Beinn Ghlas Wind Farm Protected Terrestrial Mammal Survey, 2022-2023

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Summary

Alba Ecology Ltd. was commissioned by Ventient Energy to conduct a protected terrestrial mammal survey within the Application Boundary of the proposed Beinn Ghlas Wind Farm, between the village of Taynuilt and Loch Awe, Argyll. Protected terrestrial mammal surveys were undertaken to assess the likelihood of the presence of wildcat (*Felis sylvestris*), badger (*Meles meles*), pine marten (*Martes martes*), otter (*Lutra lutra*), water vole (*Arvicola amphibius*) and red squirrel (*Sciurus vulgaris)*. Incidental records of species of conservation importance were also recorded.

The protected terrestrial mammal Study Area consisted of two discrete areas: (i) the proposed turbine area plus a 500m buffer zone, and (ii) the proposed access track plus a 20m buffer zone (either side of the track).

The surveys were undertaken between May 2022 and February 2023 during appropriate weather conditions and consisted of walkover surveys using standard best practice methods. Motion-triggered Bushnell camera traps were also deployed across the proposed turbine area for a period of 28 days each between May and June 2022. During the surveys, several watercourses were surveyed for otter and water vole, which included Allt na Crionaiche Bige, Allt na h-Uraid, Allt na Creiche, Garbh Allt and Allt na Seabhaig. Several unnamed, minor watercourses were present within the Study Area and these were also surveyed.

- A single pine marten scat was recorded at the southern side of the proposed turbine area. Seven pine marten scats were recorded along the proposed access track area.
- Badger scat was recorded in one location along the proposed access track area.
- Otter spraints within the proposed turbine area were recorded on Allt na Creiche and Allt na Crionaiche Bige. A regularly used otter run and sprainting site was recorded crossing the proposed access track.
- A few mature broadleaved trees with bat roost potential were recorded along the proposed access track (Appendix 1 Target Notes).
- Numerous foraging signs of red squirrels were present within the conifer plantation along the proposed access track area and at least two live animals were seen.
- Burrows which could have been water vole (although note, not confirmed) were recorded in small numbers and low densities within the proposed turbine area.
- No evidence of wildcat was recorded within the Study Area.
- A large number of woodant nests, likely to be Scottish woodant (*Formica aquilonia*) were recorded along the proposed access track area (Appendix 1 Target Notes).

Although there is no evidence that would suggest the Study Area is particularly important for any protected terrestrial mammal species, there is evidence of some use by otter, pine marten, badger, red squirrel and potentially water vole. The results are discussed and recommendations made in relation to informing potential constraints maps, plans and documents. Should the Proposed Development proceed, a Species Protection Plan will need to be developed (as per NatureScot standing advice) that considers potential construction impacts on protected mammals.

Introduction

The Beinn Ghlas Wind Farm is owned by Beaufort Wind Ltd which is a wholly owned subsidiary of Ventient Energy Ltd. Beinn Ghlas Wind Farm is located south-west of Taynuilt in Argyll, Scotland. It comprises of 14 wind turbines and has been operational since May 1999. In June 2022, planning consent was secured to operate the existing wind farm for an additional ten years to 2033.

A repowering project has been proposed at Beinn Ghlas by Ventient Energy Ltd. As part of the Environmental Impact Assessment (EIA) process, Alba Ecology Ltd. was commissioned to undertake protected terrestrial mammal surveys to assess the likelihood of the presence of wildcat (*Felis sylvestris*), badger (*Meles meles*), pine marten (*Martes martes*), otter (*Lutra lutra*), water vole (*Arvicola amphibius*) and red squirrel (*Sciurus vulgaris)*.

The protected mammal Study Area consisted of two discrete areas: (i) the proposed turbine area plus a 500m buffer zone (Figure 1), and (ii) the proposed access track plus a 20m buffer zone (Figure 2). The centre of the proposed turbine area is situated approximately at OS grid reference NM 978 262.

The proposed turbine area is characterised by undulating hill terrain in an upland plateau, with the summit of Beinn Ghlas (512m above sea level) by its western edge. The existing Beinn Ghlas Wind Farm infrastructure aside, it is made up of blanket bog, heath and grassland. This area has been primarily used for sheep grazing. To the south of the Study Area, there was an area of mixed age conifer plantation forestry. There were several small and medium-sized watercourses within the Study Area. While some of these watercourses were named, many were not. The named watercourses included the Laggan Burn, Eas a' Choin, Allt Carnaich Eas Ruadh and Allt na Seabhaig. The proposed access track area was characterised by mixed age conifer plantation forestry on the lower-middle ground to the north. The upper access track area was characterised by blanket bog, heath and grassland. The proposed access track route was not confirmed until January 2023 and so protected terrestrial mammal surveys focussed along the planned access route were undertaken between January and February 2023.

