

AGENDA ITEM 6

APPENDIX 3

2019/0347/DET

ECOLOGICAL REPORT

BALAVIL
ESTATE



Croftcarnoch Forestry Track Upgrade Ecological Report



October 2019

Croftcarnoch Forestry Track Upgrade

Ecological Report

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1 INTRODUCTION

1.1 Terms of Reference

EnviroCentre was commissioned to undertake an ecological survey and qualitative impact assessment of a forestry track on the Balavil Estate, near Kingussie, Inverness-shire.

Balavil Estate has proposed a network of track upgrades across its land to facilitate their future land management objectives, which include thinning the dense, native-species plantation woodland, designating vast tracts of managed moorland for native tree planting, leaving areas fallow to rewild and regenerate naturally, and increasing deer management in these areas to eliminate browsing in order to encourage native flora to flourish.

Work on one of these partially-constructed track upgrades, known as Croftcarnoch, was commenced prior to planning consent being granted.

The ecological survey and qualitative impact assessment was undertaken to inform the planning process of any potential ecological constraints within both the completed and proposed future sections of the track.

1.2 Scope of Report

The scope of this report includes:

- A desk based review of ecological information relating to the site;
- A field survey of the completed section of track plus appropriate buffers;
- A field survey of the proposed future section of track plus appropriate buffers;
- An evaluation of the ecological features present (or previously present);
- Consideration of the impact of the track construction on ecology;
- An opinion on the track from an ecological perspective in the context of the long-term land management aims at Balavil Estate; and
- Requirements for future survey and monitoring.

1.3 Site Overview

Balavil Estate lies approximately 3km north-east of Kingussie to the west of the A9 trunk road, immediately south of the Highland Wildlife Park and overlooking Insh Marshes National Nature Reserve (NNR) to the east. The Estate consists of mixed land-use, including areas of mixed agriculture, vast tracts of mountains and managed moorland to the west stretching into the Monadhliath Mountains which are used for sporting interests, and areas of commercial and non-commercial forestry, including Craigbui Wood and Creag Bheag.

The Estate has a long-term objective of expanding the naturally regenerating woodland of Creag Bheag with a native species planting regime around Creag Bhalg (in association with Trees for Life). Another phase of forest expansion involves thinning out the dense Scot's pine plantation woodland along the Croftcarnoch track and, following a period of increased deer management on Creag Bhuidhe and across the lower reaches of the Estate, allowing the open areas of moorland on Creag Bhuidhe (Craigbui Wood) to rewild and regenerate naturally.

1.4 Development Overview

The Croftcarnoch forestry track runs from Ordnance Survey Grid Reference (OSGR) NH 79818 03434, north-west of General Wade's Military Road, through an area of commercial plantation to the south-east of Creag Bhuidhe. It then follows the original track along the northern boundary of the plantation to the south-west, before joining an existing grassy forestry track at OSGR NH 78708 03147, and running south to its conclusion at OSGR NH 78739 02857, where it meets the main Estate track onto the moorland.

The approximate length of the Croftcarnoch track is 1400m plus the initial 250m through the plantation which doesn't form part of the track upgrade network.

A plan of the area of works, the survey area and the survey results can be found in Appendix A.

1.5 Report Usage

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2 METHODS

2.1 Desk Study

In order to anticipate the potential ecological sensitivities at the site, a desk study was conducted in advance of the field survey. The following sources were checked:

- Scottish Natural Heritage (SNH) Sitelink¹ for information on statutory designated sites within 5km of the site;
- Records of ancient woodland and Scottish native woodland available through Scotland’s Environment Web² up to 1km from the site; and
- National Biodiversity Network (NBN) Atlas³ for records (available for commercial use and less than 15yrs old) of protected or notable species within 2km of the site.

2.2 Field Survey

The field survey was undertaken by Mike Coleman, a highly experienced ecologist and a Full Member of the Chartered Institute of Ecology and Environmental Management (CIEEM). The surveys were designed using guidelines endorsed by CIEEM⁴. The surveys focussed on plants and habitats on the site and those faunal species that are most likely to be found in the habitats which make up the landscape in and around the site. The survey was undertaken on 24th September 2019 when lateral visibility was excellent, the weather was cloudy (cloud base of approximately 100m, and an okta coverage of 8/8) with a light breeze (Beaufort Scale 2). It was dry, although there had been rain within the previous 48 hours, and the ambient air temperature was 14°C.

The area covered the constructed sections of the Croftcarnoch track, and the unbuilt, proposed sections of the track, with a buffer along the entire route to increase the possibility of finding any field evidence of protected species. The buffer could also help assess potential disturbance of protected species along the proposed section during the construction period.

This section provides details of the methods adopted in the survey areas described in Table 2-1.

Table 2-1: Survey Areas

Habitat/Species/Species Group	Survey Area
Phase 1 Habitat	Within 50m of the centre line of the track (the site) and a 50m buffer (the survey area)
Groundwater Dependent Terrestrial Ecosystems	
Invasive Non-Native Species	
Bats	
Red squirrel (<i>Sciurus vulgaris</i>)	
Badger (<i>Meles meles</i>)	
Pine marten (<i>Martes martes</i>)	
Wildcat (<i>Felis silvestris</i>)	
Otter (<i>Lutra lutra</i>)	
Birds	

¹ SNH (2009). SiteLink, available from: <https://sitelink.nature.scot/map> (last accessed 23/09/2019)

² Interactive map available at: <https://map.environment.gov.scot/sewebmap/> (Accessed 23/09/2019)

³ Interactive map available at: <https://nbnatlas.org/> (Accessed 23/09/2019)

⁴ CIEEM (n.d.). General advice on surveys and methods. Retrieved from <https://cieem.net/resource/competencies-for-species-survey-css/> (Accessed 30/09/2019)

2.2.1 Phase 1 Habitat Survey

A Phase 1 Habitat Survey is a method that rapidly records vegetation and wildlife habitat over large areas. The information is used to identify ecologically sensitive features, inform additional species surveys and, ultimately, recommend mitigation and enhancement measures in connection with a proposed development.

