



Technical Appendix 8.1

Habitats & Protected Species Survey Results

June 2025



Contents

Document history	1
1.1. Ecology Technical Appendix	2
Introduction	2
Methods	2
Results	8
1.2. Whitehill Moss Hill Vegetation Community	9
1.3. Access Track Habitat Report.....	17

Document history

Author	Jake Walker, Senior Ecological Consultant
Checked	Jack Bell, Head of Ecology & Environmental Compliance
Approved	Euan Hutchison, Associate Director Consenting



1.1. Ecology Technical Appendix

Introduction

1.1.1. This technical appendix presents additional information in relation to habitats and protected mammal species in support of the Balgray Environmental Impact Assessment Report (EIAR), Chapter 8: Ecology.

Methods

Field Survey Methodologies

1.1.2. Baseline surveys were carried out between August – November 2023 (habitats and protected species), June 2024, September - October 2024, and March 2025. Surveys were undertaken to assess habitats present at the proposed Balgray Wind Farm Development, and to quantify use of the Site and surrounding area by protected mammal species. Table 1 below provides additional detail on survey dates and type.

1.1.3. All field surveys were undertaken by the following experienced ecological surveyors:

- Chris Rogers (MCIEEM, MSc, PGCert, BSc Hons) – Tringa Ecology
- Steven Parker (BSc (Hons)) – nàdarra Ecology Ltd
- Lisa Thomson (BSc (Hons)) – nàdarra Ecology Ltd
- Michael Hogg (MSc, BSc(Hons)) - Caledonian Conservation Ltd
- Ami Weekes (BSc (Hons)) – Locogen Consulting Ltd

Table 1: Ecological surveys undertaken at the proposed Balgray Wind Farm.

Date	Survey Type	Surveyor
29 August 2023 14 September 2023 20 November 2023 24 November 2023	Protected Species	Steven parker Lisa Thomson
05 September 2023 – 11 September 2023 (inclusive)	Phase 1 and National Vegetation Classification (NVC)	Chris Rogers
04 June 2024	Great crested newt eDNA survey	Lisa Thomson
04 June 2024	Water Vole Survey	Lisa Thomson
9 September 2024 12 September 2024	Access track – Phase 1 and NVC	Micheal Hogg
26 September 2024 27 September 2024	Access track – Protected species	Lisa Thomson



25 March 2025	Turning circle – Phase 1 & protected species	Ami Weekes
---------------	--	------------

1.1.4. Survey methodologies used are described below.

Phase 1 Habitat Survey

1.1.5. A Phase 1 habitat survey of the development area and 250m suffer buffer (where accessible) was undertaken early September 2023 (05 to 11 September 2023) this is within NatureScot's optimum survey window for detailed habitat assessment. The survey followed the Joint Nature Conservation Committee's (JNCC) Handbook for Phase 1 Habitat Survey¹.

1.1.6. Descriptions of the habitat types and target notes were provided. Target notes recorded additional details of habitat/vegetation structure and any features of ecological interest within the site.

National Vegetation Classification

1.1.7. National Vegetation Classification (NVC) surveys of the full site and 250m buffer (where accessible) was undertaken in conjunction with the Phase 1 surveys in early September 2023 (05 to 11 September 2023). NVC surveys followed standardised methodology detailed in the *National Vegetation Classification: Users' Handbook***Error! Bookmark not defined..** Communities and sub-communities were mapped in the field (based on extensive surveyor experience) using a spatially accurate GPS enabled tablet with Q-field software.

1.1.8. Target notes were recorded to provide additional information on habitat features, species composition/abundance and to note any features of ecological interest. Where areas were deemed to support varied communities or habitat mosaics, the proportion of each was estimated in field and recorded (where possible).

1.1.9. Where appropriate, 2 m x 2 m quadrats were used to collect data for comparison with published species accounts.

Bat Surveys

Bat roost assessment

1.1.10. Preliminary bat roost assessment was undertaken through August – September 2023, during wider protected species surveys. Ground based assessment of the study areas were focused predominantly on identifying trees within the Site which could support Potential Bat Roost Features (PBRF). Trees which

¹ JNCC. (2010) *Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit*. Joint Nature Conservation Committee, Peterborough.



supported PBRF were assessed according to the Bat Conservation Trust guidance that was current at the time of the survey².

1.1.11. Full methodology and results for static surveys can be found in Technical Appendix 8.2.

Otter

1.1.12. Surveys for otter (*Lutra lutra*) on potential habitat throughout the Site as part of the protected species surveys. Field signs for otter were searched for, as described in Bang & Dahlstrøm (2001)³, Chanin (2003)⁴, and Sargent & Morris (2003)⁵, these included:

- Holt – these are underground features where otters live. They can be tunnels within bank sides, underneath root plates or boulder piles, and even man-made structures such as disused drains. Holts are used by otters to rest during the day and may be used as natal or breeding sites. Otters may use holts permanently or temporarily.
- Couches – these are above ground resting-up sites. They may be partially sheltered, or fully exposed. Couches may be regularly used, especially in reed beds and on in-stream islands. They may be used as natal and breeding sites. Couches can be very difficult to identify, and may consist of an area of flattened grass or earth. Where rocks or rock armour are used as couches, these can be almost impossible to identify without observing the otter in situ.
- Prints – otters have characteristic footprints that can be found in soft ground and muddy areas.
- Spraints – otter faeces are often used to mark territories, usually deposited on in-stream boulders. They can also be present within or outside the entrances of holts and couches. Spraints have a characteristic smell and often contain fish remains.

² Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn). The Bat Conservation Trust, London.

³ Bang, P. & Dahlstrøm, P. (2001). *Animal Tracks and Signs*. Oxford University Press, Oxford

⁴ Chanin, P.(2003). *Monitoring the Otter Lutra lutra*. Conserving Natura 2000 Rivers: Monitoring Series No. 10. English Nature, Peterborough

⁵ Sargent, G., Morris, P. and Troughton, G. (2003). *How to Find and Identify Mammals*, 3rd Edition. The Mammal Society, Southampton



- Feeding signs – the remains of prey items may be found at preferred feeding stations. Remains of fish, crabs or skinned amphibians can indicate the presence of otter.
- Paths – these are terrestrial routes that otters take when moving between resting-up sites and watercourses, or during high flow conditions when otters travel along bank sides in preference to swimming.
- Slides and play areas – slides are typically worn areas on steep slopes where otters slide on their bellies; slides are often found between holts/couches and watercourses. Play areas are used by juvenile otters in play, and are usually evident as trampled vegetation and the presence of slides. These are often positioned in sheltered areas adjacent to the natal holt.

1.1.13. Any potential or confirmed field signs were recorded using a handheld GPS and was later mapped using spatially accurate Ordnance Survey maps on QGIS.

Water Vole

1.1.14. Surveys for water vole (*Arvicola amphibious*) were undertaken on potential habitat throughout the Site as part of the protected species surveys. Field signs for water vole as described in Dean (2021)⁶ were searched for, including:

- Faeces – these are recognisable by their size, shape and content. When reasonably fresh, water vole faeces are also distinguishable from rat droppings by their smell.
- Latrines – faeces are often deposited at discrete locations known as latrines.
- Feeding stations – food items are often brought along pathways and hauled onto platforms which are used as feeding stations. These are recognisable as neat piles of chewed vegetation up to 10 cm long. There can be crossover in size with field vole feeding signs, and therefore other signs may be required to provide diagnostic evidence of the presence of water vole.

⁶ Dean, M. (2021) *Water Vole Field Signs and Habitat Assessment: A practical Guide to Water Vole Surveys*. Exeter: Pelagic Publishing.



- Burrows – these appear as a series of holes along the water's edge; they are distinguishable from rat or field vole burrows by their size, position and characteristics.
- Lawns – these may appear as grazed areas around burrows.
- Nests – woven nests may be found above ground in areas where the water table is high.
- Footprints – water vole tracks may occur at the water's edge and lead into bankside vegetation. Clear prints are distinguishable from rat and field vole footprints by their characteristics and size.
- Runways in vegetation – low tunnels pushed through vegetation near the water's edge may be visible; these are less obvious than rat runs, and are only diagnostic of water vole in the presence of other signs.

1.1.12. Any potential or confirmed field signs were recorded using a handheld GPS and was later mapped using spatially accurate Ordnance Survey maps on QGIS.

Pine Marten

1.1.15. Surveys for pine marten (*Martes martes*) were undertaken on potential habitat throughout the Site as part of the protected species surveys. Field signs for pine marten as described in Bang & Dahlstrøm (2001) were searched for, including:

- Scats – These are typically dark in colour and 4-12 cm long x 0.8-1.8 cm in diameter. They often have a coiled twisted appearance, typical of many mustelid scats. Scats will often contain food remains including fur, feathers, bone, plant content and seeds. Scats vary tremendously in size, shape and colour, and establishing a positive identification can be challenging. Scats are placed in latrines at well-used dens (e.g. on lids of den boxes), as well as at sites elsewhere in an individual's home range, where they probably fulfil a social communication role.
- Footprints – The five-toed but slightly cat-like forefoot imprints measure approximately 40 x 45 mm for females and 55 x 65 mm for males; fur on the underside of feet in winter may blur prints and make them look larger, especially in soft snow. Indistinct trails of bounding martens (stride length 60-100 cm) may resemble those of hares, with prints in groups of two or three where one or both hind feet have registered over prints of forefeet.



- Den sites – Dens are usually not distinctive unless revealed by visible concentration of scats. Elevated den sites are preferred to keep martens safe from predators and provide insulation and shelter from the elements, and so hollow trees, owl boxes and the roofs of dwelling houses are often used, as well as purpose-built pine marten den boxes. Where such elevated dens are absent, they may den on the ground in rabbit burrows, rocky outcrops or under tree root plates.

1.1.16. Any potential or confirmed field signs were recorded using a handheld GPS and was later mapped using spatially accurate Ordnance Survey maps on QGIS.

Badger

1.1.17. Surveys for badger (*Meles meles*) were undertaken on potential habitat throughout the Site as part of the protected species surveys. Field signs for badger as described in Scottish Badger (2018)⁷ guidance were searched for, including:

- Setts – an underground structure which are often comprised of several tunnels and entrance holes. Spoil heaps and used bedding can be located outside of entrance holes. Badgers can use several different types of setts in different capacities and in varying levels of use.
- Hairs – badgers have distinctive guard hairs which are frequently found in spoil heaps, caught along fences/barbed wire or in dense vegetation (i.e. brambles). Guard hairs are unique to badgers and are around 70mm long, oval in cross section and coarse/wiry in texture.
- Latrines - faeces are often deposited in dung pits at discrete locations. These are known as latrines and are often used as markers to delineate territories from other social groups. Badger dung has a distinctive sweet / musky smell.
- Foraging signs – snuffle holes are holes where badgers have inserted their noses into vegetation during foraging for earthworms. Other foraging signs may include scrapes and digging – however, other species (rabbit, deer and pheasants) may also leave similar foraging evidence.
- Tracks – badgers have characteristic footprints that can be found in soft ground and muddy areas. Badger paws have five toes and long sharp

⁷ Scottish Badgers (2018). *Surveying for Badgers: Good Practice Guidelines*. Version 1



claws; prints will show all five toes and claw marks, as the claws are not retractable. Footpad is a distinctive kidney shape.

- Paths – Badgers are highly territorial and faithfully use the same pathways and commuting routes. This results in the formation of distinctive paths, pathways are generally wider than other mammal paths and will continue over/under fallen obstacles and thick vegetation.

Results

Habitats

1.1.18. Results of the 2023 and 2024 habitat surveys are shown in Figure 8.1 and 8.2. Notable habitats are further described in Chapter 8 of the EIAR. Included in Section 1.2 and 1.3 of this technical appendix are additional information regarding Whitehill Moss vegetation communities and the habitat report for the 2024 access track surveys.

1.1.19. Table 2 below provides a list of all botanical species recorded within the Site during the habitat 2023 and 2024 habitat surveys.

Table 2: Plant species recorded during habitat surevys at Balgray Wind Farm.

Common name	Latin name
Perennial ryegrass	<i>Lolium perenne</i>
Crested dog's-tail	<i>Cynosurus cristatus</i>
Yorkshire fog	<i>Holcus lanatus</i>
Common bent	<i>Agrostis capillaris</i>
Sweet vernal grass	<i>Anthoxanthum odoratum</i>
Red fescue	<i>Festuca rubra</i>
Soft rush	<i>Juncus effusus</i>
Stinging nettle	<i>Urtica dioica</i>
Creeping thistle	<i>Cirsium arvense</i>
Floating sweet-grass	<i>Glyceria fluitans</i>
Creeping bent grass	<i>Agrostis stolonifera</i>
marsh foxtail	<i>Alopecurus geniculatus</i>
European speedwell	<i>Veronica beccabunga</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Marsh bedstraw	<i>Galium palustre</i>
Fen bedstraw	<i>Galium uliginosum</i>
Sneezewort	<i>Achillea ptarmica</i>
Cow parsley	<i>Anthriscus sylvestris</i>



Water mint	<i>Mentha aquatica</i>
Wild raspberry	<i>Rubus idaeus</i>
Bramble	<i>Rubus fruticosus</i>
Fireweed	<i>Chamaenerion angustifolium</i>
Common sorrel	<i>Rumex acetosa</i>
Creeping buttercup	<i>Ranunculus repens</i>
Marsh horsetail	<i>Equisetum palustre</i>
Common heather	<i>Calluna vulgaris</i>
Purple moor-grass	<i>Molinia caerulea</i>
Cross-leaved heath	<i>Erica tetralix</i>
Tormentil	<i>Potentilla erecta</i>
Red bogmoss	<i>Sphagnum capillifolium</i>
Mat-grass	<i>Nardus stricta</i>
Sheep fescue	<i>Festuca ovina</i>
Heath bedstraw	<i>Galium saxatile</i>
Glittering Wood-moss	<i>Hylocomium splendens</i>
Springy turf-moss	<i>Rhytidiadelphus squarrosus</i>
Common lousewort	<i>Pedicularis sylvatica</i>
White clover	<i>Trifolium repens</i>
Common yarrow	<i>Achillea millefolium</i>
Goose corn	<i>Juncus squarrosus</i>
Flat-topped bogmoss	<i>Sphagnum fallix</i>
Blunt-leaved Bog-moss	<i>Sphagnum palustre</i>
Star sedge	<i>Carex echinata</i>
Deegrass	<i>Trichophorum cespitosum</i>
Carnation sedge	<i>Carex panicea</i>
Wavy hair-grass	<i>Deschampsia flexuosa</i>
Woollyfruit sedge	<i>Carex lasiocarpa</i>
Devil's-bit scabious	<i>Succisa pratensis</i>
Euphrasia spp	<i>Euphrasia spp</i>
Perennial quaking grass	<i>Briza media</i>
Marsh lousewort	<i>Pedicularis palustris</i>
Marsh byrum	<i>Byrum pseudotriquetrum</i>
Common butterwort	<i>Pinguicula vulgaris</i>
Round-leaved sundew	<i>Drosera rotundifolia</i>
Leontodon spp	<i>Leontodon spp</i>
Common self-heal	<i>Prunella vulgaris</i>
Bracken	<i>Pteridium aquilinum</i>