This document reports on the findings of the protected terrestrial mammal surveys undertaken in the Study Area by highly experienced Alba Ecology surveyors between May 2022 and February 2023. Incidental records of species of conservation importance were also recorded.

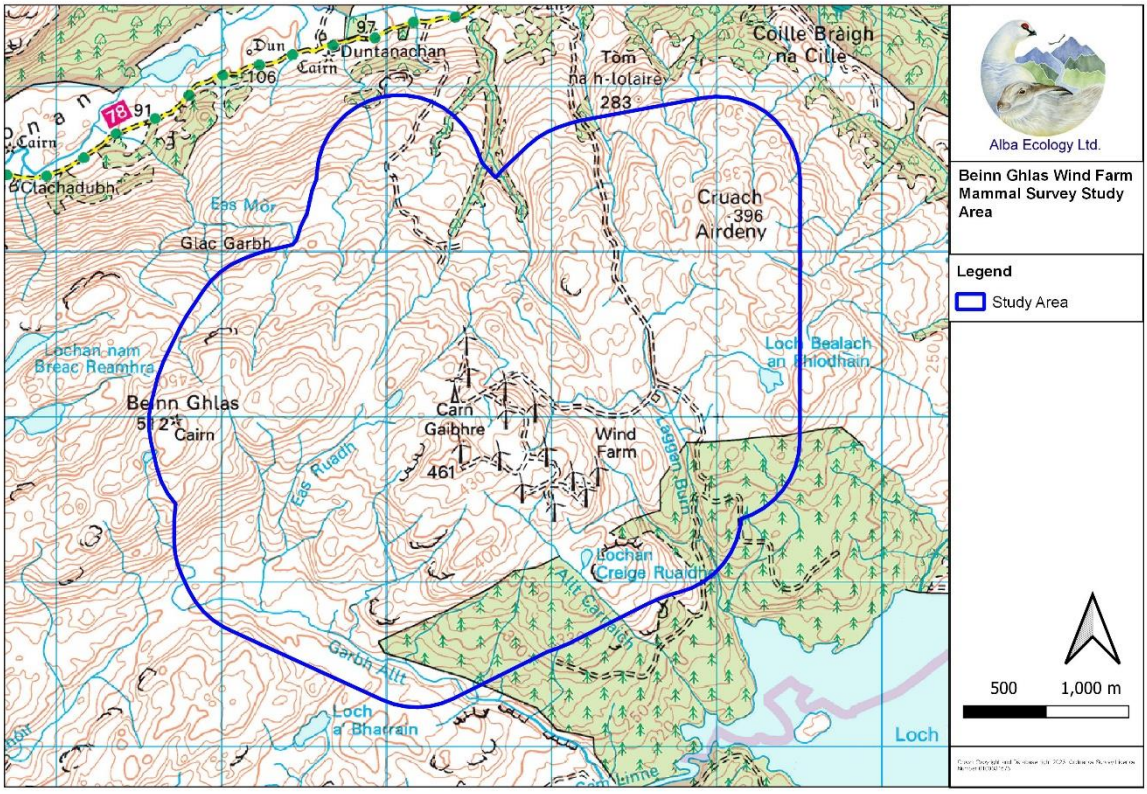

Figure 1: *Map showing the Study Area around the proposed turbine locations.*

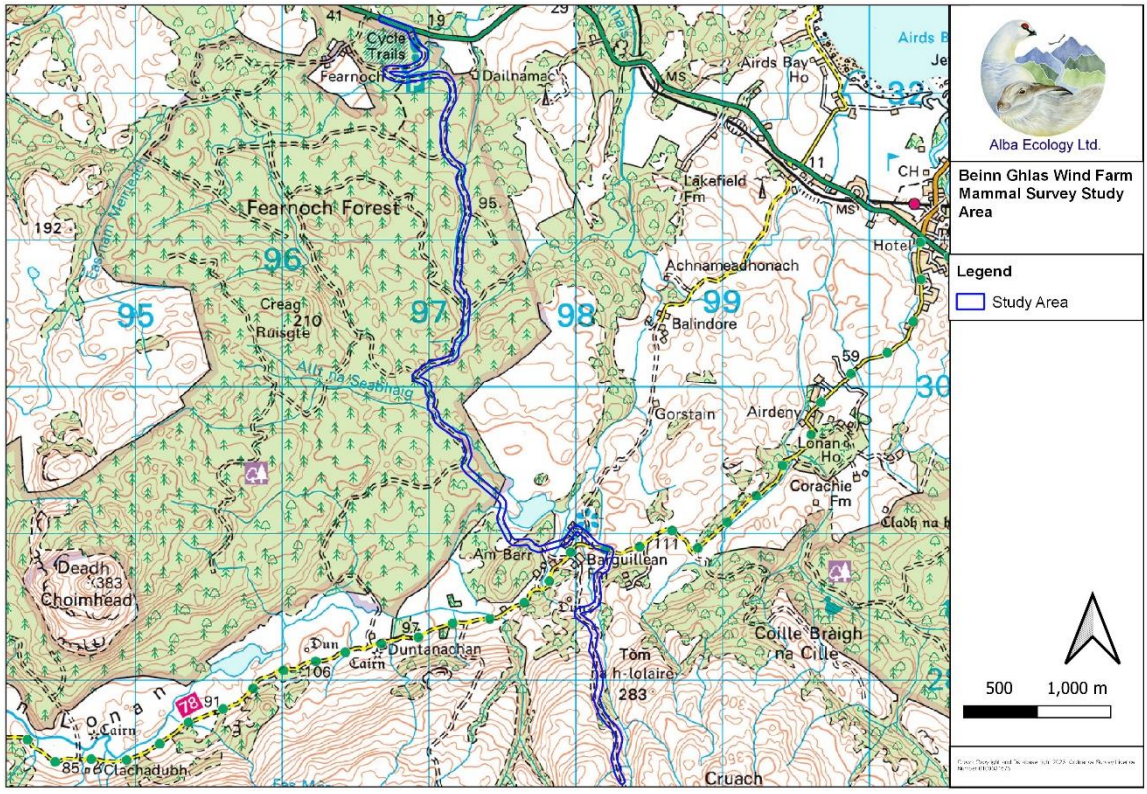

Figure 2: *Map showing the Study Area around the proposed access track.*

Methods

Experienced ecologists Mr Donald Shields, MCIEEM and Dr Peter Cosgrove, FCIEEM surveyed all potentially suitable habitats for protected terrestrial mammals within the Study Area between May 2022 and February 2023. Any signs of protected terrestrial mammals were also recorded whilst other surveyors were on site e.g. during bat/vegetation surveys. The location of each mammal sign was recorded, representative photographs were taken and a note made along with an OS grid reference using a hand-held Garmin GPS.

The key recommended survey methods and references are listed in Table 1 followed by summary details of the relevant survey methodology and legal protection.

Species	Main survey methods	Key references
Badger	Walkover search for scat, hair, claw marks, paw prints, setts and visual sightings.	Harris *et al*., 1989. Wilson *et al.,* 1997. Scottish Badgers, 2018. https://www.nature.scot/doc/guidance-licensing-badgers-badger-survey-best-practice.
Pine marten	Walkover search for scat, hair, claw marks, paw prints and visual sightings.	Vincent Wildlife Trust, 2010. The Mammal Society, 2012. Pine martens and licensing | NatureScot.