The Phase 1 Habitat Survey was undertaken according to the standard Joint Nature Conservation Committee (JNCC) method⁵. It was used to inform the requirements for further survey to determine the presence of any protected or rare habitats.

2.2.2 Groundwater Dependent Terrestrial Ecosystems

The Functional Wetland Typology⁶ was used to aid the identification of wetland habitats that derive their water from groundwater and surface water. This information is useful in identifying if and where further surveys are required to identify the presence and potential sensitivity of Groundwater Dependent Terrestrial Ecosystems (GWDTEs). To help assess ground water dependency, observations of the local topography, underlying geology, and features such as springs, diffuse ground water emergence and floristic indicators of base enrichment were made.

2.2.3 Invasive Non-Native Species

A check for the presence of invasive non-native species (INNS) was undertaken, including but not limited to the following:

- Japanese knotweed (*Reynoutria japonica*);
- Giant hogweed (*Heracleum mantegazzianum*); and
- Himalayan balsam (*Impatiens glandulifera*).

2.2.4 Bats

A brief assessment was undertaken in accordance with the criteria set out by the Bat Conservation Trust (BCT)⁷. The suitability of roosting, commuting and foraging habitat was classified according to the criteria in Table 2-2 below.

Table 2-2: Suitability Classification of Roosting, Commuting and Foraging Habitats for Bats

Suitability	Roosting Features	Commuting and Foraging Habitats
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	<p>Continuous high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edges.</p> <p>High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland.</p>

⁵ JNCC (2010). Handbook for Phase 1 Habitat Survey; a technique for environmental audit. Peterborough: Joint Nature Conservation Committee.

⁶ SNIFFER (2009). WFD95: A Functional Wetland Typology for Scotland; Project Report. Edinburgh: SNIFFER.

⁷ Collins, J. (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines. London: The Bat Conservation Trust, Ed. (3rd ed.).

Suitability	Roosting Features	Commuting and Foraging Habitats
		The site is close to and connected to known roosts.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due their size, shelter, protection, conditions and/or surrounding habitat but unlikely to support a roost of high conservation status.	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis; or A tree of sufficient size and age to contain potential roost features but with none seen from the ground; or features seen with only very limited roosting potential.	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated. Suitable but isolated habitat that could be used by small numbers of foraging bats such as a lone tree or a patch of scrub.
Negligible	A structure or a tree with negligible features likely to be used by roosting bats.	Negligible habitat features likely to be used by foraging or commuting bats.

Potential Roosting Features (PRFs) in trees and structures were identified, as listed in Table 2-3 below.

Table 2-3: PRFs in Trees and Structures Frequently Used by Bats for Roosting

PRFs in trees frequently used as bat roosts	Access points in structures frequently used as bat roosts	Frequently used roosting locations in structures
Hollows and cavities from woodpecker, rot and knot holes	Gaps in windowsills and window panes	Top of chimney breasts, gable ends and dividing walls
Hazard beams and other vertical or horizontal cracks and splits in stems or branches	Underneath peeling paintwork or lifted rendering	All beams and roof beams (ridge, hip etc.)
Partially detached plated bark	Behind hanging tiles, weatherboarding, eaves, soffit boxes, fascias and lead flashing	Junction of timber joints, mortise and tenon joints
Cankers, included bark and compression forks with potential cavities	Under tiles and slates	Behind purlins
Partially detached ivy with stem diameters in excess of 50mm	Gaps in brickwork and stonework	Between tiles/slates and the roof lining
Bat or bird boxes	Gaps in rendering behind gutters	Under flat roof materials

2.2.5 Red Squirrel

A check for squirrel activity was undertaken based on best practice guidance⁸, which involves a search of suitable habitat (primarily coniferous woodland) for two distinct field signs:

- Drey count – dreys are the nests made by both species of squirrel in trees. Dreys are distinguishable from birds' nests as they are normally 50cm in diameter and 30cm deep, comprise a ball shape and are usually densely constructed. The dreys are normally located close to the main stem of the tree at a height of 3m or more; and
- Feeding evidence – where cone producing trees (conifers) are evident evidence of squirrel feeding is searched for. Although the two species of squirrel cannot be distinguished from feeding remains, the manner in which squirrels break open seeds and nuts, which are then left on the forest floor, is diagnostic.

2.2.6 Badger

A check for badger activity was undertaken in suitable and accessible habitat, with reference to the methodology described by Scottish Badgers (2018)⁹, which aimed to identify the following field evidence:

- Setts (any structure or place, which displays signs indicating current use by badger/located within an active badger territory as defined by the standard guidance);
- Day beds (above ground areas where badgers sleep, characterised by flattened vegetation or bundles of grass);
- Dung pits (single faeces deposit placed in a small excavation); and
- Latrines (collection of faecal deposits often used by badger clans to mark home range boundaries);
- Foraging signs such as diggings or snuffle holes (badgers use their snout to turn over vegetation or soft soil to forage for bulbs and invertebrates);
- Paths (network of paths generally linking setts to foraging habitat);
- Breach points (gaps in fences or crossing points over roads);
- Scratching posts (marks on tree trunks/ fallen trees where badgers have left claw marks);
- Guard hair; and
- Footprints.