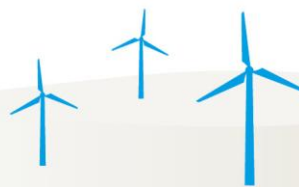
Sitka spruce	<i>Picea sitchensis</i>
Sycamore	<i>Acer pseudoplatanus</i>
Ash	<i>Fraxinus excelsior</i>
Timothy	<i>Phleum pratense</i>
Mouse-ear chickweed	<i>Cerastium fontanum</i>
Daisy	<i>Bellis perennis</i>
Downy birch	<i>Betula pubescens</i>
Creeping soft grass	<i>Holcus Mollis</i>
Wood sorrel	<i>Oxalis acetosella</i>
Red campion	<i>Silene dioica</i>
Male fern	<i>Dryopteris filix-mas</i>
Alder	<i>Alnus glutinosa</i>
Grey willow	<i>Salix cinerea</i>
Goat willow	<i>Salix caprea</i>
Tufted hair grass	<i>Deschampsia cespitosa</i>
Lady fern	<i>Athyrium filix-femina</i>
broad buckler-fern	<i>Dryopteris dilatata</i>
Dandelion spp	<i>Traxacum spp</i>
Beech	<i>Fagus sylvatica</i>
Opposite-leaved golden-saxifrage	<i>Chrysosplenium oppositifolium</i>
Broad-leaved enchanter's nightshade	<i>Circaea lutetiana</i>
Wood cow-wheat	<i>Melampyrum nemorosum</i>
Common tamarisk-moss	<i>Thuidium tamariscinum</i>
Herb-robert	<i>Geranium robertianum</i>
Marsh hawk's-beard	<i>Crepis paludosa</i>
Avens spp	<i>Geum spp</i>
Heath speedwell	<i>Veronica officinalis</i>
Water avens	<i>Geum rivale</i>
Phalaris spp	<i>Phalaris spp</i>
Sharp-flowered rush	<i>Juncus acutiflorus</i>
Birdfoot trefoil	<i>Lotus corniculatus</i>
Ribwort plantain	<i>Plantago lanceolata</i>
Heath Milkwort	<i>Polygala serpyllifolia</i>
False oat-grass	<i>Arrhenatherum elatius</i>
Bog bilberry	<i>Vaccinium uliginosum</i>
Bistort	<i>Bistorta officinalis</i>
Elder	<i>Sambucus nigra</i>
Creeping thyme	<i>Thymus praecox</i>



Annual meadow grass	<i>Poa annua</i>
Bittercress	<i>Cardamine flexuosa</i> ,
Green sedge	<i>Carex viridula</i>
Pointed Spear-moss	<i>Calliergonella cuspidata</i>
Fern-leaved Hook-moss	<i>Cratoneuron filicum</i>
Rough-stalked Feather-moss	<i>Brachythecium rutabulum</i>
Blue sedge	<i>Carex flacca</i>
Fern-leaved Hook-moss	<i>Cratoneuron filicinum</i>
Long-stalked yellow-sedge	<i>Carex lepidocarpa</i>
Germander speedwell	<i>Veronica chaemedrys</i>
Bitter vetch	<i>Lathyrus linifolius</i>
Mouse-ear hawkweed	<i>Pilosella officinarum</i>
Marsh cinquefoil	<i>Potentilla palustris</i>
Marigold	<i>Caltha palustris</i>
Water horsetail	<i>Equisetum fluviatile</i>
Branched bur-reed	<i>Sparganium erectum</i>
Fountain Apple-moss	<i>Philonotis fontana</i>
Bottle sedge	<i>Carex rostrata</i>
Short-fruited willowherb	<i>Epilobium obscurum</i>
Bugle	<i>Ajuga reptans</i>
Bog asphodel	<i>Narthecium ossifragum</i>
Rowan	<i>Sorbus aucuparia</i>
Common polypody	<i>Polypodium vulgate</i>
Hedge woundwort	<i>Stachys sylvatica</i>
Dog's mercury	<i>Mercurialis perennis</i>
False brome	<i>Brachypodium sylvaticum</i>
Hairy brome	<i>Bromus ramosus</i>
Common dog violet	<i>Viola riviniana</i>
Barren strawberry	<i>Potentilla sterilis</i>
Big shaggy-moss	<i>Rhytidiadelphus triquetrus</i>
Common Striated Feather-Moss	<i>Eurhynchium striatum</i>
Greater stitchwort	<i>Stellaria holostea</i>
Sweet woodruff	<i>Galium odoratum</i>
Eared willow	<i>Salix aurita</i>
Hawthorn spp	<i>Crataegus spp</i>
Hazel	<i>Corylus avellana</i>
Veronica spp	<i>Veronica spp</i>
Valeriana spp	<i>Valeriana spp</i>



Spring avens	<i>Geum vernum</i>
Ragged robin	<i>Lychnis flos-cuculi</i>
Pointed Spear-moss	<i>Calliergonella cuspidata</i>
Bitter dock	<i>Rumex obtusifolius</i>
Common dandelion	<i>Taraxacum officinale</i>
Lesser stitchwort	<i>Stellaria graminea</i>
Hare's-tail cottongrass	<i>Eriophorum vaginatum</i>
Papillose Bog-moss	<i>Sphagnum papillosum</i>
Ribbed bog moss	<i>Aulacomnium palustre</i>
Common cottongrass	<i>Eriophorum angustifolium</i>
Crowberry	<i>Epicoccum nigrum</i>
Yellow sedge	<i>Carex demissa</i>
Flea sedge	<i>Carex pulicaris</i>
Curled Hook-moss	<i>Palustriella commutata</i>
Comb-moss	<i>Ctenidium molluscum</i>
Garden Heliotrope	<i>Valeriana dioica</i>
Water hemlock	<i>Cicuta virosa</i>
Water horsetail	<i>Equisetum fluviatile</i>
Common knapweed	<i>Centurea nigra</i>
Greater tussock sedge	<i>Carex paniculata</i>
Fringed Bog-moss	<i>Sphagnum fimbriatum</i>
Common mare's tail	<i>Hippurus vulgaris</i>
Typha spp	<i>Typha spp</i>
Ragwort	<i>Senecio jacobaea</i>
Common bilberry	<i>Vaccinium myrtillus</i>
Heather spp	<i>Calluna spp</i>
Narrow buckler fern	<i>Dryopteris carthusiana</i>
Red-stemmed feathermoss	<i>Pleurozium schreberi</i>
Marshberry	<i>Vaccinium oxycoccos</i>
Heath Plait-moss	<i>Hypnum jutlandicum</i>
Common hair moss	<i>Polytrichum commune</i>
Green-ribbed sedge	<i>Carex binervis</i>
Lustrous Bog-moss	<i>Sphagnum subnitens</i>
Flexuous Bog-moss	<i>Sphagnum flexuosum</i>
Marsh violet	<i>Viola palustris</i>
Bogbean	<i>Menyanthes trifoliata</i>
Marsh orchid spp	<i>Dactylorhiza spp</i>
Twisted Bog-moss	<i>Sphagnum contortum</i>



Rusty hook moss	<i>Scorpidium revolvens</i>
Marsh thistle	<i>Cirsium palustre</i>
Arrowgrass spp	<i>Triglochin spp</i>
Common wood rush	<i>Luzula multiflora</i>
Heath spotted-orchid	<i>Dactylorhiza maculata</i>
Tawny sedge	<i>Carex hostiana</i>
Marsh grass of Parnassus	<i>Parnassia palustris</i>
Warnstorff's Bog-moss	<i>Sphagnum warnstorfi</i>
Yellow Starry Feather-moss	<i>Campylium stellatum</i>
Neat Feather-moss	<i>Pseudoscleropodium purum</i>
Bog stitchwort	<i>Stellaria alsine</i>
Snowberry	<i>Symphoricarpos albus</i>
Common wintergreen	<i>Gaultheria procumbens</i>
Couchgrass	<i>Elymus repens</i>
Wood speedwell	<i>Veronica montana</i>
Hart's-tongue Thyme-moss	<i>Plagiomnium undulatum</i>
Swan's-neck Thyme-moss	<i>Mnium hornum</i>
Cock's-foot	<i>Dactylis glomerata</i>
Himalayan balsam	<i>Impatiens glandulifera</i>

Blanket bog

- 1.1.20. Phase 1 habitat surveys identified several parcels of blanket bog within the Survey Area. Notes on condition, species composition and peat depth were recorded. Table 3 below details the target notes recorded for the areas of blanket bog present in the Site. Target Notes are shown in *Figure 8.6 Blanket Bog Target Notes*



Table 3: Notes on condition, species composition and peat depth

Target Note	Description
1	Overall typical wet heath on shallow peat (10cm) but <i>E.vaginatum</i> at high frequency over much of extent. Dominant species are <i>T.cespitosum</i> / <i>E.tetralix</i> / <i>C.vulgaris</i> . Abundant species <i>N.ossifragum</i> / <i>S.capillifolium</i> / <i>M.caerulea</i> . Frequent, <i>E.vaginatum</i> / <i>S.papillosum</i> / <i>J.squarrosus</i> . M17 derived
2	<i>E.vaginatum</i> constant. Sphagnum continuous (<i>S.capillifolium</i> / <i>S.papillosum</i>). <i>C.vulgaris</i> / <i>T.cespitosum</i> / <i>E.tetralix</i> / <i>N.ossifragum</i> all constant, none dominant in low open sward. On dry side and shallow peat (20-30cm) but M17.
3	More flushed; <i>E.vaginatum</i> dominant with <i>S.fallax</i> / <i>E.tetralix</i>
4	Peat rises again; <i>E.vaginatum</i> (A), <i>E.tetralix</i> (A). <i>N.ossifragum</i> (C). <i>vulgaris</i> (F)..Very hummocky; <i>Aulacomnium</i> / <i>P.commune</i> / <i>S.palustre</i> / <i>S.papillosum</i> . <i>V.oxycoccos</i> (F on hummocks. Clearly bog. Peat >1m.
5	Hummocky bog with occasional lower part supporting <i>Carex</i> / swamp community. At this point, peat lowers to produce <i>Carex</i> /swamp more extensively although considerable intergrading with hummocky bog vegetation
6	Large raised hummocks of <i>S.capillifolium</i> / <i>S.palustre</i> / <i>P.commune</i> with <i>E.tetralix</i> / <i>V.oxycoccos</i> / <i>N.ossifragum</i> , surrounded by <i>Carex</i> / <i>Menyanthes</i> / <i>Succisa</i> community running throughout lower ground between hummocks
7	Hummocky bog community dominant. On hummocks <i>E.vaginatum</i> dominant. <i>E.tetralix</i> / <i>N.ossifragum</i> / <i>V.oxycoccos</i> (C) <i>C.demissa</i> / <i>P.palustris</i> / <i>Succisa</i> / <i>Caltha</i> , between raised bog hummocks
8	<i>S.papillosum</i> / <i>P.commune</i> hummocks with <i>D.rotundiflora</i> / <i>E.tetralix</i> . <i>Molinia</i> frequent. Peat >1m saturated
9	Extensive area of deep peat with bog community. <i>E.vaginatum</i> (A). <i>E.tetralix</i> very abundant. Hummocks of etiolated bog Sphagnum with <i>V.oxycoccos</i> . Presumed <i>S.pap.</i> but <i>S.pal</i> / <i>S.mag</i> potentially present.
10	Hummocky bog community. Several hummocks supporting common <i>S.capillifolium</i> / <i>Aulacomnium</i> ./ <i>P.schreberi</i> <i>V.oxycoccos</i> / <i>E.tetralix</i> / <i>E.vaginatum</i> Mix of <i>S.palustre</i> / <i>S.fallax</i> (acid) or <i>C.cuspidatum</i> / <i>C.stellatum</i> / <i>Carex</i> (basic) irritating between tussocks
11	Very flushed here; carpets of <i>S.palustre</i> but species rich with much <i>V.officinalis</i> / <i>M.trifoliata</i> / <i>Succisa</i> / <i>Carex</i>
12	Species-rich with sheets of <i>S.palustre</i> . Like a species rich M6



13	Like a species rich M6 on lower ground (i.e more acidic). <i>S.palustre</i> A/ <i>S.fallax</i> F. <i>S.subnitens</i> noted. Hummocks of <i>P.commune</i> / <i>P.schreberi</i> .
14	Around edges of ombrogenous raised peat much of the community resembles M6 flush, dominated by <i>S.palustre</i> (and <i>P.commutata</i>).
15	Relict bog common on deep, saturated peat (M18), hydrologically influenced similar to transitional mire M9a in mosaic with ombrogenous on raised peat (M18 & M20) & transitional acid flush (M6). Bog & acid flush significantly enriched & herb rich
16	Proportion of bog community on deeper peat higher than enriched M9 mire but hydrologically influence very evident throughout
17	Peat 55cm. <i>E. vaginatum</i> (F). <i>S.capillifolium</i> (A) near continuous, saturated
18	Peat 55cm. <i>S.papillosum</i> / <i>S.capillifolium</i> near continuous carpet. <i>E.vaginatum</i> C. <i>E.tetralix</i> / <i>T.cespitosum</i> / <i>M.caerulea</i> / <i>C.vulgaris</i> / <i>N.ossifragum</i> (C), no species dominant. Occasional hummock <i>P.commune</i> .
19	Peat depth >50cm. <i>M.caerulea</i> / <i>E.tetralix</i> / <i>C.vulgaris</i> / <i>T.cespitosum</i> / <i>P.erecta</i>
20	Appears wet heath limited extent on slightly deeper peat; grades to M23 (not typical: <i>M.caerulea</i> at high cover). Patches of M15 have abundant <i>N.ossifragum</i> / <i>E.angustifolium</i> & <i>S.pratensis</i> . Peat often less than 50cm. No Sphagna present.
21	Whilst much of this area has reverted to M23b, significant areas are M15. At this location. <i>M.caerulea</i> dominant, <i>N.ossifragum</i> A/ <i>M.ca</i> / <i>P.erecta</i> is common alongside <i>S.pratensis</i> . Peat depths approximately 50cm, no Sphagna. <i>J.effusus</i> / <i>C.palustre</i> present indicating intergrade with M23.
22	<i>S.capillifolium</i> / <i>T.cespitosum</i> / <i>C.vulgaris</i> / <i>E.tetralix</i> / <i>M.caerulea</i> / <i>N.ossifragum</i> / <i>P.erecta</i> all very prominent. Although Juncus is present at high cover, it is incorrect to classify as M23. Closer to M15 than M23
23	Last TN (M17) only a very small area. Quickly degrades, with several hummocks of <i>P.commune</i> / <i>P.schreberi</i> & <i>M.caerulea</i> thickening up. However, peat is generally around 50cm, saturated with much <i>S.cap</i> and bog species. Good restoration potential.
24	Peat 60cm. <i>S.papillosum</i> / <i>S.capillifolium</i> near continuous, although poached/ several hummocks <i>P.commune</i> . <i>J.acutiflorus</i> (O). Sitka regeneration noted (occasional seedling). <i>E.vaginatum</i> (F). Other bog constants (F). Good restoration potential.
25	As previous TN. Clearly on dry side and grading towards wet heath, but Sphagnum near continuous, <i>E.vaginatum</i> (F) and peat depths consistently just over 50cm.
26	Generally, M15 but areas of deeper wet peat with abundant Sphagna & much <i>E.vaginatum</i> . Generally dry/poor condition bog but good restoration potential.