Wildcat	Walkover survey for scat, hair, claw marks, paw prints, suitable holes and visual sightings.	NatureScot, undated. Daniels *et al.,* 2001. MacDonald *et al.,* 2004. The Mammal Society, 2012. https://www.nature.scot/doc/standing-advice-planning-consultations-wildcats.
Otter	Walkover survey of riparian habitat looking for places otters use for shelter, resting and protection (such as couches, lying-up sites and holts), or for signs of activity (such as slides or spraints).	Chanin, 2003. https://www.nature.scot/doc/standing-advice-planning-consultations-otters.
Water vole	Walkover all potentially suitable watercourses, usually gently sloping peatland riparian habitats looking for faeces, latrines, feeding stations, burrows, grazed 'lawns', nests, footprints and runways in the vegetation.	The Mammal Society, 2016. Strachan *et al.,* 2011. https://www.nature.scot/doc/standing-advice-planning-consultations-water-voles.
Red squirrel	Walkover survey of woodland areas for dreys, feeding signs, droppings and direct sightings of animals.	Daniels *et al.,* 2001. Gurnell *et al.,* 2009. MacDonald *et al.,* 2004. The Mammal Society, 2012. Standing advice for planning consultations - Red Squirrels | NatureScot.

Table 1: *Key protected terrestrial mammal survey methods used.*

Target Species

The following accounts summarise the legal protection afforded to the target mammal species. The informal, plain English nature of these summaries mean that they cannot be substituted for the actual legislation, its amendments or its subordinate Orders, Licences and Regulations and we therefore urge it to be used with care. Where a formal detailed or definitive answer on legal protection is needed, this requires the opinion of a qualified lawyer and reference to the original published legislation.

