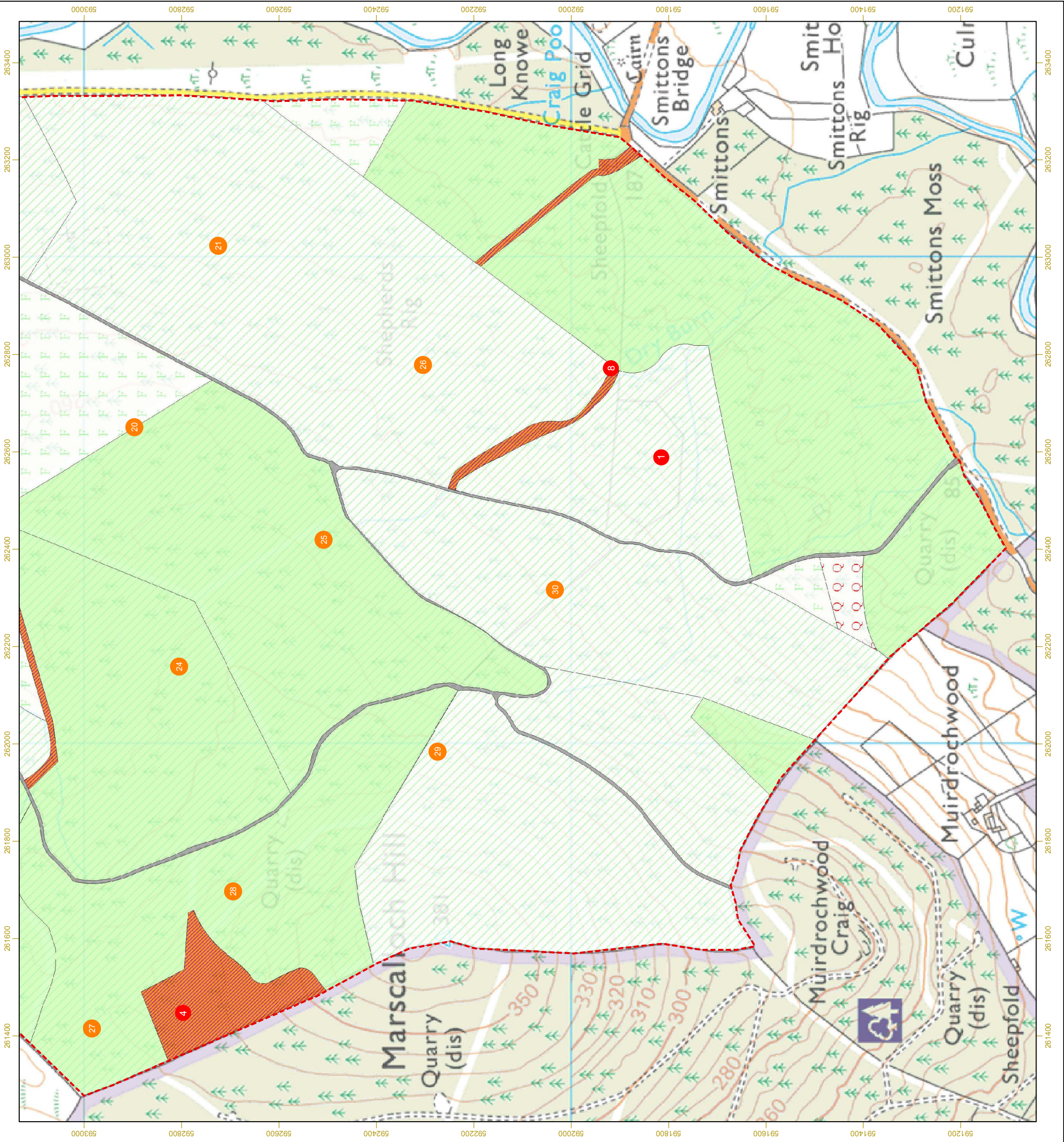
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PROJECT TITLE  
**SHEPHERDS RIG**