26	Large area continuous M15b. Peat c. 20cm. <i>S.capillifolium</i> / <i>S.papillosum</i> (A). Good condition wet heath
27	<i>E.vaginatum</i> at high cover for M15 but peat very shallow. <i>S.capillifolium</i> / <i>S.papillosum</i> (C) but patchy.
28	Reasonable condition M17. <i>V.oxycoccus</i> noted at location.
29	M17; patch in good condition. <i>S.papillosum</i> / <i>S.capillifolium</i> carpet
30	Bog in poor condition, grading towards M20b with large hummocks of <i>H.jutlandicum</i> / <i>P.schreberi</i> with <i>V.myrtillus</i> . Sphagnum still abundant around hummocks.
31	Wet heath community with abundant <i>J.acutiflorus</i> . Hummocks of <i>S.capillifolium</i> / <i>H.jutlandicum</i> / <i>P.commune</i> recalls M20b but virtually no <i>E.vaginatum</i> .
32	M15b with abundant <i>J.acutiflorus</i> on peat >50cm. Saturated with high Sphagnum cover but many hummocks <i>H.jutlandicum</i> / <i>P.commune</i> (with <i>V.myrtillus</i>). <i>M.caerulea</i> at high cover. <i>E.tetralix</i> A. <i>T.cespitosum</i> / <i>C.vulgaris</i> (F). Degraded bog
33	<i>E.vaginatum</i> (C) but Sphagnum patchy, dry (raised ground). Peat very shallow
34	Peat depth variable, wet. <i>E.vaginatum</i> (C). <i>S.capillifolium</i> / <i>S.papillosum</i> at high cover. Good restoration potential.
35	Peat depth >50cm. <i>E.vaginatum</i> / <i>M.caerulea</i> (A). Very little Sphagnum, other bog associates common.
36	On raised ground.
37	<i>E.vaginatum</i> dominant large hummocks <i>P.schreberi</i> / <i>Polytrichum</i> / <i>P.commune</i> with <i>S.fallax</i> between (some <i>S.capillifolium</i>). Peat >50cm.
38	Area mainly M15b some M20b Sphagnum variant. Peat <50cm.
39	<i>E.vaginatum</i> C. Peat >50. Poor Sphagnum- mainly <i>S.fallax</i> .
40	Peat >50. <i>E.vaginatum</i> dominant. <i>S.capillifolium</i> / <i>E.tetralix</i> / <i>M.caerulea</i> / <i>C.vulgaris</i> / <i>T.cespitosum</i> all common. M17 going towards M20.
41	<i>E.vaginatum</i> dominant. Sphagnum (A); mainly <i>S.fallax</i> but some <i>S.capillifolium</i> . <i>E.tetralix</i> (C) / <i>C.vulgaris</i> (O). Grassy; <i>A.canina</i> / <i>M.caerulea</i> . Peat 10-20cm. Poor condition bog/flush. At edge small area <i>J.squarrosus</i> / <i>S.capillifolium</i> (U6a)
42	M15b on slope
43	On peat 10-20cm. <i>E.vaginatum</i> (C). <i>S.papillosum</i> / <i>S.capillifolium</i> extensive cover. Quite dry/ poached with common <i>J.squarrosus</i> . Floristics as M17 (near continuous <i>S.pap</i> / <i>S.cap</i> / <i>E.vaginatum</i> (C)/ <i>N.ossifragum</i> / <i>C.vulgaris</i> / <i>T.cespitosum</i> (C). <i>E.tetralix</i> (O)



44	Peat generally shallow but = 50cm at this location. <i>E.vaginatum</i> (A). <i>S.pap/S.cap</i> (A). Wet peat/ Sphagna, heavily poached.
45	Peat c1m. <i>E.vaginatum</i> (A). Fairly dry; <i>S.pap/S.cap</i> not as constant as elsewhere but abundant. Trampled/poached.
46	Peat shallow. Sphagnum less abundant (more <i>S.fallax</i>). <i>J.squarrosus</i> (F).
47	<i>E.vaginatum</i> absent. <i>T.cespitosum</i> strongly dominant. Grades to M25a
48	Grades to typical M15b
49	Shallow peat, quite dry. Sphagnum (A) but mainly <i>S.fallax</i> (although <i>S.cap/S.pap</i> (F). <i>E.vaginatum</i> (C) in places. <i>N.ossifragum/T.cespitosum/ E.tetralix/C.vulgaris</i> (A). Poached.
50	<i>J.effusus/S.fallax</i> in basin. Heavily grazed & poached (Sphagna pulled-up).

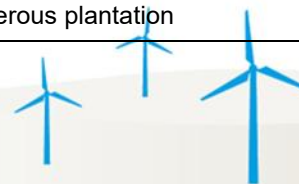
Protected Species

- 1.1.21. Target notes from the protected species surveys are presented in Table 4 below. Further information can be found in confidential Technical Appendix 8.6. Results are summarised in Chapter 8 of the EIAR.
- 1.1.22. Results of the protected species surveys are shown in Figure 8.3 and 8.4.

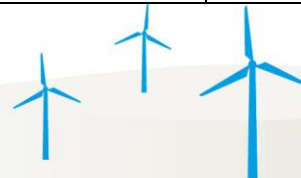


Table 4: Results of protected species surveys at Balgray Wind Farm.

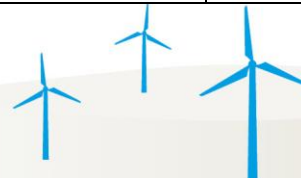
Label	Date	Easting	Northing	Species	Field sign	Notes
1	29/08/2023	315372	587959	Badger	Mammal path	Mammal path running across the pasture. Running west to east. passing under the fence. Potential badger path, however, no other field signs (guard hairs / latrines / snuffle holes) recorded.
2	29/08/2023	315263	587793	Bat sp.	Bat Roost Potential	Mature ash tree standing in field uphill off Kirkcroft Burn. Tree has several splits and knot holes offering Bat Roost Potential (BRP). Assessed as low potential habitat. The tree is sited in open habitat with woodland edge habitat nearby.
3	29/08/2023	315163	587792	Bat sp.	Bat Roost Potential	Mature ash tree standing in field uphill off Kirkcroft Burn. Tree has several splits and knot holes offering Bat Roost Potential (BRP). Assessed as low potential habitat. The tree is sited in open habitat with woodland edge habitat nearby.
4	29/08/2023	315260	587812	Badger	Snuffle holes	3-metre square area with past foraging activity present (snuffle holes) situated in good quality badger foraging habitat (permanent pasture).
5	29/08/2023	315300	587803	Bat sp.	Bat Roost Potential	Mature ash tree standing in field uphill off Kirkcroft Burn. Tree has several splits and knot holes offering Bat Roost Potential (BRP). Assessed as low potential habitat. The tree is sited in an open habitat with woodland edge habitat nearby.
7	29/08/2023	316404	586555	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation. The tree has several splits down main trunk and knot holes that offer bat roost potential. Open hillside to southeast and northeast. With nearby woodlands offering good edge habitat for foraging.
8	29/08/2023	316406	586555	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
9	29/08/2023	316402	586552	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation



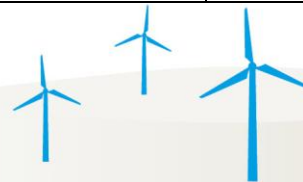
10	29/08/2023	316400	586547	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
11	29/08/2023	316402	586540	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
12	29/08/2023	316393	586529	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
13	29/08/2023	316395	586524	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
14	29/08/2023	316391	586521	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
15	29/08/2023	316389	586516	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
16	29/08/2023	316386	586511	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
17	29/08/2023	316383	586507	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
18	29/08/2023	316379	586503	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
19	29/08/2023	316377	586500	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
20	29/08/2023	316366	586492	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
21	29/08/2023	316363	586489	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
22	29/08/2023	316360	586485	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
23	29/08/2023	316352	586483	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation



24	29/08/2023	316353	586482	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
25	29/08/2023	3163507	58647	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
26	29/08/2023	316343	586477	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
27	29/08/2023	316336	586475	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
28	29/08/2023	316322	586488	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
29	29/08/2023	316350	586488	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
30	29/08/2023	316317	586498	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
31	29/08/2023	316312	586508	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
32	29/08/2023	316304	586515	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
33	29/08/2023	316294	586521	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
34	29/08/2023	316288	586523	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
35	29/08/2023	316277	586527	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
36	29/08/2023	316258	586528	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
37	29/08/2023	316244	586531	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation



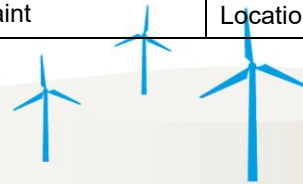
38	29/08/2023	316222	586543	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
39	29/08/2023	316214	586547	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
40	29/08/2023	316199	586551	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
41	29/08/2023	316190	586555	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
42	29/08/2023	386558	516183	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
43	29/08/2023	316177	586561	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
44	29/08/2023	316172	586562	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
45	29/08/2023	316164	586568	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
46	29/08/2023	316163	586572	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
47	29/08/2023	316161	598658	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
48	29/08/2023	316228	586550	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
49	29/08/2023	316228	586550	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
50	29/08/2023	316154	586600	Bat sp.	Bat Roost Potential	Mature beech tree along the perimeter edge of post felled coniferous plantation
53	29/08/2023	316094	586788	Badger	Snuffle holes	Evidence of recent foraging activity by badger. Snuffle holes recorded at the north-east edge of Sitka plantation. A



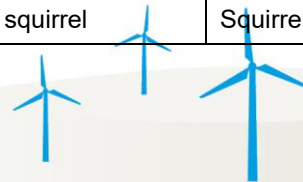
						mammal path next to snuffle holes leads north, passing under a fence into open hillside. No latrines were observed.
54	29/08/2023	316098	586754	Squirrel	Feeding sign	Four spruce cones on ground indicating evidence of past squirrel feeding activity. Located within semi mature Sitka spruce plantation. Plantation is densely planted with low cone crops at time of surveying.
55	29/08/2023	316094	586713	Squirrel	Feeding sign	Six spruce cones on ground showing evidence of past squirrel feeding activity. Located within semi mature Sitka spruce plantation. Plantation is densely planted with low cone crop at time of surveying.
56	29/08/2023	316090	586677	Badger	Snuffle holes	Past foraging activity - snuffle holes. Activity does not appear to be recent, evidence recorded within Sitka spruce plantation.
59	29/08/2023	315947	586795	Badger	Latrine	Badger latrine with dung present, looks fresh with musky smell. Located along north edge of spruce plantation. Snuffle holes also present at same location, covering a 3m ² area. Badger path present, going under fence to open hillside.
62	14/09/2023	317515	587396	Badger	Latrine	Two latrines at the northern edge of plantation. One latrine with fresh dung indicating recent activity, second latrine with old dung. Evidence of fresh foraging activity/ snuffle holes covering approximately 3m ² area.
63	14/09/2023	317516	587387	Squirrel	Feeding sign	Single old spruce cone showing evidence of squirrel feeding.
65	14/09/2023	317290	587334	Badger	Snuffle holes	Single snuffle hole and other foraging activity within coniferous plantation.
66	14/09/2023	317113	587319	Badger	Latrine	Two latrines and foraging activity located at the northern edge of the coniferous plantation. Recorded close to fence line.
67	14/09/2023	317106	587324	Badger	Tracks/footprints	The mammal path leading under fence in a northerly direction into open hillside habitat.



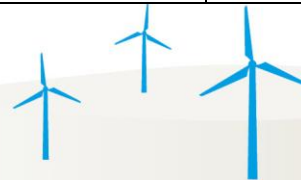
68	14/09/2023	317619	587451	Otter	Suitable habitat	Small loch/standing body of water within buffer area next to Hogg Hill. Suitable habitat for otters and water vole. Surrounded by willow trees with <i>Juncus</i> sp present.
69	14/09/2023	317335	587820	Badger	Snuffle holes	Snuffle holes and signs of foraging within the bracken on the east facing slope of Firtree Hill.
70	14/09/2023	317323	587991	Reptile sp.	Other	Visual sighting of common lizard (<i>Zootoca vivipara</i>) on the northeast slope of Firtree Hill. Habitat is acid grassland mosaic with bracken and heather.
71	14/09/2023	317284	588028	Badger	Burrow/hole	Past digging activity, large hole approximately 20x20cm into east facing slope of hillside within an area of bracken. Typical of badger setts. The ground was noted to be hard; possibly a result of abandonment due to stoney ground offering unsuitable habitat for sett establishment. Badger foraging activity noted across hill side.
72	14/09/2023	317378	588199	Badger	Snuffle holes	Eight snuffle holes on east sloping hill side approximately 30m from woodland edge.
73	14/09/2023	317390	588286	Squirrel	Feeding sign	Extensive forging signs (cones on forest floor) at the base of a mature Sitka spruce
74	20/11/2023	316594	588180	Water vole	Suitable habitat	Unnamed water course draining down to Hallhills Loch. The watercourse is densely vegetated with <i>Juncus</i> , and has a moderate flow. Low potential suitability for water vole inhabitation. No field signs recorded at the time of survey.
75	20/11/2023	316646	588560	Otter	Spraint	Otter spraints on southern bank of the Hewke burn. Bones and scales visible in spraint; noted to be old and not fresh.
76	20/11/2023	316654	588564	Water vole	Suitable habitat	Hewke Burn approx 1m wide and half meter deep. Slow flow rate and dense <i>Juncus</i> and meadowsweet along banks. Flows into Hallhills Loch. Potential water vole habitat, no field signs recorded.
78	20/11/2023	315581	588676	Otter	Spraint	Otter spraint on rock along southern bank of Hewke Burn. Location above small waterfall within a wooded glen. Spraint



						is old, watercourse high flow rate may have washed additional spraints away. Watercourse is shallow <30cm deep and approximately .2m wide.
79	20/11/2023	315566	588682	Otter	Spraint	Otter spraint on rock along the north bank of Hewke Burn below small waterfall within wooded glen.
80	20/11/2023	315578	588681	Bat sp.	Suitable habitat	Mature beech tree north bank of Hewke burn in wooded glen. Potential commuting corridor through glen with quality edge habitat, open hillside to north and south.
82	20/11/2023	316762	587724	Badger	Snuffle holes	Evidence of recent badger foraging activity >10 snuffle holes within grassland on open hillside
83	20/11/2023	316529	588980	Squirrel	Feeding sign	Six spruce cones on the plantation floor, showing evidence of past squirrel feeding activity. Mature Sitka spruce plantation offering suitable habitat to red squirrel.
84	20/11/2023	316681	588806	Squirrel	Feeding sign	Four spruce cones on the plantation floor, showing evidence of past squirrel feeding activity. Mature Sitka spruce plantation offering suitable habitat to red squirrel.
85	21/11/2023	315875	588683	Badger	Burrow/hole	Past digging activity indicates possible badger activity. Potentially an abandoned badger sett excavation due to rocky ground. Hole only goes back <30cm small spoil heap vegetated over in places. No recent digging. South facing hillside c.6m above Hewke Burn
86	21/11/2023	315422	588615	Badger	Latrine	Six latrines on north-west facing hillside with recent foraging activity recorded to. Grass hillside with some bracken patches. Path heading downhill (northwestern direction) towards wooded glen.
88	21/11/2023	316228	586550	Badger	Latrine	Badger latrines on hillside
89	26/09/2024	317347	588361	Red squirrel	Red squirrel	Squirrel feeding signs on ground at edge of Sitka plantation.
90	26/09/2024	317239	588377	Red squirrel	Red squirrel	Squirrel feeding signs (discarded cones on ground)



91	26/09/2024	317259	588442	Badger	Badger	Shallow snuffle holes within depression running through trees.
93	26/09/2024	317337	588463	Red squirrel	Red squirrel	Evidence of substantial feeding (discarded cones) by squirrel
94	26/09/2024	317536	588415	Red squirrel	Red squirrel	Low number of discarded cones on ground showing signs of squirrel feeding. No dreys at this location.
95	26/09/2024	317426	588445	Badger	Badger	Three sections of dug up ground where recent foraging activity has occurred. No latrines present
96	26/09/2024	317264	588534	Badger	Badger	Single snuffle hole on outskirts of plantation.
97	26/09/2024	317214	588681	Red squirrel	Red squirrel	Single discarded cone. No drey at this location.
98	26/09/2024	317277	588808	Red squirrel	Red squirrel	Low number of discarded cones on ground. No drey visible.
99	26/09/2024	317280	588808	Bird	Bird	Tree stump that has been used as plucking post. Feathers covering stump and surrounding ground.
100	26/09/2024	317674	589463	Red squirrel	Red squirrel	Discarded cones at base of semi-mature Sitka tree
101	26/09/2024	317679	589469	Amphibian		Small water body formed due to quarrying activities, evidence of breeding by common frogs with tadpoles (c. 50) present in pool.
102	26/09/2024	317413	588507	Red squirrel	Red squirrel	Extensive feeding evident, high number of discarded cones. No drey observed within the vicinity.
103	26/09/2024	317453	588613	Red squirrel	Red squirrel	Low number of discarded cones.
104	26/09/2024	317400	589039	Reptile	Reptile	Stone sheepfold in good condition but collapsed in a small section, potential hibernacula for reptiles & amphibians.
105	26/09/2024	317359	589050	Red squirrel	Red squirrel	Low number of discarded cones on forest floor. No drey seen at this location.