Setts were categorised as follows:

Main setts

Normally each group of badgers has only one main sett. Main setts usually have several holes with large spoil heaps, and the sett generally looks well used. There are obvious paths to and from the sett and between sett entrances. Although normally the breeding sett and in continuous use, it is possible to find a main sett that has some disused or dormant entrances.

Annexe setts

These are often close to a main sett, normally less than 150 metres away, and are connected to the main sett by one or more well-worn paths. Usually there are several holes but the sett may not be in use all the time, even if the main sett is very active. Note the large spoil heaps at entrance holes.

Subsidiary setts

These are usually at least 50 metres from a main sett, and do not have an obvious path connecting with another sett. They are not continuously active.

⁸ Available at: [http://www.forestry.gov.uk/PDF/fcpn011.pdf/\\$FILE/fcpn011.pdf](http://www.forestry.gov.uk/PDF/fcpn011.pdf/$FILE/fcpn011.pdf) (Accessed 23/09/2019)

⁹ Scottish Badgers (2018) Surveying for Badgers Good Practice Guidelines. Available at: <https://www.scottishbadgers.org.uk/planning.asp> (Accessed 23/09/2019)

Outlier setts

These often have little spoil outside the holes, have no obvious path connecting them with another sett, and are only used sporadically. When not in use by badgers, they are often taken over by foxes or even rabbits. However, they can still be recognised as badger setts by the shape of the tunnel (not the actual entrance hole), which is at least 25 centimetres in diameter, and rounded or a flattened oval shape (i.e. broader than high). Fox and rabbit tunnels are smaller and often taller than they are broad.

Suitable foraging habitat within the survey area was categorised with reference to SNH approved guidance¹⁰:

- Primary foraging habitat (short grazed or mown grassland and broadleaved woodlands); and
- Secondary foraging habitat (arable land, rough grassland, scrub and mixed woodland).

2.2.7 Pine Marten

A non-invasive check for any suitable pine marten habitat and any field signs was undertaken. This included:

- Appraising the habitat appropriately, including differentiating blocks of woodland of high and low quality in terms of foraging and denning opportunities;
- Searching for pine marten field signs (scats and footprints) on the track, woodland paths, or on prominent features such as large rocks; and
- Identifying field signs, including the variation in the morphology of scats and separating them from scats of other carnivores where possible (e.g. foxes).

2.2.8 Wildcat

The site is close to the Aviemore Conservation Area (Wildcat Action), therefore a survey for evidence of wildcat was undertaken. This included a search of suitable habitat for potential den sites such as large log piles, tree roots, rock piles or disused mammal holes such as badger setts and rabbit warrens. The survey also searched for evidence of wildcat presence such as scats (e.g. on prominent features such as tree stumps, dead logs or stones), urine spray, prey remains, scratch marks and footprints. It is impossible to distinguish between wildcat, hybrid, and domestic cat from field evidence alone, therefore any potential den sites were mapped for future observation usually by camera trapping¹¹.

2.2.9 Otter

A brief check was conducted along the watercourses downstream and upstream, where accessible. The survey followed best practice guidelines¹², and searched for suitable habitat along with field signs, including:

- Spraints (otter faeces/droppings used as territorial signposts. Often located in prominent positions and placed on deliberate piles of soil or sand); Three categories are used for describing otter spraint: Dried fragmented (Df); Dried intact (Di); and Not fully dry (Nd);
- Footprints;
- Feeding remains (can often be a useful indication of otter presence);
- Paths/slides (otter can often leave a distinctive path from and into the watercourse);

¹⁰ SNH approved guidance available at:

https://www.highland.gov.uk/download/downloads/id/2637/badger_best_practice_guidance_badger_surveys_september_2006.pdf (Accessed 23/09/2019)

¹¹ The Mammal Society (2012). UK BAP Mammals. Interim Guidance for Survey Methodologies, Impact Assessment and Mitigation. The Mammal Society, Southampton.

¹² Chanin P (2003). Monitoring the Otter *Lutra lutra*. Conserving Natura 2000 Rivers Monitoring Series No. 10, English Nature, Peterborough.

- Holts (underground shelter) are generally found:
 - Within trees roots at the edge of the bank of a river;
 - Within hollowed out trees;
 - In naturally formed holes in the river banks that can be easily extended;
 - Or preferably in ready-made holes created by other large mammals or humans such as badger setts, rabbit burrows or outlet pipes; and
- Couches/lay-ups (couches or lay-ups are places for lying up above ground are usually located near a watercourse, between rocks or boulders, under dense vegetation).

In order to assess their importance, the status of otter resting sites are assigned from Low to High according to Table 2-4 below¹³:

Table 2-4: Guidance for Assigning Status of Otter Resting Sites

Resting Site Status	Definition
Low	Feature with limited evidence of otter activity – low number of spraints, not all age classes present. Insufficient seclusion to be a breeding site or key resting site, unlikely to have links to the key otter requirements. Most likely to provide a temporary ‘stop off’ for otters when moving through their territory. Loss/disturbance of such a feature is unlikely to be significant in terms of the individual or population.
Moderate	Feature containing sprainting with a range of age classes, but not in significant quantities. Availability may be limited by season, tides or flow. Unlikely to be suitable as a breeding/natal site but will be a key resting site and may be linked to other important features within the territory. The impact arising from a loss or disturbance of such a feature will be determined by the availability of more suitable or well used sites within an otter territory.
High	Feature has a high level of otter activity, including an abundance of sprainting of all age classes, large spraint mounds, well used grooming hollows, paths and slides. Affords a high degree of cover and is linked to key features such as fresh water and abundance of prey. May be suitable as a breeding area (spraints may be absent from natal holts). The site is usually available at all times of year and at high and low tide/flow. The loss/ disturbance of such as feature will often be considered significant in terms of the individual or population.