DRAWING TITLE  
**Figure 2C: Extended Phase 1 Habitat Survey - April**

CLIENT	Arcus Consultancy Services Ltd						
VER	DATE	COMMENTS	Drawn	Checked			
1.2	26/04/18	Ex Phase 1 - Map C	MP	MS			
DRAWING NUMBER: BearEnvironmentalLtd/1001-117/ExtendedPhase1/C							
SCALE	1:7,500	PLOT SIZE	A3	DATUM	OSGB	PROJECTION	BNG

CLIENT	Arcus Consultancy Services Ltd						
VER	DATE	COMMENTS	Drawn	Checked			
1.2	26/04/18	Ex Phase 1 - Map C	MP	MS			
DRAWING NUMBER: BearEnvironmentalLtd/1001-117/ExtendedPhase1/C							
SCALE	1:7,500	PLOT SIZE	A3	DATUM	OSGB	PROJECTION	BNG





## APPENDIX A – TARGET NOTES

Target Note	Note and NGR
1	Coniferous plantation woodland dominated by European larch
2	Areas of felled woodland
3	Blanket mire beneath coniferous woodland
4	Marshy grassland dominated by species poor purple moor-grass occurring in forest rides and breaks
5	<i>Calluna vulgaris</i> dominated heath
6	Broadleaved plantation woodland
7	Broadleaved plantation woodland
8	Otter spraint
9	Pond with recorded amphibians

## APPENDIX B SPECIES LIST

COMMON NAME	SCIENTIFIC NAME
Bent grasses	<i>Agrostis</i> spp.
Birds foot trefoil	<i>Lotus corniculatus</i>
Blaeberry	<i>Vaccinium myrtillus</i>
Bog haircap moss	<i>Polytrichum strictum</i> ,
Bracken	<i>Pteridium aquilinum</i>
Broad leaved dock	<i>Rumex obtusifolius</i>
Broad-leaved Plantain	<i>Plantago major</i>
Common alder	<i>Alnus glutinosa</i>
Common sorrel	<i>Rumex acetosa</i>
Dock	<i>Rumex</i> sp.
European larch	<i>Larix decidua</i>
Field horsetail	<i>Equisetum arvense</i>
Ling heather	<i>Calluna vulgaris</i>
Marsh thistle	<i>Cirsium palustre</i>
Moss	<i>Bryophyta</i> spp.
Oak	<i>Quercus</i> sp.
Papillose Bog-moss	<i>Spagnum papillosum</i>
Perennial ryegrass	<i>Lolium perenne</i>
Pleurocarpous mosses	<i>Hypnum jutlandicum</i>
Purple moor-grass	<i>Molinia caerulea</i>
Red bog moss	<i>Sphagnum capillifolium</i>
Red fescue	<i>Festuca rubra</i>
Red-stemmed feathermoss	<i>Pleurozium schreberi</i>
Reed canary grass	<i>Phalaris arundinacea</i>
Reindeer lichen	<i>Cladonia portentosa</i>
Rowan	<i>Sorbus aucuparia</i>
Rough-stalked feather-moss	<i>Brachythecium rutabulum</i>
Rush species	<i>Juncaceae</i> spp.
Scabious	<i>Scabiosa</i> sp.
Selfheal	<i>Prunella vulgaris</i>
Silver birch	<i>Betula pendula</i>
Sitka spruce	<i>Picea sitchensis</i>
Soft rush	<i>Juncus effuses</i>
Spear thistle	<i>Cirsium vulgare</i>
Sphagnum magellanicum	<i>Magellanic bogmoss</i>
Tufted hair-grass	<i>Deschampsia cespitosa</i>
White clover	<i>Trifolium repens</i>
Yorkshire fog	<i>Holcus lanatus</i>
	<i>Rhytidiadelphus</i> spp.
	<i>Racomitrium lanuginosum</i>

APPENDIX C SURVEY PHOTOGRAPHS



PLATE 1 – Coniferous woodland.



PLATE 2 – Felled woodland, northern section of Site.



PLATE 3 – Blanket mire.



PLATE 4 – Marshy grassland.



PLATE 5 – Heath adjacent to access track, northern section of Site.



PLATE 6 – Deciduous woodland (TN7).



PLATE 7 – Evidence of otter (TN8).



PLATE 8 – Pool with evidence of newt activity (TN9).