106	26/09/2024	317746	589624	Badger	Badger	Badger latrines (recent & old) present. Additional signs of badger activity include digging and snuffle holes.
107	26/09/2024	317746	589625	Badger	Badger	Foraging activity, slight spoil heap left from digging.
108	27/09/2024	317752	589687	Badger	Badger	Single snuffle hole in mossy ground.
109	27/09/2024	317787	589226	Red squirrel	Red squirrel	Feeding platform at top of tree stump. Discarded cones and seed husks present. .
110	27/09/2024	317778	589146	Bird	Bird	Egg shells present at base of mature Sitka. Species is unknown and nest unlikely active as b season.
111	27/09/2024	317621	589029	Red squirrel	Red squirrel	Potential feeding platform on tree stump. Not confirmed, potential to just be a single discarded cone.
112	27/09/2024	317575	588847	Badger	Badger	Extensive foraging present in mossy ground. Four similar sized foraging patches recorded.
113	27/09/2024	317448	588712	Red squirrel	Red squirrel	Single discarded cone at base of tree.
114	27/09/2024	317448	589091	Red squirrel	Red squirrel	Single discarded cone at base of tree.
115	27/09/2024	317465	589097	Red squirrel	Red squirrel	Feeding platform, with feeding debris recorded.
116	27/09/2024	317420	589125	Red squirrel	Red squirrel	Single discarded cone.



1.2. Whitehill Moss Hill Vegetation Community

Briefing Note Balgray NVC Survey: Interpretation of community present at Whitehill Moss

M9a *Carex rostrata*-*Calliergon cuspidatum/giganteum*
mire, *Campylium stellatum*-*Scorpidium scorpioides* sub-
community
Annex I: H7140
High GWDTe



- This area is mapped as M21, VM1 and species-rich M23/M23 sedge mire in previous survey.
- Here it is interpreted as a basin mire bog community on deep, saturated peat (closest to M18) which is extensively and intricately irrigated by groundwater.
- This creates a transitional mire (M9a), in fine mosaic with ombrogenous communities on raised bodies (islands) of peat (M18 and M20), with transitional areas of acid flush (M6). Both the bog and acid flush communities significantly enriched and herb rich.
- M9 is a transitional mire created where base rich water runs over peat. It is Annex I: H7140 Transition mire and High GWDTE
- Excerpt from Rodwell describes the situation at Whitehill Moss (Rodwell Volume 2 p.92);

Since base and calcium enrichment are strongly dependent on springs which debouch water from calcareous bedrocks the Carex-Calliergon mire [M9] occurs closely juxtaposed to calcifugous mire vegetation more remote from soligenous influence or elevated above the ground-water table on ombrogenous peats.

- It is evident that base-enrichment arises due to irrigation from base rich flushing to west (M10 flushes on slopes above basin mire and more diffuse base enrichment indicated by clear transition to species-rich communities on slopes above the basin mire; often with species community analogous to M10 but within a closed, *Juncus*-dominated sward). These are target-noted
- The ombrogenous blanket bog areas are present on islands of more raised peat (escaping much of the soligenous influence of GW, although enrichment is generally highly evident). Some of these areas are identified as M18 due to the presence of highly saturated, deep peat and high cover of *S.papillosum* and *V.oxycoccus* (these were identified as M21 on previous survey). The bog community on other peat bodies are more degraded M20 with acid flush in transition to areas with more basic flushing (M9).
- The M9 has been identified as sub-community M9a due to presence of bryophytes such as *Drepanocladus revolvens*, *Campylium stellatum* and base-tolerant *Sphagna* (*S.warnstorffii* & *S.contortum*); see table below. Also the short, open structure with high cover of short sedges (M9b would have a high, dense cover of tall mesotrophic herbs).
- It should be noted that the extensive area of M9a in the basin mire overlies very deep, highly saturated peat.



- There were occasional patches of *S.cinerea* scrub over the M9 *Carex* sward. This is relict W3 wet woodland (w1d/A2.1). See TNs. It is possible that this carr woodland would establish in the basin if grazing were reduced.
- Smaller areas of M9a were found around the edge of Hallhills Loch (including scrubby areas of relict W3). The hydrological regime producing the transition mire is less clear here. It may be due to periodic inundation by the loch but the influence of nearby soligenous input probably also plays a role.
- See Species list and photographs on following pages



Species Present in M9 Community at Whitehill Moss (with constancy/abundance data for the two sub-communities)

Community /sub-community	Species	Constancy value	Maximum abundance
M9a	<i>Bryum pseudotriquetrum</i>	II	3
M9b	<i>Bryum pseudotriquetrum</i>	II	3
M9a	<i>Calliergon cuspidatum</i>	IV	4
M9b	<i>Calliergon cuspidatum</i>	IV	7
M9a	<i>Caltha palustris</i>	II	3
M9b	<i>Caltha palustris</i>	V	3
M9a	<i>Campylium stellatum</i> var. <i>stellatum</i>	V	5
M9b	<i>Campylium stellatum</i> var. <i>stellatum</i>	II	4
M9a	<i>Carex demissa</i>	II	4
M9a	<i>Carex diandra</i>	II	7
M9b	<i>Carex diandra</i>	IV	7
M9a	<i>Carex paniculata</i>	I	4
M9b	<i>Carex paniculata</i>	I	4
M9a	<i>Climacium dendroides</i>	I	3
M9b	<i>Climacium dendroides</i>	II	4
M9a	<i>Cratoneuron commutatum</i>	I	2
M9b	<i>Cratoneuron commutatum</i>	I	3
M9a	<i>Cratoneuron filicinum</i>	I	3
M9b	<i>Cratoneuron filicinum</i>	I	3
M9a	<i>Ctenidium molluscum</i>	I	4
M9b	<i>Ctenidium molluscum</i>	I	1
M9a	<i>Drepanocladus revolvens</i>	IV	4
M9b	<i>Drepanocladus revolvens</i>	I	4
M9	<i>Equisetum fluviatile</i>	III	4
M9a	<i>Equisetum fluviatile</i>	III	4
M9b	<i>Equisetum fluviatile</i>	III	4
M9	<i>Equisetum palustre</i>	III	4
M9a	<i>Equisetum palustre</i>	III	4
M9b	<i>Equisetum palustre</i>	III	3
M9a	<i>Filipendula ulmaria</i>	I	3
M9b	<i>Filipendula ulmaria</i>	III	3
M9a	<i>Galium palustre</i> sens.lat.	III	3
M9b	<i>Galium palustre</i> sens.lat.	IV	4
M9a	<i>Galium uliginosum</i>	I	3
M9b	<i>Galium uliginosum</i>	III	3
M9a	<i>Juncus acutiflorus</i>	I	3
M9b	<i>Juncus acutiflorus</i>	II	3
M9a	<i>Mentha aquatica</i>	II	4
M9b	<i>Mentha aquatica</i>	IV	3
M9a	<i>Potentilla palustris</i>	IV	4



Community /sub-community	Species	Constancy value	Maximum abundance
M9b	Potentilla palustris	IV	4
M9a	Salix cinerea	II	3
M9b	Salix cinerea	II	5
M9a	Sphagnum contortum	III	4
M9b	Sphagnum contortum	I	1
M9a	Sphagnum subnitens	II	3
M9b	Sphagnum subnitens	I	1
M9a	Sphagnum warnstorffii	I	4
M9a	Succisa pratensis	III	3
M9b	Succisa pratensis	III	3
M9a	Valeriana dioica	II	4
M9b	Valeriana dioica	IV	4

Photos

1. M9a



2. M9a – showing peat depth >125cm



3. M9a – high *Carex* cover and base-tolerant *S.warnstorffii* & *S.contortum*



4. Raised ombrogenous peat bodies within M9



5. Raised ombrogenous peat bodies (M20) juxtaposed with M9a



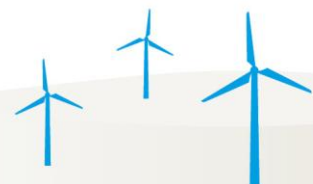
6. Sphagna hummocks within M9 mire (note high cover *V.oxycocos* and species richness due to GW influence)



7. Relict carr woodland (W3); *S.cinerea* scrub over *Carex* sward



7. M10 base-rich flush feeding GW to the basin mire from slopes to west



1.3. Access Track Habitat Report



Locogen Energy Services Ltd
Balgray Access Track
National Vegetation Classification Survey Report

Ref: CC01089/R1

September 2024

Prepared by:

Michael Hogg MSc, BSc(Hons), Ecologist

Kirsty Godsman PhD, ACIEEM, Senior Ecologist

Reviewed by:

Julie Smith BSc(Hons), Senior Ecologist

Caledonian Conservation Ltd
E: info@caledonianconservation.co.uk
T: 01786 836961
M: 07789 77 11 66
A: Office 2 and 3, Craigarnhall
Bridge of Allan, Stirling, FK9 4NG



Contents

Summary	1
Introduction	2
1 Legislation and Conservation Status.....	3
1.1 The UK Withdrawal from the European Union (Continuity) (Scotland) Act 2020	3
1.2 The Habitats Directive and Habitats Regulations	3
1.3 The Wildlife and Countryside Act 1981 (as amended).....	3
1.4 Nature Conservation (Scotland) Act 2004 and Scottish Biodiversity List	3
1.5 Local Biodiversity Action Plan	4
1.6 Water Framework Directive.....	4
2 Methodology	5
2.1 National Vegetation Classification (NVC) Survey	5
2.2 Survey Limitations.....	5
3 Results	6
3.1 National Vegetation Classification (NVC) Survey	6
3.2 Invasive Non-native Species	13
4 Conclusion.....	14
5 Recommendations.....	16
6 References	18
APPENDIX 1: Figures	19
APPENDIX 2: Correspondence with UK Habitat Classification.....	25

Summary

Caledonian Conservation Ltd was commissioned by Locogen Energy Services Ltd to carry out a National Vegetation Classification (NVC) survey for a proposed access track near Boreland, Dumfries and Galloway.

The survey work was undertaken on 9th and 12th September 2024 and involved mapping habitats following NVC classification. The purpose of the survey was to identify habitats listed under Annex I of the Habitats Directive, as well as potential Groundwater Dependent Terrestrial Ecosystems (GWDTEs).

Further, forestry operations, including construction of access roads and planting operations have the potential to negatively impact the sensitive habitats identified during surveys.

Recommendations have been made in Section 5.

Introduction

Caledonian Conservation Ltd was commissioned by Locogen Energy Services Ltd to carry out a National Vegetation Classification (NVC) survey for a proposed access track near Boreland, Dumfries and Galloway (approximate central grid reference BNG NY 17549 89139), hereafter referred to as “the site”.

The survey area comprised a 200 m survey buffer of the proposed access track. The survey area is shown in Appendix 1, Figure 1.

The purpose of the NVC survey was to identify habitats corresponding to those listed under Annex I of the Habitats Directive, as well as potentially Groundwater Dependent Terrestrial Ecosystems (GWDTEs).

The NVC survey was carried out by Michael Hogg (Ecologist) on the 9th and 12th September 2024; This report was prepared by Michael Hogg. Mapping using ArcGIS Pro was completed by Kirsty Godsman (Senior Ecologist). The report was reviewed by Julie Smith (Senior Ecologist).

This report details the results of these surveys, potential ecological constraints and recommendations.

■ **Legislation and Conservation Status**

The following section summarises relevant legislation and other relevant conservation status categories.

○ **The UK Withdrawal from the European Union (Continuity) (Scotland) Act 2020**

EU Directives (see Habitats and Birds Directives described below) are transposed into UK law by the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland) and domestic legislation continues to be aligned after Scotland left the European Union with the UK through The UK Withdrawal from the European Union (Continuity) (Scotland) Act 2020.

○ **The Habitats Directive and Habitats Regulations**

The Habitats Directive identifies plant species (Annex V) and habitats (Annex I) which require conservation. Another major provision of the Directive is the identification and classification of Special Areas of Conservation (SACs) for rare or vulnerable species and habitats.

In Scotland, the Habitats Directive is translated into specific legal obligations by the Habitats Regulations. The Regulations provide for the designation and protection of 'European sites', the protection of 'European protected species' (EPS) and the adaptation of planning and other controls for the protection of European sites. Sites may be designated for habitats that are listed on Annex I of the Habitats Directive. A list of Annex I habitats and Annex II species occurring in the UK is available online.

The protection of European plant species in Great Britain is covered by the Conservation (Natural Habitats, &c.) Regulations, 1994, Part II, Regulations 42-46, with the wild plant species listed on Schedule 4.

○ **The Wildlife and Countryside Act 1981 (as amended)**

The Wildlife and Countryside Act 1981 (as amended in Scotland) is the primary legislation protecting animals, plants, and certain habitats in the UK.

Under Schedule 8, it is an offence to:

- Intentionally pick, uproot or destroy any listed wild plant; or
- Possess, sell or advertise for sale any listed wild plant (live or dead) or any part of or anything derived from such a plant.

Non-native species

Under the Wildlife and Countryside Act 1981 (as amended in Scotland by the Wildlife and Natural Environment (Scotland) Act 2012), it is an offence to:

- plant, or otherwise cause to grow, a plant in the wild at a location outside its native range.

○ **Nature Conservation (Scotland) Act 2004 and Scottish Biodiversity List**

This Act places a duty on every public body to further the conservation of biodiversity consistent with the proper exercise of their functions. It requires Scottish Ministers to designate one or more strategies for the conservation of biodiversity as the Scottish Biodiversity Strategy and to publish lists of species of flora, fauna and habitats of principle importance.

The Scottish Biodiversity List (SBL) is a list of animals, plants and habitats that Scottish Ministers consider to be of principal importance for biodiversity conservation in Scotland. The development of the list has been a collaborative effort involving species experts and is a tool to help public bodies carry out their Biodiversity Duty. The SBL was developed to meet the requirements of Section 2 (4) of the Nature Conservation (Scotland) Act 2004 for the conservation of biodiversity and, along with biodiversity lists from other UK countries, supersedes the UK Biodiversity Action Plan. Public bodies must consider SBL species and habitats when reporting on their 'Biodiversity Duty' (as defined and required by the Nature Conservation (Scotland) Act 2004 and Wildlife and Natural Environment (Scotland) Act 2011).

Under section 3 of the Nature Conservation (Scotland) Act 2004, areas of land with recognised special interest for their flora, fauna, geology, or geomorphology can be established as Sites of Special Scientific Interest (SSSI). This statutory designation protects these sites from intentional or reckless damage and the site's natural features must be managed appropriately.

- **Local Biodiversity Action Plan**

Local Biodiversity Action Plans (LBAP) are used to protect and enhance biodiversity and inform planning decisions. They identify priority habitats and species requiring conservation within a local area and recommend targeted conservation work for these priority species. The relevant LBAP for this site is the Dumfries and Galloway Local Biodiversity Action Plan (Norman, 2009).