2.2.10 Birds

Habitats within the survey area were assessed for their suitability to support breeding and overwintering birds. Observations of bird species were recorded during the survey.

¹³ Bassett, S., & Wynn, J. (2010). Otters in Scotland: How Vulnerable Are They to Disturbance? *CIEEM In Practice*, (70), 19–22.

3 RESULTS

3.1 Desk Study

No statutory designated sites are present within the site boundary. The statutory designated sites in Table 3-1, below, are present within a 5km radius of the site boundary. They are considered to have a limited physical or ecological connection to the site.

Table 3-1: Statutory Designated Sites

Site Name	Designation ¹⁴	Distance and Orientation	Designated Features	Ecological Connectivity
River Spey – Insh Marshes	SSSI	Approx. 500m south-east	Arctic charr (<i>Salvelinus alpinus</i>); Flood-plain fen; Breeding bird assemblage; Invertebrate assemblage; Mesotrophic loch; Osprey (<i>Pandion haliaetus</i>); Otter; Vascular plant assemblage; Whooper Swan (<i>Cygnus Cygnus</i>) (non-breeding).	Limited
	SPA		Osprey (foraging and breeding); Hen Harrier (<i>Circus cyaneus</i>) (non-breeding); Spotted Crake (<i>Porzana porzana</i>) (breeding); Whooper Swan (non-breeding); Wigeon (<i>Anas penelope</i>) (breeding); Wood Sandpiper (<i>Tringa glareola</i>) (breeding).	
	Ramsar		Flood-plain fen; Breeding bird assemblage; Mesotrophic loch; Trophic range river/stream; Whooper Swan (non-breeding).	
River Spey	SAC	Approx. 500m south-east	Atlantic salmon (<i>Salmo salar</i>); Otter; Sea lamprey (<i>Petromyzon marinus</i>); Freshwater pearl mussel (<i>Margaritifera margaritifera</i>).	Limited
Insh Marshes	SAC	Approx. 500m south-east	Alder woodland on floodplains; Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels; Otter; Very wet mires often identified by an unstable 'quaking' surface.	Limited

All woodland in and within 1km of the site is considered to be Ancient Woodland (of semi-natural origin), which suggests that there has been an element of forest cover in these areas since before 1750, irrespective of the original provenance, planting regimes, or subsequent management of those woods.

Biological records of protected species and species of conservation concern which may be present within suitable habitats on site from the NBN Atlas show the following as being present historically within 2km:

- Otter;
- Song Thrush (*Turdus philomelos*);
- Lesser Redpoll (*Acanthis cabaret*);
- Dunnock (*Prunella modularis*);
- Willow Warbler (*Phylloscopus trochilus*);
- Spotted Flycatcher (*Muscicapa striata*);
- Cuckoo (*Cuculus canorus*); and

¹⁴ SAC (Special Area of Conservation), SPA (Special Protection Area), Ramsar wetlands of international importance, SSSI (Site of Special Scientific Interest).

- Mistle Thrush (*Turdus viscivorus*).

3.2 Field Survey

3.2.1 Phase 1 Habitat Survey

The following section should be read in conjunction with Appendix A: Location Plan and Survey Results, and Appendix B: Photographic Record.

Five Phase 1 habitat types were identified in the survey area as follows:

- A1.2.2 Coniferous plantation woodland
- A1.3.1 Mixed semi-natural woodland
- C1.2 Scattered bracken
- D1 Dry dwarf shrub heath
- G2 Running water

A1.2.2 Coniferous Plantation Woodland

Woodland is defined as vegetation dominated by trees more than 5m high when mature, forming a distinct, although sometimes open canopy. Coniferous woodlands are those where there is 10% or less broadleaved in the canopy. All obviously planted woodland of any age is included as plantation, unless it is more than 120 years old, consists of native trees, and has a semi-natural woodland ground flora and shrub communities.

Despite being mapped as an Ancient Woodland of semi-natural origin, the main area of woodland which stands immediately to the south and east of the Croftcarnoch track is a commercial plantation, predominantly consisting of Scot's pine (*Pinus sylvestris*), although there are broadleaved trees present, mainly birch (*Betula* spp.) and rowan (*Sorbus aucuparia*).

Much of the woodland is extremely dense and consists of tall, spindly trees which have a closed canopy, encouraging little or no understorey or ground flora to flourish.

In the southern and eastern parts of the plantation there is a typical Caledonian forest ground flora comprising blaeberry (*Vaccinium myrtillus*), cowberry (*Vaccinium vitis-idaea*) and heather (*Calluna vulgaris*). Grass species, bracken (*Pteridium aquilinum*) and mosses are also present and these become more common as the altitude rises and the woodland floor becomes damper. The most abundant mosses are *Rhytidiadelphus squarrosus*, *Hylocomium splendens*, *Mnium hornum*, *Polytrichum commune*, *Dicranella heteromalla* and several *Sphagnum* species.