- **Water Framework Directive**

The Water Framework Directive (WFD) sets out objectives to protect, enhance and restore surface water, groundwater and water dependent protected areas. Groundwater Dependent Terrestrial Ecosystems (GWDTEs) are wetlands which are dependent on groundwater. They are protected by the WFD as they are sensitive to hydrological changes resulting from development. For this reason, some activities require a licence from the Scottish Environment Protection Agency (SEPA) (SEPA, 7 2017).

■ Methodology

○ National Vegetation Classification (NVC) Survey

Surveying habitats to NVC level allows identification of habitats corresponding with those listed on Annex I of the Habitats Directive. In addition, NVC survey ensures that any potential GWDTEs are identified in accordance with SEPA guidance (SEPA, 2017).

The NVC survey was undertaken on 9th and 12th September 2024. The survey area comprised the access track plus a 200 m buffer (Figure 1, Appendix 1).

The NVC survey was completed following the methods described in Rodwell (2006). Aerial photos were reviewed prior to the field survey in order to give an overview of the survey area and to identify broad distributions of vegetation types. A field survey was undertaken, noting the NVC communities and mosaics present. Where appropriate, 2 m x 2 m quadrats were used to collect data for comparison with published species accounts. Otherwise, the DAFOR dominance scale was used to record a list of the vegetation assemblage present for examples of each habitat type. Habitats were classified to NVC level based on published descriptions (Averis *et al.*, 2004; Rodwell, 1991a; 1991b; 1992; 2001) and mapped in the field.

Vascular plant species names (common and scientific) follow Stace (2019) and bryophyte names follow Blockeel *et al.* (2021). Descriptions of each of the NVC communities present within the survey areas were also recorded.

Although all habitats present were identified and mapped, particular attention was paid to identifying habitats of ecological importance such as those corresponding with habitats listed on Annex I of the Habitats Directive and potential GWDTEs.

Any invasive non-native plant species (INNS) present within the survey area were noted, although a specific survey for non-native invasive species was not undertaken.

○ Survey Limitations

The NVC survey was not carried out during peak flowering times of June to July for the dominant habitats, so some species which are present during the spring and summer months may have been overlooked or were no longer present during September. However, vegetative identification is still possible for many species outside of peak flowering times in order to classify the habitat types present.

Access was arranged by the client and was good overall. A small area of ground to the north of the site was not accessed. This area encompasses a residential area on private ground, and to the north of the site beyond the B723 included some agricultural fields with some rough grazing.

These limitations are not considered to have had a significant impact on the results of the survey and no other potential limitations to the survey were identified.



▪ Results

○ National Vegetation Classification (NVC) Survey

The following sections describe the results of the NVC Survey.

A total of 15 different vegetation communities and a single area of unvegetated ground were recorded during the survey. Of these communities, three correspond with habitats included on Annex I of the Habitats Directive (though all are very poor matches), eight correspond with SBL priority habitats (two poor matches) and four communities were identified as being potential GWDTEs.

For many of the plant communities identified there is no direct match within the NVC as defined by Rodwell (1991a, 1992), but several correspond with communities identified by Averis & Averis (2020). A small number of communities could not be assigned to any previously recognised community, and are simply described.

The site is dominated by non-NVC plantation forestry, with grassland and some flush communities. Botanically, the habitats were species poor in most parts.

The site is subject to historic and recent human and land management practises, including tracks and paths, and there is evidence of ongoing disturbance.

There is little evidence of grazing on site, though deer are noted to pass through.

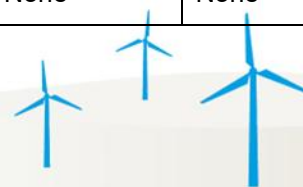
There is considerable non-native regeneration on site, mainly within the areas of cleared forestry. Grazing and browsing pressure is regarded as low on site, and willow regeneration was also extensive. There were scattered examples of hawthorn (*Crataegus monogyna*), rowan (*Sorbus aucuparia*), oak (*Quercus sp.*) and birch (*Betula sp.*).

An overview of the vegetation communities is presented in Table 1. A description of the recorded NVC communities (and sub-communities where applicable) is provided below. The mapped NVC communities are shown in Appendix 1, Figure 2. Communities that are identified as sensitive are shown in Appendix 1, Figures 3 to 5.



Table 1. Summary of vegetation communities recorded during the NVC survey with corresponding Annex I habitat, Scottish Biodiversity List priority habitat and potential groundwater dependence where relevant.

NVC Code	NVC Title	Corresponding Annex I Habitat	Scottish Biodiversity List Priority Habitat	GWDTE
M23a	<i>Juncus effusus/acutiflorus</i> – <i>Galium palustre</i> rush pasture, <i>Juncus effusus</i> sub-community	None	Upland flushes, fens & swamps	High
MG1a	<i>Arrhenatherum elatius</i> grassland, <i>Festuca rubra</i> sub-community, <i>Epilobium angustifolium</i> variant	None	None **	None
MG9 acid	<i>Holcus lanatus</i> – <i>Deschampsia cespitosa</i> grassland (acid form)	None	Coastal & floodplain grazing marsh	Moderate
MG10a	<i>Holcus lanatus-juncus</i> <i>effusus</i> rush pasture, typical sub-community	None	Coastal & floodplain grazing marsh	Moderate
OV24	<i>Urtica dioica</i> – <i>Galium</i> <i>aparine</i> community	None	None	None
U2	<i>Deschampsia flexuosa</i> grassland	None	Lowland dry acid grassland	None
W1 Scr	<i>Salix cinerea</i> scrub with a W7-type ground flora	None	Wet woodland	Moderate
W11 alder	<i>Quercus petraea</i> – <i>Betula</i> <i>pubescens</i> – <i>Oxalis</i> <i>acetosella</i> woodland (Non-NVC alder dominated form)	H91A0 Western acidic oak woodland	Lowland wood pastures and parkland	None
W17	<i>Quercus petraea</i> – <i>Betula</i> <i>pubescens</i> – <i>Dicranum</i> <i>majus</i> woodland	H91A0 Western acidic oak woodland	Upland birchwoods / Upland oakwood	None
W18	<i>Pinus sylvestris</i> – <i>Hylocomium splendens</i> woodland	H91C0 Caledonian forest / H91D0 Bog woodland	Native pinewoods	None
QF	Non-NVC community	None	None	None



NVC Code	NVC Title	Corresponding Annex I Habitat	Scottish Biodiversity List Priority Habitat	GWDTE
	<i>Quarry Face</i>			
RI	<i>Non-NVC community Rubus idaeus scrub</i>	None	None	None
SB	<i>Non-NVC community Stony Bank</i>	None	None	None
SF	<i>Non-NVC community Sitka Forestry</i>	None	None	None
Track	<i>Non-NVC community Access track</i>	None	None	None
*Groundwater Dependent Terrestrial Ecosystems (GWDTE) are identified as potential GWDTE. ** MG1 grassland is only included within the Scottish Biodiversity List as coastal grassland, which does not apply on this site.				

Annex I Habitats

None of the three communities identified as being potential matches for Annex 1 habitats are considered a good match. The reasons for this are discussed below.

H91A0 Western acidic oak woodland

W11 *Quercus petraea*-*Betula pubescens*-*Oxalis acetosella* woodland

W11 woodland typically has a canopy of sessile oak, with often abundant ash, particularly in lowland sites, with a grassy understorey. On this site, whilst the grassy understorey is present, the oaks present are small, pole stage trees, and have been planted, and the largest trees are alder and ash. Averis & Averis (2020) consider that this woodland mixture would either correspond to an ash dominated, drier form of W9, or to an alder dominated form of W11. Since in this woodland area the ash trees all show signs of infection with ash dieback fungus (*Hymenoscyphus fraxineus*), and are either dead or dying, the latter classification is preferred. However, since this woodland lacks the dominant canopy tree of a typical W11, it is considered a poor match for Western acidic woodland, and has been mapped here as 'W11 alder'.

The W11 alder community is discussed further under 3.1.2.5

W17 *Quercus petraea*-*Betula pubescens*-*Dicranum majus* woodland

The W17 classification within the survey area applies only to the ground flora of the more shaded woodland rides within the Sitka spruce forestry plantation. The canopy species *Quercus petraea* and *Betula pubescens* are absent. The ground flora is more fern rich, with *Dryopteris dilata* and *Dryopteris filix-mas*, *Athyrium filix-femina*, *Holcus mollis*, *Ajuga reptans*, *Urtica dioica*, *Oxalis acetosella*, and a covering of bryophytes including *Thuidium tamariscinum*, *Polytrichastrum formosum*, *Kindbergia praelonga* and *Pleurozium schreberi*., together with abundant dog's-tooth lichen. It has a much



greater vegetation cover than within the plantation stands, but cannot be considered to be a good match for Western acidic oak woodland.

The W17 classification is discussed further under section 3.1.2.6

H91C0 Caledonian forests / H91D0 Bog woodland

W18 *Pinus sylvestris*-*Hylocomium splendens* woodland

The single stand of Scots pine trees at the north end of the site consists of a dozen trees of even aged mature trees, and the understorey is not typical of any of the usual sub-communities of W18. It is considered that this stand is of planted, rather than natural origin, and is a poor match for either Caledonian forest or Bog woodland. It is discussed further under 3.1.2.7

Scottish Biodiversity List (SBL) Habitats

Upland flushes, fens and swamps

M23 *Juncus effusus/acutifloris* – *Galium palustre* rush-pasture

The majority of the M23 vegetation on site is considered most characteristic of M23b *Juncus effusus* subcommunity, which is more species poor than the M23a *Juncus acutiflorus* subcommunity. M23a is listed under SBL Upland flushes, fens and swamps. *Juncus acutiflorus* dominated M23 vegetation was recorded in just one location from the site, adjacent to an area of willow scrub. The community comprised a sward of *Juncus acutiflorus* with frequent *Deschampsia cespitosa* and *Filipendula ulmaria*. It is described further under section 3.2.3.

This community occurred within the site as wet areas in woodland rides, and in some areas occurred as part of a mosaic with *Holcus mollis* grassland.

Coastal and floodplain grazing marsh

MG9 *Holcus lanatus*-*Deschampsia cespitosa* grassland

This is a coarse sward of mixed grasses on damp soils, primarily dominated by *Holcus lanatus* and *Deschampsia cespitosa*, but with a mixed herbaceous flora, the exact composition of which varied across the site, but comprised mainly of *Rumex acetosella*, *Juncus effusus*, *Epilobium montanum*, *Urtica dioica*, *Filipendula ulmaria*, *Ranunculus repens*, *Digitalis purpurea*, *Dactylis glomerata* and *Agrostis capillaris*. Within this typical mix of species some acidophilous species were also frequent, including *Potentilla erecta* and *Galium saxatile*. Averis & Averis (2020) describe this mix as an acid form of MG9 that is common in woodland margins and cleared forestry. This form is not described specifically under the SBL, but should be considered as part of the category because of its species richness.

It has been mapped as 'MG9 acid' where it occurs alone, and as 'MG9' when it is part of a mosaic, but all examples seen were of the acid form. It occurred frequently within the survey area, adjacent to the access track in the south of the site, and within cleared forestry areas in the north of the site.

MG10a *Holcus lanatus*-*juncus effusus* rush pasture, typical sub-community.

This vegetation is *Juncus effusus* dominated, without the *Deschampsia cespitosa* co-dominance of M23 rush pasture. It is a species poor sward, though of importance to some species of birds and invertebrates. It occurs in two small areas of the site: a wet ditch line running along a dry stone wall at the extreme southern end of the survey area, and as a small vegetated hollow in the north-east of the site, where it is



being colonised by *Chamaerion angustifolium*. Neither area is of high conservation value.

Lowland dry acid grassland

U2 *Deschampsia flexuosa* grassland.

This community is present as a single dry grassland area on higher ground than its surroundings, in the northeast of the site. The dominant grasses are *Avenella flexuosa* and *Agrostis capillaris*, with a mix of *Holcus lanatus*, *Dactylis glomerata*, *Potentilla erecta*, *Campanula rotundifolia* and *Cerastium fontanum*. It is not particularly species-rich, and is at risk of colonisation by species from adjacent habitats.

Wet woodland

W1 *Salix cinerea* scrub with a W7-type ground flora

Salix cinerea woodland falls into the wet woodland category of SBL priority habitat. Grey willow (*Salix cinerea*) was the only willow species recorded in the survey. It is mapped as W1 Scr (as per Averis & Averis, 2020), being a scrub form of true W1 woodland, since the ground flora does not match that of the typical W1 community. The field layer is more typical of W7 *Alnus glutinosa*-*Fraxinus excelsior*-*Lysimachia nemorum* woodland, with frequent *Holcus mollis*, *Filipendula ulmaria*, *Ranunculus repens* and *Cirsium palustre*.

This community also occurs as scattered individual trees and small saplings across the site, especially bordering the access track. Willow scrub may therefore be regarded as being present within all of the plant communities that border the track, but as a very low percentage (<5%) of those communities. It is therefore only recorded on the map as two areas wherein it is the dominant plant community.

Lowland wood pastures & parkland

W11 *Quercus petraea*-*Betula pubescens*-*Oxalis acetosella* woodland

This woodland area appears to be a planted mix, being made up almost entirely of young, pole-stage trees, mainly *Fraxinus excelsior*, *Alnus glutinosa*, *Quercus robur* and *Sorbus acuparia*, though two mature *Picea sitchensis* are also present. The woodland lacks a shrub layer, and is fairly open, made more so by the dead and dying *Fraxinus excelsior*. Being a relatively young woodland it lacks the rich understorey and bryophyte flora of a more mature woodland, but the presence of standing dead trees may contribute some biodiversity value for invertebrates and fungi, as well as nesting sites for birds and bats.

Upland birchwoods / Upland oakwood

W17 *Quercus petraea*-*Betula pubescens*-*Dicranum majus* woodland

As described in 3.2.2.1 these communities have been defined on the basis of their ground flora only, in order to distinguish them from the extremely species-poor communities of the forestry stands. Since they lack both oak and pine they are considered a very poor match for the SBL communities in this instance.

Native pinewoods

W18 *Pinus sylvestris*-*Hylocomium splendens* woodland



As discussed above, these stands appear to be planted woodland, and are a poor match for SBL Native pinewoods. The ground flora in the drier stand is nettle dominated, indicating soil nutrient enrichment, and in the wetter stand a mix of fern-dominated vegetation and *Geum rivale*, with frequent *Epilobium palustre*, *Ranunculus repens* and *Ranunculus acris*.

Groundwater Dependent Terrestrial Ecosystems (GWDTEs)

M23 *Juncus effusus/acutifloris* – *Galium palustre* rush-pasture

M23 is regarded as potentially highly groundwater dependent habitat and can be directly dependent on permanent groundwater.

The M23 communities are discussed under section 3.1.2.1.

W1 *Salix cinerea* scrub with a W7-type ground flora

Salix cinerea scrub has been described in section 3.1.2.4. It is considered to be potentially moderately groundwater dependant.

MG9 *Holcus lanatus-Deschampsia cespitosa* grassland

MG9 is regarded as potentially moderately groundwater dependent. However, the typical form of MG9 occurs on neutral to mildly base-enriched soils, but the form observed within the survey area is an acid form. Since groundwater influence tends to provide a degree of base enrichment to the soil, it is therefore considered less likely that the MG9 acid communities on site will be groundwater dependent.

MG10a *Holcus lanatus-juncus effusus* rush pasture, typical sub-community.

MG10a is regarded as potentially moderately groundwater dependent. It has been discussed in section 3.1.2.2.

Other habitats

NVC communities

OV24 *Urtica dioica-Galium aparine* community

This area is the base of an old quarry, which appears to have recently been used as a dumping ground for agricultural waste. It is dominated by *Urtica dioica*, growing on manure-enriched soil, with *Galium aparine*, *Holcus lanatus*, *Chamaerion angustifolium* and *Epilobium montanum*. Non-native agricultural *Hordeum* species were also present.

Non-NVC communities

These are communities which, derived of significant man-made disturbance, do not fit or approximate to any recognised NVC community.

Quarry Face

The base of the quarry at grid reference NY 17886 89545 can be classified as OV24, but the vertical quarried rock face is distinctly different, and is comprised of a mix of species from the adjacent quarry floor and grassland communities, together with shade-tolerant bare ground colonist species. The quarry face has abundant *Dryopteris filix-mas* and *Athyrium filix-femina* ferns, *Chamaerion angustifolium* and *Rubus idaeus*. Single examples of *Sorbus acuparia*, *Crataegus monogyna* and *Picea sitchensis* grow at the top of the cliff, and there are occasional seedlings of *Sorbus acuparia* growing on the quarry face. Scrambling within these plants are frequent



Plantago lanceolata, *Galium saxatile*, *Festuca rubra*, and many mosses, including *Polytrichum commune*. The face has been mapped using the code QF.

***Rubus idaeus* scrub**

RI - A small area of scrub dominated by wild raspberry (*Rubus idaeus*), within which grow several individual trees and shrubs (*Salix cinerea*, *Cornus* sp., *Prunus* sp., *Sorbus acuparia*, *Acer* sp.). As this is a very small area, and only single examples of the various tree species were present (some of which are non-native), this area is best described as *Rubus idaeus* scrub. The ground flora reflects the communities surrounding this, with *Arrhenatherum elatius*, *Holcus lanatus*, *Dactylis glomerata* and *Chamaerion angustifolium* the most frequent species.

Stony Bank

A man-made bank along the west side of the access track has been constructed with stone dug out from the quarry on the other side of the track (see Unvegetated, below). This area consists largely of unvegetated stone, but has been colonised by species from adjacent habitats that can tolerate the free draining stony soil. It is too lightly vegetated to currently be classified under NVC methodology, though if left unmanaged will likely develop into MG1 grassland. Species present include *Chamaerion angustifolium*, *Poa trivialis*, *Potentilla erecta*, *Arrhenatherum elatius*, *Senecio vulgaris*, *Campanula rotundifolia*, *Dryopteris filix-mas*, *Rumex obtusifolius* and the moss *Rhytidiadelphus loreus*. It has been mapped using the code SB.

Sitka spruce forestry

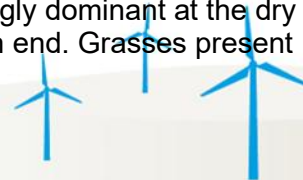
The great majority of the survey area comprises uniform stands of mature Sitka spruce. No other conifer species were recorded within these blocks, and only occasional broadleaved trees and shrubs were observed at the edges of the conifer blocks. The ground flora was very poor, consisting primarily of bare ground and a carpet of twigs and needles, with only small patches of vegetation, mainly near the edges. These consisted of the fern *Dryopteris dilatata*, and the mosses *Thuidium tamariscinum*, *Polytrichum commune*, and *Kindbergia praelonga*. Many drainage ditches and wet flush lines cross these blocks, but were generally unvegetated. Conifer plantation is not covered by NVC classifications, but (Wallace, 2001) examined conifer plantations in the borders of Scotland and found that stands up to 17 years old approximated to the NVC W17 community in terms of their ground flora and associated broadleaf tree species, but more mature stands lost this correlation. The conifer blocks in the current survey were all too mature to correlate with W17, though it is notable that the shaded woodland rides discussed above show a ground flora that is a fit for W17 understorey.

Scattered trees

Individual examples of (in order of frequency of occurrence, highest to lowest) *Picea sitchensis*, *Salix cinerea*, *Crataegus monogyna*, *Sorbus acuparia*, *Quercus robur*, and *Betula pendula* occur across the site outside the conifer blocks.

Track

The access track itself is gravelly, with minimal soil, but has been colonised at its edges and in places in the centre, by species tolerant of dry stony ground. As it runs the length of the site, it passes through multiple different communities, and so a large number of species have been recorded along it, but there is no clearly identifiable dominant flora that can be assigned to an NVC category. The most frequently encountered species is *Logfia minima*, which is overwhelmingly dominant at the dry northern end of the track, but only occasional at the southern end. Grasses present



include *Poa annua*, *Poa trivialis*, *Holcus lanatus* and *Arrhenatherum elatius*. Other plant species recorded more than once were *Sagina procumbens*, *Trifolium repens*, *Trifolium pratense*, *Trifolium dubium*, *Bellis perennis*, *Prunella vulgaris*, *Hypericum radicatum* and *Epilobium ciliatum*. *Epilobium brunescens* was abundant at the southern end of the track, but not recorded elsewhere along it.

Unvegetated

An area at grid reference NY 17703 89489 has been quarried for stone, and is completely unvegetated. It is recorded in Figure 2 as Non-NVC.

○ Invasive Non-native Species

A large and mature specimen of *Gunnera sp.* is growing at the edge of the garden of Corsehill, next to the area of *Rubus idaeus* scrub. *Gunnera tinctoria* is regarded as invasive in the UK, and its sale and cultivation has been banned since 2017.

Gunnera manicata is not regarded as invasive. However, Edwards et. al. (2022) showed that *G. manicata* is no longer present in the UK, and specimens previously regarded as *G. manicata* are actually a hybrid between *G. manicata* and *G. tinctoria*, referred to as *Gunnera x cryptica*, which should be regarded as potentially invasive, and is covered by INNS legislation. Whilst no attempt was made to definitively identify the species of *Gunnera* seen during this survey, it is likely to be *G x cryptica*.

Ash dieback fungus *Hymenoscyphus fraxineus* was present in every ash tree seen on site, approximately half of which were dead.



■ Conclusion

It is understood that the objective for survey was to identify sensitive habitats along a forestry track with a view to upgrading this track for wind farm access. The NVC survey has found no features or sensitivities that would present a major obstacle to the proposed creation of an access road on the site. However, some potential sensitivities have been identified which require more careful consideration within the proposed scheme and are discussed below.

Several habitats of conservation interest and potential GWDTEs were identified within the site. Since forestry operations, including construction of access roads and planting operations, have the potential to negatively impact these sensitive habitats, mitigation is recommended.

The site is largely man-made and shows evidence of significant human disturbance (woodland clearance, trampling, quarrying and path/track creation). Since NVC is a methodology for the assessment of natural vegetation communities, many of the plant assemblages recorded during the study either do not fit into an existing NVC classification, or are communities that were not identified during the original NVC surveys. Accordingly, assigning a 'best-fit' of NVC community is in some instances quite difficult, and such communities are best simply described, and classified as 'Non-NVC'.

For such non-standard communities, identifying sensitivities is additionally problematic, as they are not always included within the definitions of, for example, GWDTE. Therefore, within the current study, an approach has been taken of using professional judgement when assigning sensitivities. Individual cases are discussed below.

W11 Quercus petraea-Betula pubescens-Oxalis acetosella woodland (Non-NVC alder dominated form); W17 Quercus petraea-Betula pubescens-Dicranum majus woodland; W18 Pinus sylvestris-Hylocomium splendens woodland

Three communities, W11, W17 and W18 were identified as potential matches for Annex 1 habitats. However, all three NVC communities were not typical examples of their type. The W11 and W17 communities lacked the definitive canopy of oaks, and were classified on the basis of their field layer. The W18 pine woodland was considered to be of planted rather than natural origin, and showed atypical field layers indicative of disturbance and nutrient enrichment. Accordingly it is not felt that these communities are of Annex 1 conservation importance within this site.

Similarly, the W17 and W18 communities are poor matches for the Scottish Biodiversity List priority habitats Upland oakwood / Upland birchwood, and Native pinewoods respectively. The W11 woodland is also of plantation origin, largely even-aged semi-mature trees, and is affected by ash die back, however, presence of standing dead trees may contribute some biodiversity value for invertebrates and fungi, as well as nesting sites for birds and bats.

W11 alder Quercus petraea-Betula pubescens-Oxalis acetosella woodland

Whilst not a typical example of its type, this woodland area does correspond to the Lowland wood pastures and parkland SBL priority habitat. It may have additional value in terms of dead wood providing habitat for invertebrates and fungi. However, the woodland is currently young, and originated from planting, so it lacks a species-rich understorey or epiphytic bryophyte flora. It also contains mature examples of the non-native *Picea sitchensis*, which has the potential to outcompete the native species through rapid growth and reproduction, which could result in loss of broadleaved woodland over time. The presence of the pathogenic fungus *Hymenoscyphus*



fraxineus means that any disturbance within this woodland has the potential to further spread this invasive pathogen.

W1 Salix cinerea scrub with a W7-type ground flora

This non-NVC community corresponds to the SBL priority habitat Wet woodland, and is potentially moderately groundwater dependent.

If left unmanaged this scrub woodland would likely become more extensive across the site on wetter soils, particularly colonising the track verges, the Hmol/M23 communities and the wetter parts of the cleared forestry areas. In time it would develop from scrub to true woodland and increase in conservation value.

M23 Juncus effusus/acutiflorus – Galium palustre rush-pasture

M23 corresponds with SBL Priority Habitat Upland flushes, fens & swamps and is regarded as potentially highly groundwater dependent. M23 can be directly dependent upon more or less permanent groundwater.

Although this habitat is of limited conservation interest, it can support nesting birds and be important habitat for invertebrates, especially where herb-rich. However, all M23 rush pasture is thought to have originated from woodland or scrub since this habitat occurs within the altitudinal range of woodland and woody species typically will encroach if grazing ceases. The M23 communities found within the present survey area are generally small, isolated areas and are botanically species poor.

MG9 Holcus lanatus-Deschampsia cespitosa grassland (acid form)

MG9 grassland corresponds with SBL Priority Habitat Coastal & floodplain grazing marsh and is potentially moderately groundwater dependent. MG9 grassland occurs in its acid form at both ends of the site, and also within cleared forestry areas. MG9 grassland is potentially moderately groundwater dependent, though it is felt that this is less likely for the acid form. The examples on site are not especially species rich, or large examples of the community.

MG10a Holcus lanatus-Juncus effusus rush pasture, typical sub-community

Only two small areas of this community, which matches the SBL priority habitat Coastal & floodplain grazing marsh and are potentially moderately groundwater dependent, were found within the site. Both are small and species poor.

U2 Deschampsia flexuosa grassland

A single example of this community, which corresponds to the Lowland dry acid grassland SBL priority habitat, occurs in the north of the site. It is not a species-rich example of its type, and transitions gradually to the coarse understorey of the W11 woodland.



■ Recommendations

None of the communities recorded are considered to be large enough or sufficiently species-rich to pose a significant obstacle to the proposed track development, though where possible any loss of sensitive habitats should be appropriately mitigated, and damage through construction activities kept to a minimum.

It is likely that the Sitka spruce plantation blocks were historically planted either on a mix of MG9 grassland and M23 rush pasture, or upon land that had been cleared of broadleaved woodland. As such, historically, this land may have shown sensitivities in terms of GWDTE. However, although much of the forestry remains on wet soils, the Sitka woodland is sufficiently mature that any GWDTE habitats are likely to have been degraded or lost to acidification and evapotranspiration. Should any of this woodland be cleared in future with a view to replanting with native tree species, this historical value should be considered.

The following recommendations are made:

General mitigation measures

- If works do not commence within two years of these survey visits, update surveys will be required.
- Avoid or minimise damage to W11, W17 and W18 woodland community where possible. While they do not exhibit characteristics of Annex I or SBL types with which they correspond, the woodlands do increase biodiversity of the site overall, and the presence of standing dead trees may contribute some biodiversity value for invertebrates and fungi, as well as nesting sites for birds and bats.
- While W11 Scrub habitat is not a typical example of its type, this woodland area does correspond to the Lowland wood pastures and parkland SBL priority habitat and is potentially moderately groundwater dependent. It may have additional value in terms of dead wood, however, the woodland is even aged with semi-mature trees and lacks a species-rich ground flora or understory and is threatened by the spread of non-native *Picea sitchensis*. It is recommended that the woodland is avoided where possible to minimise loss and disturbance and prevent the potential spread of the invasive pathogen *Hymenoscyphus fraxineus*.
- While the M23a communities found are generally small, isolated areas and are botanically species poor, these should be avoided where possible as they are potentially highly groundwater dependent habitats. Disturbance to these habitats should be minimised where avoidance is not possible in the first instance.
- The MG9 and MG10 habitats recorded on site are not especially species rich, or large examples of the community and are atypically acid forms of the habitat and less likely to be groundwater dependent than more neutral to slightly basic examples. Disturbance to these habitats should be minimised where avoidance is not possible.
- Avoid or minimise damage where possible to U2 grassland that are not within areas of cleared forestry.
- The habitat described as W1 *Salix cinerea* scrub, corresponds to the SBL priority habitat Wet woodland, and is potentially moderately groundwater dependent. If left unmanaged this scrub woodland would likely become more extensive across the site on wetter soils and in time develop from scrub to true woodland and increase in conservation value.



- Follow existing biosecurity guidelines and regulations (Wildlife and Countryside Act, 1981, as amended by the Wildlife and Natural Environment (Scotland) Act 2012) with regard to *Gunnera sp.* and ash dieback fungus *Hymenoscyphus fraxineus*, in order to prevent any further spread of these species within the site or further afield.



■ References

Averis, A.M., Averis, A.B.G., Birks, H.J.B, Horsfield, D, Thompson, D.B.A. and Yeo, M.J.M. 2004. *An illustrated guide to British upland vegetation*. JNCC, Peterborough.

Averis, B. & Averis, A. 2020. Plant communities found in surveys by Ben and Alison Averis but not described in the UK National Vegetation Classification. Available at:

<http://www.benandalisonaveris.co.uk/resources>

Blockeel, T.L., Hodgetts, N.G., Pilkington, S.L. & Pescott, O.L. A Census Catalogue of British and Irish Bryophytes. British Bryological Society. 2021.

Norman, P. 2009. *Dumfries and Galloway Local Biodiversity Action Plan*. Dumfries and Galloway Biodiversity Partnership.

Rodwell, J.S. (Ed.). 1991a. *British Plant Communities Volume 1: Woodlands and scrub*. Cambridge University Press, Cambridge.

Rodwell, J.S. (Ed.). 1991b. *British Plant Communities Volume 2: Mires and heaths*. Cambridge University Press, Cambridge.

Rodwell, J.S. (Ed.). 1992. *British Plant Communities Volume 3: Grasslands and montane communities*. Cambridge University Press, Cambridge.

Rodwell, J.S. (Ed.). 2001. *British Plant Communities Volume 5: Maritime Communities and Vegetation of Open Habitats*. Cambridge University Press, Cambridge.

Rodwell, J.S. 2006. *National Vegetation Classification: Users' Handbook*. JNCC, Peterborough.

Scottish Environmental Protection Agency (SEPA). 2017. *Land Use Planning System SEPA Guidance Note 31. Guidance on Assessing the Impacts of Development Proposal on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems*. SEPA.