In the drier western area of the plantation, white clover (*Trifolium repens*), cow-wheat (*Melampyrum pratense*) and harebell (*Campanula rotundifolia*) are also present in and immediately adjacent to the woodland along the existing grass track.

A1.3.1 Mixed Semi-natural Woodland

Mixed woodlands are those where there is 10-90% of either coniferous or broadleaved tree species in the canopy. Semi-natural woodland comprises all stands which do not obviously originate from planting.

This habitat is present to the west of the track and on the eastern slopes of Creag Bhuidhe above the track.

The more mature trees (both Scot's pine and birch) are scattered on the craggy mountainside, with an open canopy, and a flourishing ground flora of blaeberry, cowberry, bearberry (*Arctostaphylos uva-ursi*), heather, bell heather (*Erica cinerea*), cross-leaved heath (*Erica tetralix*), several mosses, tormentil (*Potentilla erecta*), and milkwort (*Polygala vulgaris*). Over this there is an understory layer dominated by frequent juniper (*Juniperus communis*) in the more open areas, and bracken at lower altitudes, beneath the naturally regenerating birch trees which are abundant over much of the hill.

Juniper on heaths is an Annex 1 habitat under the EU Habitats Directive. The survey area falls in Zone 1 according to the Juniper Conservation Zones in Scotland¹⁵: Self-sustaining juniper populations.

C1.2 Scattered Bracken

Bracken dominates to the north of the track on the eastern slopes of Creag Bhuidhe, and is found occasionally within the plantation. It is present, but rarely, across much of the survey area. Foxglove (*Digitalis purpurea*) is also present along the plantation edges and within the bracken stands.

D1 Dry Dwarf Shrub Heath

This heathland contains greater than 25% cover of ericoids or small gorse species in relatively dry situations.

The open, western slopes of Creag Bhuidhe contain the same ground flora as the mixed semi-natural woodland to the east, but there is no tree cover. The flora is dominated by heather, bell heather, cross-leaved heath, blueberry and cowberry, although there are damper areas which have *Sphagnum* spp. or other mosses present.

Dry dwarf shrub heath is a UK Biodiversity Action Plan (UK BAP) Priority Habitat.

G2 Running Water

There is one un-named and un-mapped watercourse which runs off the eastern slope of Creag Bhuidhe into the plantation. A culvert has been built under the Croftcarnoch track to allow the water to drain, although the flow was low on the day of the survey.

Running water is a UK BAP Priority Habitat.

3.2.2 Groundwater Dependent Terrestrial Ecosystems

No wetlands or potential GWDTEs were identified during the survey.

3.2.3 Invasive Non-Native Species

No INNS were recorded during the survey.

3.2.4 Bats

The woodland edges across the survey area and the riparian habitat to the west offer suitable foraging and commuting resources for bat species present in the locale. The habitats in the survey area link to the adjoining

¹⁵ Plantlife – The State of Scotland's Juniper in 2015. Plantlife Scotland, Stirling.

woodland, riparian and linear vegetated features in the wider landscape. The habitats in the survey area are therefore considered to offer **Moderate** potential for commuting and foraging bats in the locale with reference to Table 2-2 '*Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water*'.

No buildings are present within the survey area and no trees on or adjacent to the site are identified as offering PRFs.

Bats are European Protected Species (EPS).

3.2.5 Red Squirrel

There was no evidence of red squirrel recorded during the survey.

The area of semi-natural mixed woodland in the survey area is not optimal red squirrel habitat due to the high percentage of broadleaved trees and the scattered positioning of the most suitable pines.

The plantation woodland is suitable habitat, and there are suitable coniferous habitats in the wider landscape, with many of the forestry blocks interlinked and providing optimal connected foraging and breeding conditions over a wide area. The survey area and its adjacent environs are therefore considered highly likely to support a population of red squirrel.

The red squirrel is protected under the Wildlife and Countryside Act 1981.

3.2.6 Badger

No evidence of badger was found during the survey.

The woodland on and adjacent to the site is on free draining ground and offers potential habitat suitable for sett creation, as well as providing connectivity to setts in the wider landscape, although much of the ground is rocky and hummocky, and is considered suboptimal.

The surrounding areas, with less rocky ground and easier access to agricultural grassland with a more valuable food resource, are likely to be preferable, and so the survey area is considered unlikely to support any badger population.

The badger is protected for welfare reasons under the Protection of Badgers Act 1992.

3.2.7 Pine Marten

No evidence of pine marten was found during the survey.

The plantation woodland and the semi-natural woodland both offer suitable habitats for martens, as well as offering good foraging opportunities and connectivity to the wider landscape.

The area is quiet, the rocky ground within the plantation provides excellent locations for sheltering and den creation, and the dense tree cover is likely to support breeding birds and berry bushes which will provide valuable food resources.

Therefore, it is considered likely that the habitats within the survey area support a pine marten population.

The pine marten is protected under the Wildlife and Countryside Act 1981.

3.2.8 Wildcat

No evidence of wildcat was found during the survey.

Bearing in mind the survey area's proximity to a Wildcat Action Conservation Area, it is considered possible that the habitats within the survey area could support wildcat. In the east of Scotland wildcats are found in such marginal agricultural areas with moorlands, pasturelands and woodlands, usually below 500m above sea level¹⁶.

As for pine marten, the area is quiet, and the rocky ground within the plantation provides excellent locations for sheltering and den creation. The woodland edge is likely to support small mammals as a foraging resource.

The wildcat is an EPS.

3.2.9 Otter

Otter has been recorded historically on the Raitt's Burn to the west of the survey area.

No evidence of otter was found during the survey.

There was little water present in the un-named watercourse running off Creag Bhuidhe and no suitable habitat present elsewhere within the survey area to support an otter population, or a suitable food resource for otters.

The otter is an EPS.

3.2.10 Birds

Thirteen birds were recorded during the survey, predominantly within the plantation woodland and the birch on Creag Bhuidhe:

Goldcrest (*Regulus regulus*), Siskin (*Spinus spinus*), Coal Tit (*Periparus ater*), Chaffinch (*Fringilla coelebs*), Blue Tit (*Cyanistes caeruleus*), Mistle Thrush, Bullfinch (*Pyrrhula pyrrhula*), Buzzard (*Buteo buteo*), Lesser Redpoll, Wren (*Troglodytes troglodytes*), Chiffchaff (*Phylloscopus collybita*), Treecreeper (*Certhia familiaris*) and Robin (*Erithacus rubecula*).

The woodland and shrub habitats provide suitable nesting locations for all of these species, several of which are species of conservation concern in the UK.

None of the recorded species is considered unusual in similar suitable habitat in Scotland.

3.2.11 Other Sightings

One speckled wood butterfly (*Pararge aegeria*) was feeding in the ground flora on the highest point of Creag Bhuidhe, and one red admiral butterfly (*Vanessa atalanta*) was flying along the Estate track adjacent to the western point of the Croftcarnoch track.

No incidental sightings or field evidence of any amphibians or reptiles were recorded during the survey, although the heathland habitat is likely to be suitable for common lizard (*Zootoca vivipara*).

¹⁶ The Mammal Society (2012). UK BAP Mammals. Interim Guidance for Survey Methodologies, Impact Assessment and Mitigation. The Mammal Society, Southampton.

4 TRACK IMPACT ON ECOLOGY

4.1 Discussion of Impacts/Potential Impacts

The constructed section of track took out approximately four young to semi-mature birch trees and an estimated 15 juniper bushes. It was built over areas of drainage for the plantation, and areas of bracken and foxglove along the plantation edge leading onto Creag Bhuidhe. It is likely that the drainage along the plantation edge has been improved by the construction of the track. The installation of the culvert into the new drainage channel at the downstream end of the un-named watercourse which runs off the east of Creag Bhuidhe has also reduced the likelihood of flooding within the plantation.

The track was initially proposed to assist with the logistics of thinning the plantation to recreate a more natural woodland structure within the Ancient Woodland, which would benefit biodiversity across a large area of the Estate. The early stages of this management are already looking promising, with light reaching the understorey and the ground flora in the eastern sections of woodland. The objective of Balavil Estate is to allow these native trees to spread naturally over Creag Bhuidhe, creating a landscape and habitat reminiscent of the native Caledonian forest, and a track that skirts the edge of the dense plantation is considered less ecologically damaging than creating further tracks through the rocky ground within the damp areas.

No evidence of protected species was recorded during the survey, although bats, pine marten, wildcat, red squirrel and several species of breeding bird may be present in the wider area. The construction of the track is not considered to have resulted in any negative impact on populations of protected species, or breeding birds.

The juniper bushes which have been lost cannot be replaced, but considering the long-term aim of rewilding the Creag Bhuidhe area, and the proliferation of juniper on the eastern side of the hill which suggests that the bushes in this area are viable, there is the potential, over time, for the population of juniper to spread. This will create an important nesting and foraging resource for a range of bird species, and form part of an important shrub layer in the expansion of the semi-natural woodland that will be created.

The track building process appears to have been undertaken professionally to a high standard, with track edge reinstatement having taken place over much of the eastern section. It is apparent that the separation and storage of topsoil, any peat layer present, and any vegetation (or plant roots) during the cutting of the track route was successful. The vegetation along the newly-created banks of the track, and along the drainage ditches which border the track, has already begun to regenerate naturally. Rocks from sections of the constructed track which pass through rocky outcrops or areas with little or no topsoil have been used as banking, or as natural-looking screes, which have the potential to attract reptiles. Common lizard may use these rocky areas as hibernacula through the winter, and this may be considered a positive impact from the construction process, as there are very few natural rocky screes or rock piles in the area that offer suitable habitat for common lizard.

The constructed section of track is not considered to have had any significant negative impacts on the ecology of the area. Much of the route is the widening of an existing track. There has been an element of habitat enhancement through the creation of potential reptile hibernacula. The risk of flooding or pooling of surface run-off at the foot of Creag Bhuidhe has been reduced by the installation of the culvert beneath the new track, and by the system of drainage ditches along the edge of the new track. The unconstructed section of track is also not considered likely to result in any significant impacts to protected species, breeding birds or habitat.

The track is sympathetic with the landscape, and landscaping of the track edge, where undertaken, makes the track appear mature, and once the drainage ditches and other disturbed ground begin to naturally vegetate, the track will be considered a long-standing access route to the northern edge of the plantation, from where the harvested pine will be taken away, forming the southern boundary of the new area of rewilding.

Were the constructed sections of the track to be removed and the land reinstated to its previous condition, there is a severe risk of creating an area that is liable to flood, saturating the east of the plantation. As reinstating some of the track may lead to unstable slopes, there would be an increased risk of inducing landslides during prolonged periods of wet weather, or during periods of snow melt. It is considered likely that the overall disturbance to the ground and adjacent habitats would be more severe than during the initial construction, and it is likely that further trees and juniper bushes would need to be felled to grant access to larger vehicles and more plant. There would also be further disturbance of the damp, rocky ground within the Ancient Woodland plantation to allow harvesting vehicles to access some of the northern areas within the trees.