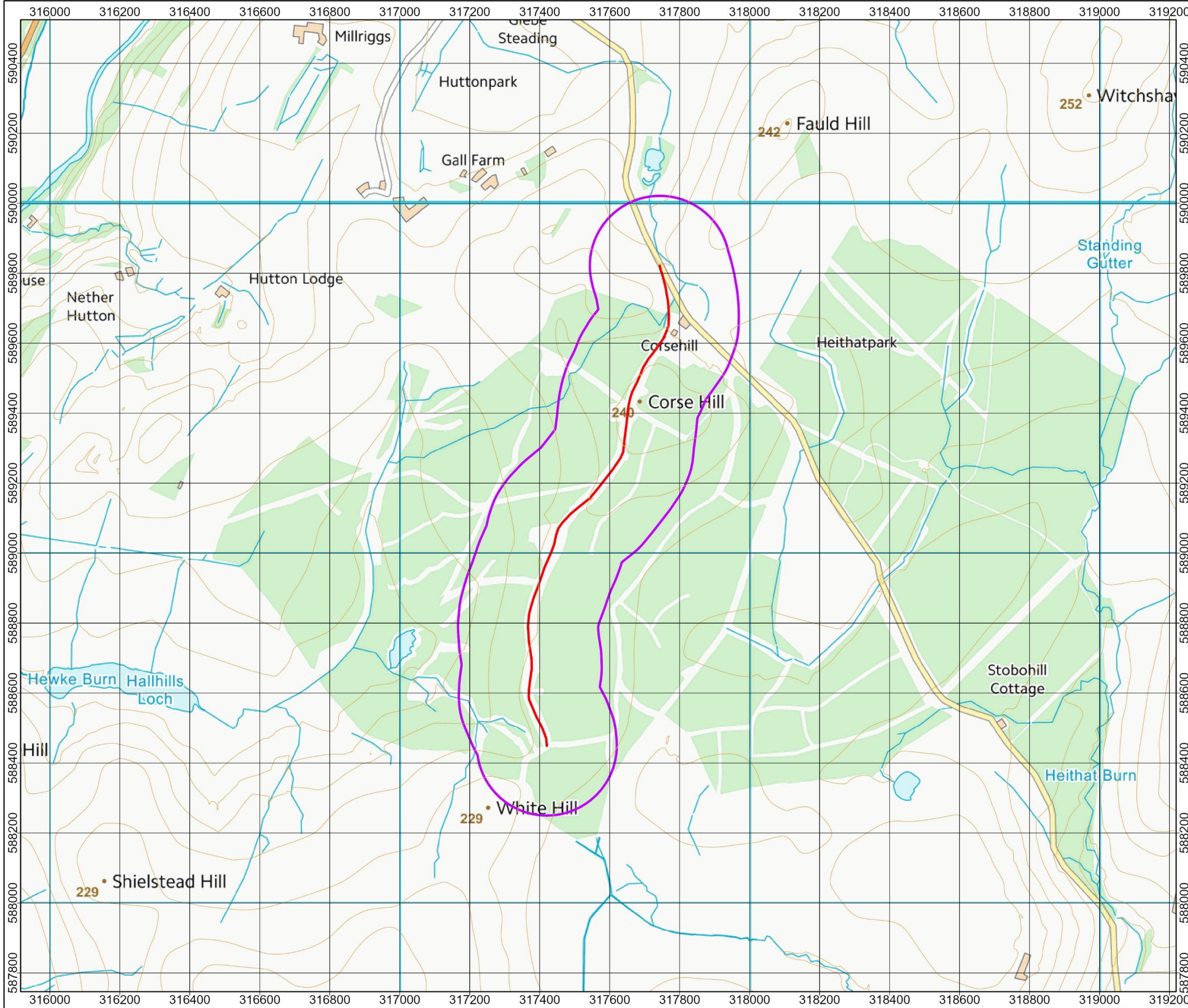
Stace, C.A. 2019. *New Flora of the British Isles. Fourth Edition*. C&M Floristics.

Wallace, A. 2001. *Vegetation of plantation Sitka spruce – development of new 'forest noda'*. In, JNCC report No. 335, Goldberg, E. (Ed.). JNCC, Peterborough



APPENDIX 1: Figures





Key

- Proposed Access Track
- 200 m Survey Buffer

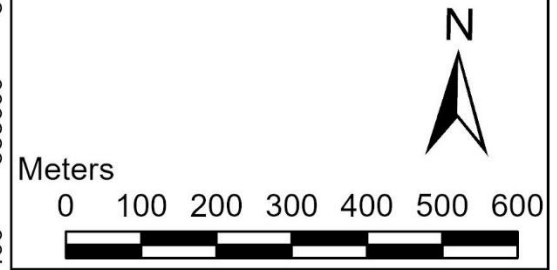
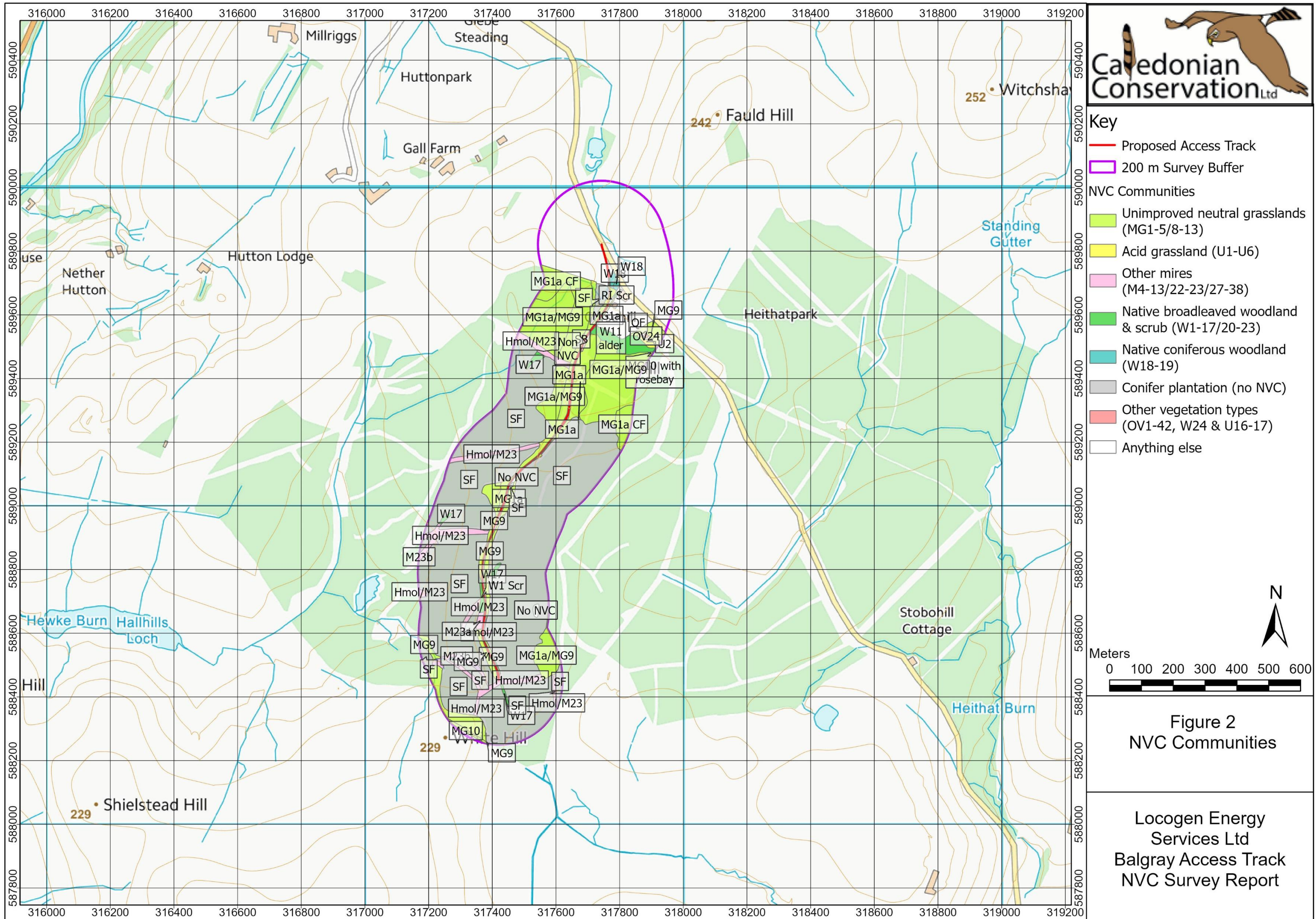
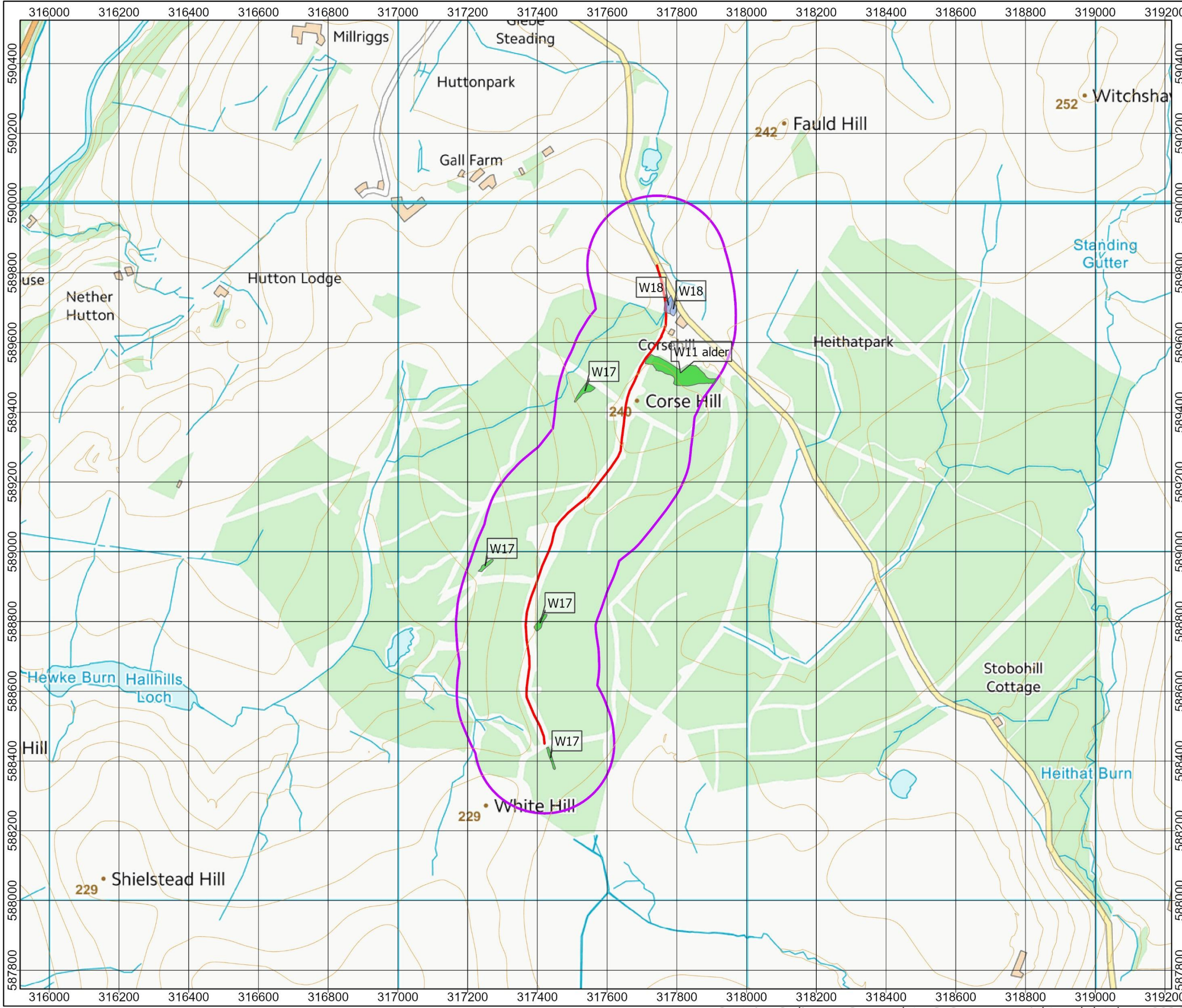


Figure 1
Site and Survey Area

Locogen Energy
Services Ltd
Balgray Acces Track
NVC Survey Report





- Key**
- Proposed Access Track
 - 200 m Survey Buffer
 - Annex I Habitat Type
 - Caledonian forest/Bog woodland
 - Western atlantic oak woodland

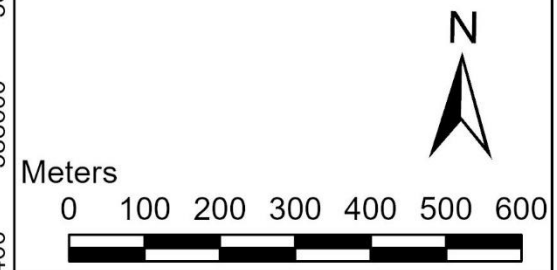
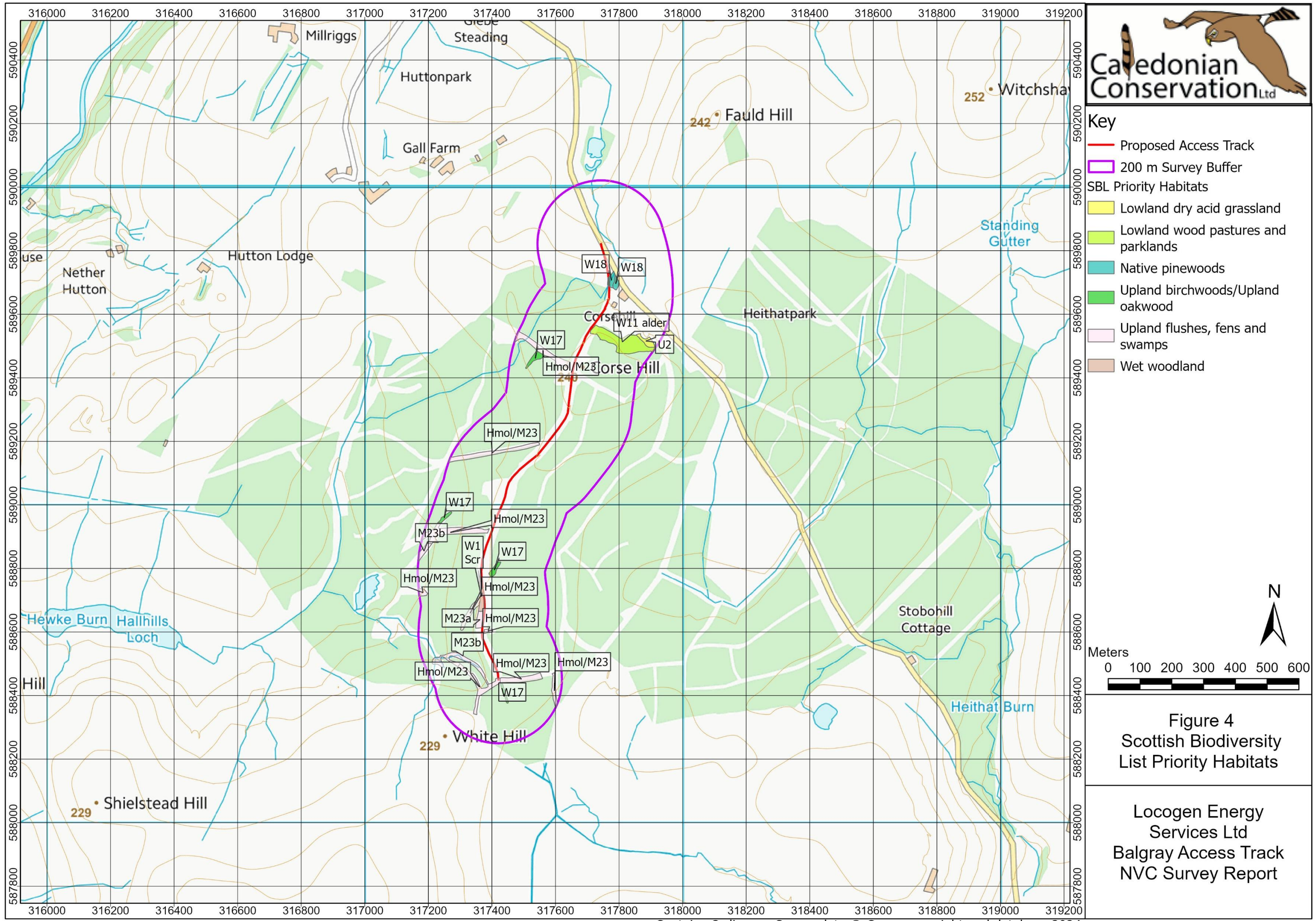