This disturbance is likely to take many years (estimated at 20) to regenerate fully, and although it is considered to be reversible and temporary over the long-term, it is also considered that the rewilding efforts and natural regeneration of Creag Bhuidhe over the same timeframe would have more benefits to the ecology of the area.

4.2 Recommendations

It is recommended that the following generic mitigation measures be implemented for any future work on the Croftcarnoch track:

- Works should continue to be undertaken to a high standard, with careful storage and restoration of soils and vegetation. The SNH guidance 'Constructed tracks in the Scottish Uplands'¹⁷ should be used.
- Works should follow the Scottish Environment Protection Agency's (SEPA's) Guidance for Pollution Prevention (GPPs)¹⁸.
- Works should be undertaken outwith the bird breeding season (mid-March to mid-August). If this is not possible, then pre-works checks should be carried out for nesting birds.
- If any trees are to be felled then they should be checked beforehand for the presence of bats and squirrel dreys.
- All contractors should be made aware of the potential presence of protected species in the survey area and, in the event of one being discovered, or evidence being found, work should cease immediately and a suitably qualified ecologist should be contacted.
- Any excavations or exposed pipes should allow animals to escape if left overnight.

¹⁷ Available here: <https://www.nature.scot/constructed-tracks-scottish-uplands> (Accessed 01/10/19)

¹⁸ Available here: <http://www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-pggs-and-replacement-series/guidance-for-pollution-prevention-gpps-full-list/> (Accessed 01/10/19)

5 SUMMARY

The desk based review and ecological walkover survey have identified the following key pieces of information:

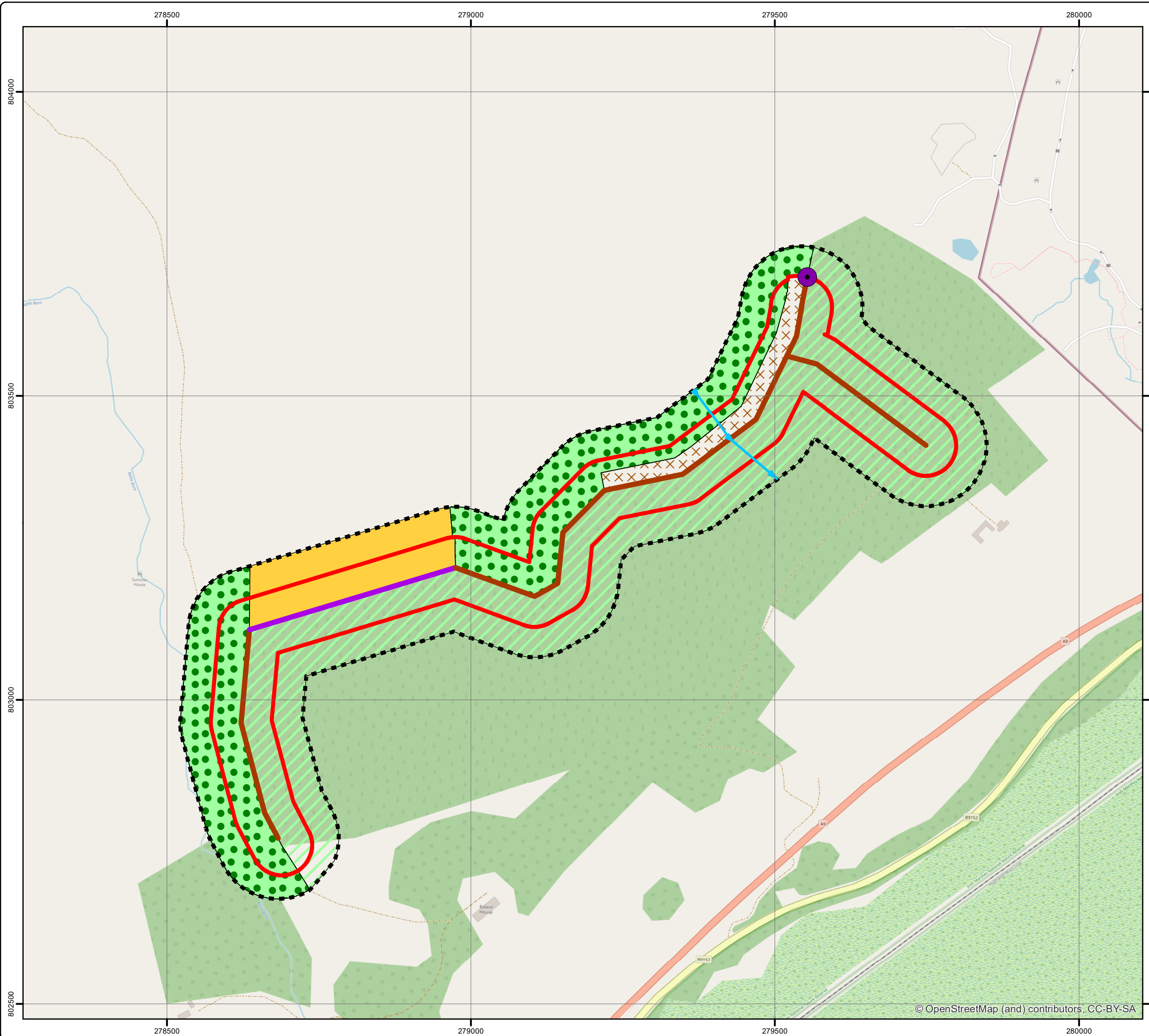
- There are no statutory designated sites in the survey area.
- The plantation woodland in the survey area is listed as Ancient Woodland (of semi-natural origin).
- Juniper on heaths, present in the survey area, is an Annex 1 habitat under the EU Habitats Directive.
- Dry dwarf shrub heath and running water, also present in the survey area, are UK BAP Priority Habitats.
- There are no potential GWDEs in the survey area.
- There are no INNS in the survey area.
- The survey area supports suitable habitat for pine marten, wildcat, red squirrel, breeding birds, and foraging and commuting bats.
- The most important habitats are outwith the immediate areas of the constructed track and the unconstructed proposed track. These are the open, mature semi-natural woodland set in heathland.
- The constructed track runs adjacent to the plantation, through bracken stands and areas of grass and heathland edge habitat.
- The unconstructed, proposed track runs through dry dwarf shrub heath before joining onto an existing grassy track through the forest edge.
- The constructed section of track is not considered to have had any significant negative impacts on the ecology of the area. Much of the route is the widening of an existing track. There has been an element of habitat enhancement through the creation of potential reptile hibernacula. The risk of flooding or pooling of surface run-off at the foot of Creag Bhuidhe has been reduced by the installation of the culvert beneath the new track, and by the system of drainage ditches along the edge of the new track.
- The unconstructed section of track is also not considered likely to result in any significant impacts to protected species, breeding birds or habitat.
- Were the constructed sections of the track to be removed and the land reinstated to its previous condition, it is considered that the overall disturbance to the ground and adjacent habitats would be more severe than during the initial construction and take many years (estimated at 20) to regenerate fully. It is considered that the rewilding efforts and natural regeneration of Creag Bhuidhe over the same timeframe would have more benefits to the ecology of the area.
- Works should continue to be undertaken to a high standard, with careful storage and restoration of soils and vegetation. The SNH guidance 'Constructed tracks in the Scottish Uplands'¹⁹ should be used.
- Works should follow the Scottish Environment Protection Agency's (SEPA's) Guidance for Pollution Prevention (GPPs)²⁰.
- Works should be undertaken outwith the bird breeding season (mid-March to mid-August). If this is not possible, then pre-works checks should be carried out for nesting birds.
- If any trees are to be felled then they should be checked beforehand for the presence of bats and squirrel dreys.
- All contractors should be made aware of the potential presence of protected species in the survey area and, in the event of one being discovered, or evidence being found, work should cease immediately and a suitably qualified ecologist should be contacted.
- Any excavations or exposed pipes should allow animals to escape if left overnight.

¹⁹ Available here: <https://www.nature.scot/constructed-tracks-scottish-uplands> (Accessed 01/10/19)

²⁰ Available here: <http://www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-pgps-and-replacement-series/guidance-for-pollution-prevention-gpps-full-list/> (Accessed 01/10/19)

APPENDICES

A LOCATION PLAN & SURVEY RESULTS



Legend

- Constructed Track
- Unconstructed Track
- Site
- Survey Area
- Roundabout

Phase 1 Habitat Codes

- A1.2.2 Coniferous Plantation Woodland
- A1.3.1 Mixed Semi-natural Woodland
- C1.2 Scattered Bracken
- D1 Dry Dwarf Shrub Heath
- G2 Running Water

Do not scale this map

Client
Balavil Estate

Project
Balavil Forestry Track

Title
Phase 1 Habitat Survey Map

Status
FINAL

Drawing No. 673065-GIS001	Revision
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Scale 1:6,000	A3	Date 1 October 2019
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Drawn JAS	Checked SMC	Approved MC
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B PHOTOGRAPHIC RECORD



Photograph 1. NH79818 03434 – looking NW up forestry track from Croftcarnoch residence into plantation



Photographs 2 & 3. Ongoing thinning operations within the plantation.



Photograph 4. NH79625 03604 – looking SSW from roundabout along newly constructed section of track.
Photograph 5. – showing newly-built drainage ditch along new track at the foot of Creag Bhuidhe.



Photograph 6. NH79552 03468 – looking north through large culvert, taking the un-named watercourse from Creag Bhuidhe into the plantation.



Photograph 7. Showing typical habitat of Creagh Bhuidhe (bracken stands and semi-mature woodland).
Photograph 8. Showing typical view within the plantation – rocky, moss-clad ground and dense Scot's pine.



Photograph 9. The constructed track uses the contours of the hill to run between the plantation (on the left) and the semi-natural woodland (on the right).



Photograph 10. Reinstatement of the banking along the track has already begun to regenerate naturally.



Photographs 11 & 12. Views E/NE into Strathspey and Loch Insh from the highest point of the track, showing the landscaping and contours.



Photograph 13. A line of broadleaved trees on the edge of the plantation (left), and the mature semi-natural woodland (right), as the track skirts the edge of the plantation.



Photograph 14. Typical ground flora of the damper sections of heath on Creag Bhuidhe showing a mix of mosses and heather species.



Photograph 15. NH79093 03222 – From the highest point of the track looking NW to the Monadhliath, onto the section of unconstructed track.



Photograph 16. NH78841 13166 – Looking up from the end of the grassy ‘Land Rover’ track to the constructed section of track at the top of Creag Bhuidhe, showing the dry dwarf shrub heath present on the west of Creag Bhuidhe.



Photographs 17 & 18. Showing the western end of the unconstructed track at its confluence with the main Estate track (at NH78739 02857), and the grassy ‘Land Rover’ track which is proposed to be upgraded.