Figure 3
Annex I Habitats

Locogen Energy
Services Ltd
Balgray Access Track
NVC Survey Report



Key

- Proposed Access Track
- 200 m Survey Buffer
- SBL Priority Habitats
 - Lowland dry acid grassland
 - Lowland wood pastures and parklands
 - Native pinewoods
 - Upland birchwoods/Upland oakwood
 - Upland flushes, fens and swamps
 - Wet woodland

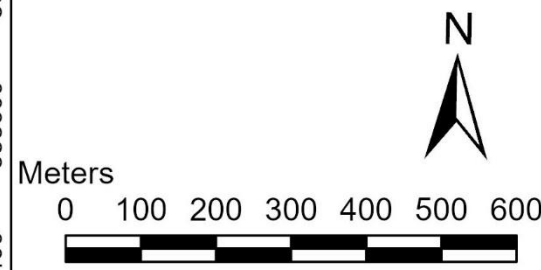
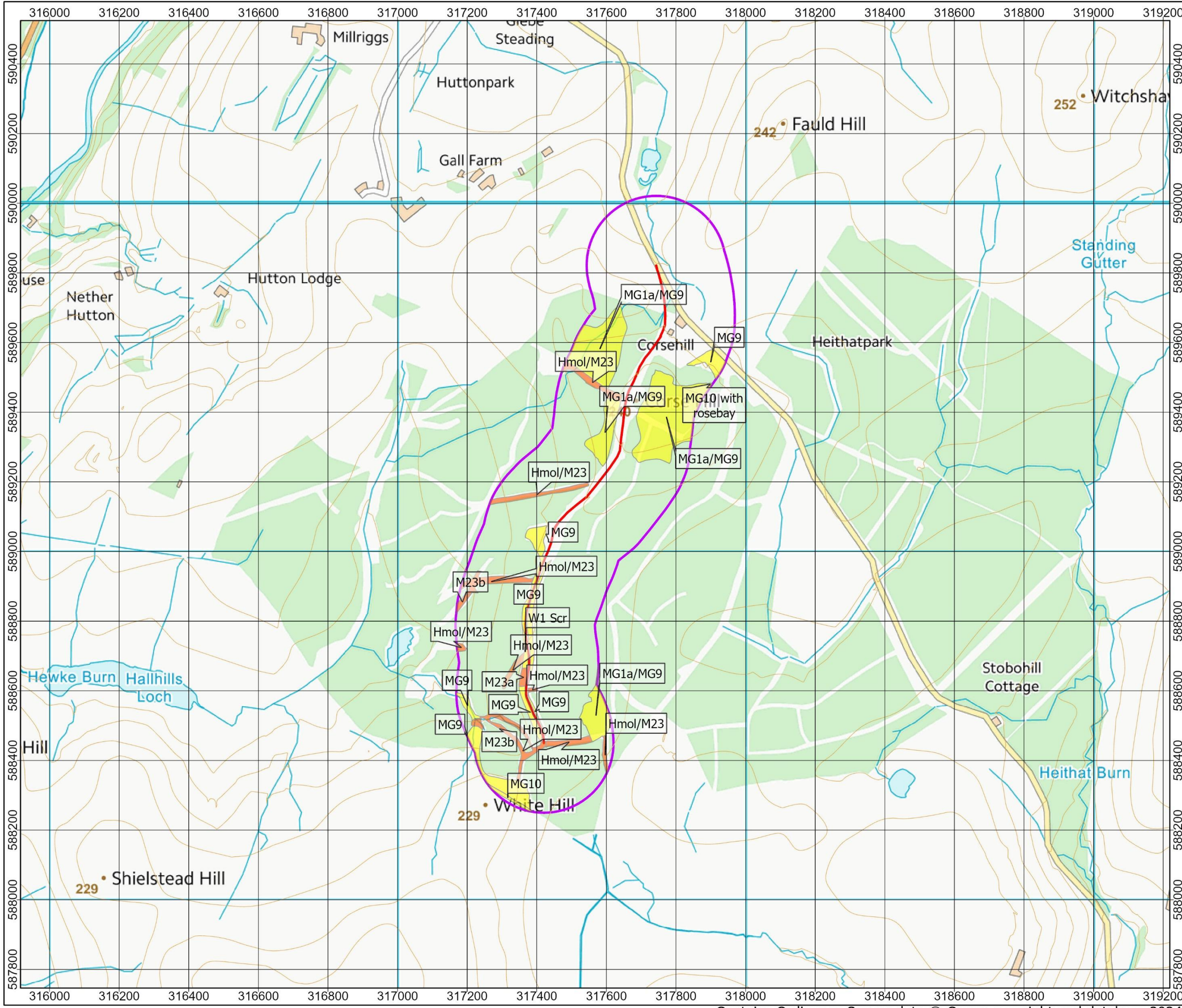


Figure 4
Scottish Biodiversity List Priority Habitats

Locogen Energy Services Ltd
Balgray Access Track
NVC Survey Report



Key

- Proposed Access Track
- 200 m Survey Buffer

GWDTE

- High
- Moderate

Meters
0 100 200 300 400 500 600

N

Figure 5
Potential GWDTEs

Locogen Energy
Services Ltd
Balgray Access Track
NVC Survey Report

APPENDIX 2: Correspondence with UK Habitat Classification

Table 2: NVC habitats recorded on site with their corresponding UK Hab classification

NVC Code	NVC Title	Corresponding UK Hab Classification
M23	<i>Juncus effusus/acutiflorus–Galium palustre</i> rush pasture, <i>Juncus effusus</i> sub-community	F2b – Purple moor-grass and rush pastures
MG1a	<i>Arrhenatherum elatius</i> grassland, <i>Festuca rubra</i> sub-community, <i>Epilobium angustifolium</i> variant	G3c5 – <i>Arrhenatherum</i> neutral grassland
MG9 acid	<i>Holcus lanatus-Deschampsia cespitosa</i> grassland (acid form)	G1d – Other lowland acid grassland
MG10a	<i>Holcus lanatus-juncus effusus</i> rush pasture, typical sub-community	F2b – Purple moor-grass and rush pastures
OV24	<i>Urtica dioica-Galium aparine</i> community	C1a5 – Arable field margins tussocky
U2	<i>Deschampsia flexuosa</i> grassland	G1a6 – Other lowland dry acid grassland
W1 Scr	<i>Salix cinerea</i> scrub with a W7-type ground flora	H3j – Willow scrub
W11 alder	<i>Quercus petraea-Betula pubescens-Oxalis acetosella</i> woodland (Non-NVC alder dominated form)	W1h5 – Other woodland, mixed, mainly broadleaved
W17	<i>Quercus petraea-Betula pubescens-Dicranum majus</i> woodland	W2c – Other coniferous woodland
W18	<i>Pinus sylvestris-Hylocomium splendens</i> woodland	W2b – Other Scots pine woodland
QF	Non-NVC community Quarry Face	S1a8 – Plants in crevices in acid rocks (H8220)
RI	Non-NVC community <i>Rubus idaeus</i> scrub	H3h – mixed scrub
SB	Non-NVC community	U1f – Sparsely vegetated urban land



NVC Code	NVC Title	Corresponding UK Hab Classification
	<i>Stony Bank</i>	
SF	<i>Non-NVC community Sitka Forestry</i>	W2c – Other coniferous woodland
Track	<i>Non-NVC community Access track</i>	U1f – Sparsely vegetated urban land
Non-NVC	<i>Unvegetated quarry</i>	U1c – Artificial unvegetated, unsealed surface
*	<i>Burn lines</i>	R2b – Other rivers and streams
*	<i>Dry stone walls</i>	U1e – Built linear feature

* = No NVC community recorded, but feature present.



RENEWABLE FUTURES.
GENERATED TODAY.

PHASE 1 HABITATS AND PROTECTED SPECIES SUMMARY

Balgray Access Track North Turning Point

Fred Olsen. Renewables Ltd.

Introduction

- 1.1.23. Locogen Consulting Ltd. was commissioned by Fred Olsen. Renewables Ltd. (the Client) to undertake an extended Phase 1 habitat and protected species surveys, and results summary for the access track turning point at the proposed Balgray Wind Farm. The turning point is an update to the original access track plan of which was not surveyed at the time of the original habitats and protected species surveys. The survey was undertaken on 25 March 2025. This summary report sets out to understand the habitats present within this section of the access track and the extent to which protected species may occupy these habitats.
- 1.1.24. The Site is defined as the Red Line Boundary (RLB) with the addition of a 200m survey buffer to account for potential badger and otter presence.

Habitats

- 1.1.25. The area within the RLB predominantly consists of both semi-improved and marshy grassland, with a small area of bare ground to the south. Habitats out with the RLB but within the survey buffer are largely the same however semi-improved grassland is significantly more dominant. The survey buffer is also composed of coniferous woodland of which only one parcel was accessible for surveying. Detailed descriptions of the habitats and their species composition are as follows;

A1.2.1 - Coniferous woodland - semi-natural

- 1.1.26. One small parcel of coniferous woodland was identified within the survey area. This area was sparsely covered with Scots pine (*Pinus sylvestris*) whilst bracken (*Pteridium aquilinum*), wild raspberry (*Rubus idaeus*), and cock's-foot (*Dactylis glomerata*) dominates the ground layer.

B5 - Marsh/marshy grassland

- 1.1.27. The centre of the exclusivity area is largely covered by marshy grassland. Species identified here are generally typical of the habitat and includes the following species:



Table 5: B5-marshy grassland species

Common name	Latin name
Soft rush	<i>Juncus effusus</i>
Crested dog's-tail	<i>Cynosurus cristatus</i>
Tufted hair grass	<i>Deschampsia cespitosa</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Red fescue	<i>Festuca rubra</i>
Marsh marigold	<i>Caltha palustris</i>
Springy turf moss	<i>Rhytidiadelphus squarrosus</i>

B6 - Poor semi-improved grassland

1.1.28. Semi-improved grassland is the most dominant habitat. Vegetation is varied and can be found detailed in table 6 below.

Table 6: B6 – poor semi-improved grassland species

Common name	Latin name
Crested dog's-tail	<i>Cynosurus cristatus</i>
Perennial ryegrass	<i>Lolium perenne</i>
Tufted hair grass	<i>Deschampsia cespitosa</i>
Red fescue	<i>Festuca rubra</i>
Tall fescue	<i>Lolium arundinaceum</i>
White clover	<i>Trifolium repens</i>
Soft rush	<i>Juncus effusus</i>
Springy turf moss	<i>Rhytidiadelphus squarrosus</i>
Creeping buttercup	<i>Ranunculus repense</i>
Meadow buttercup	<i>Ranunculus acris</i>
Common sorrel	<i>Rumex acetosa</i>
Pignut	<i>Conopodium majus</i>
Mouse-ear chickweed	<i>Cerastium fontanum</i>
Bittercress	<i>Cardamine hirsuta</i>
Creeping thistle	<i>Cirsium arvense</i>
Daisy	<i>Bellis perennis</i>
Rosebay willowherb	<i>Chamerion angustifolium</i>

J4 – Bare ground

1.1.29. Covers one small section at the entrance to the field, likely cattle poached. No vegetation present.



Protected species

- 1.1.30. Several locations within the survey area were of interest in terms of their habitat suitability for protected species. Figure 1 below highlights each of the locations where suitable habitat or evidence of protected species has been identified.



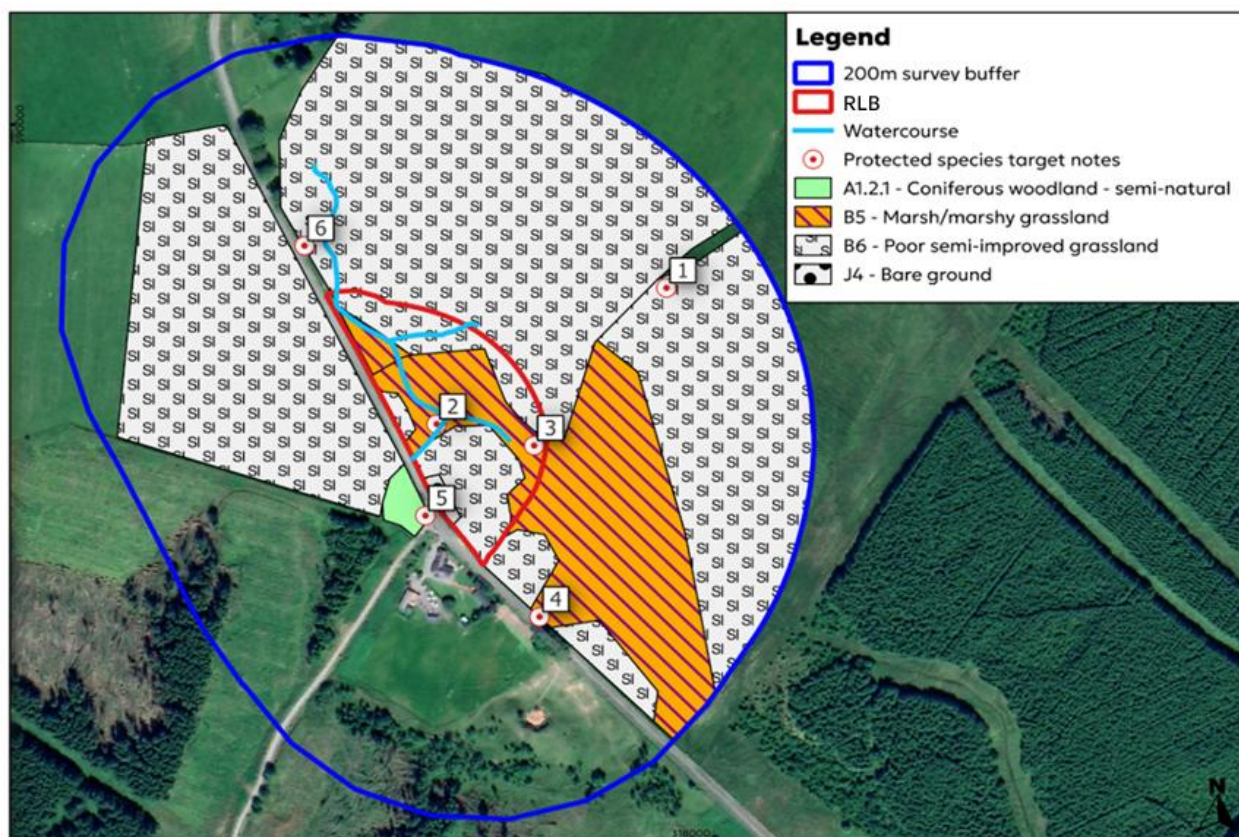


Figure 1: Phase 1 habitats and protected species on Site.

1.1.31. Table 7 below details each of the protected species target notes identified at the time of the walkover survey.

Table 7: Protected species target notes.

Target note	Description
1	Brown hare (<i>Lepus europaeus</i>) sighting
2	Watercourse flowing through exclusivity area. Potential otter (<i>Lutra lutra</i>) and water vole (<i>Arvicola amphibius</i>) habitat.
3	Marsh puddles throughout marsh habitat. Potential amphibian habitat.
4	Brick wall running along roadside providing suitable reptile resting sites.
5	Brick wall, potential reptile habitat.
6	Large log pile. May act as reptile and amphibian hibernacula.





Fred. Olsen Renewables Ltd
Ochil House, Springkerse Business Park
Stirling FK7 7XE

www.fredolsenrenewables.com