Badger

The badger is protected under The Protection of Badgers Act (1992) 1992 as amended by the Wildlife and Natural Environment (Scotland) Act 2011. Under this Act it is illegal to intentionally or recklessly damage a badger sett or obstruct access to a sett and to disturb a badger while occupying a sett, or for any person to kill, injure or take a badger. It is also an offence to cruelly ill-treat a badger, to dig for or to snare a badger. In effect, badgers are fully protected in Scotland, and any planned activity that may affect them requires prior consultation with NatureScot. The presence of a sett may be pertinent in any constraints analysis (depending upon location) for defining the design layout.

Badger surveys were conducted by experienced mammal surveyors using the standard best practice methods (Table 1). Badger surveys began in May 2022 and continued through to February 2023. Surveyors regularly searched for badger signs, particularly setts across all suitable habitat within the Study Area. All badger signs were searched for, but the main focus of searches was on setts, due to the statutory protections afforded to them. Setts (if found) should be classified as active, inactive or disused. Active setts are defined by a number of characteristics such as:

- Tunnels having smoothly brushed sides (lack of cobwebs etc);
- Obviously used paths to the entrance (characterised by a lack of vegetation);
- A lack of vegetation/leaves in the entrance;
- Footprints; and
- Snuffle holes, latrines and tree scratching in the immediate vicinity.

Inactive setts are characterised by tunnels looking disused e.g. cobwebs and vegetation/leaves in the entrance and no other evidence of badger. Disused setts are often characterised by a loss of the structural integrity of the tunnel entrance (such as when they have been trampled by sheep/cattle/deer) and/or roots growing through the tunnel, and no other evidence of badger, (i.e. the hole could not likely be used for shelter by a badger in its current state).

Pine marten

Pine martens are listed on Schedules 6 of the Wildlife and Countryside Act (1981) (as amended in Scotland) and by the Nature Conservation (Scotland) Act 2004. It is an offence to

intentionally or recklessly kill, injure or take a wild pine marten or to destroy or obstruct access to any structure or place which such an animal uses for shelter or protection. Knowingly causing or permitting any of the above acts to be carried out is also an offence.

Experienced surveyors searched for pine marten signs including scats and dens as per standard guidance (Table 1). Pine marten surveys began in June 2022 and continued through to February 2023. Searching for dens focused on areas providing the greatest potential for pine marten dens such as boulder outcrops, rock piles, raised uneven ground and damaged trees where snags/holes or root plates could provide cover.

Wildcat

Wildcats are classed as European Protected Species and are fully protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). It is an offence to intentionally or recklessly kill, injure or take a wildcat or destroy or obstruct access to any structure or place which such an animal uses for shelter or protection.

Wildcat surveys were conducted by experienced surveyors using the standard best practice methods (Table 1). These propose a hierarchical approach starting with a walkover survey to establish whether there are potential den sites within the survey area. The walkover survey focused on stream banks, rocky habitats, scrub and wooded areas. Wildcat surveys began in June 2022 and continued through to February 2023.

Camera traps

Standard walkover mammal surveys can provide physical evidence of pine marten, badger and wildcat occurrence. However, these species (in particular wildcat) do not always leave obvious field signs and so can potentially be over-looked. This is especially the case if use of an area is intermittent, rather than regular (when field signs might be expected to build up). The use of camera traps has been shown to be a useful tool in recording nocturnal and otherwise difficult to record protected mammal species such as pine marten, badger and wildcat. A SNH 2011 Commissioned Report entitled '*The Use of Camera Trapping as a Method to Survey for the Scottish Wildcat'* tested the efficacy of a range of potential wildcat survey methods, including the use of camera traps. The findings from this report were used to help direct and target the use of motion-triggered Bushnell camera traps in the Study Area.

An initial walkover survey was undertaken May 2022 to identify the presence of any of the following habitat features that could be potentially used by wildcats, badgers and pine martens for shelter:

- Rock crevices, any potential burrows, setts, dens or holes; and
- Clusters of boulders along watercourses.

Areas with any of the features above were further examined for evidence of wildcat, badger and pine marten use. Evidence of activity is usually detected by the presence of one or more of the following physical signs which usually build up over time with regular use:

- Scats on denuded pathways, in ground vegetation or on tussocks;
- Hair caught on branches, barbed wire fences or in shelters;
- Prey remains; and
- Claw marks and diagnostic paw imprints in soft mud/peat.

Wildcats tend to avoid pasture and open heather moorland within home ranges, preferring woodland, stream sides and habitat edges (Daniels *et al.*, 2001; MacDonald *et al.*, 2004). Increased survey effort focused on these areas, including any lower riparian reaches immediately downstream (and outside) of the Study Area. During these searches, signs of other species, e.g. badger setts, latrines, runs etc., were also searched for.

Bushnell cameras were placed strategically to record across likely animal trails, focussing more on potentially suitable linear habitat features entering the Study Area. Camera traps tend to be less effective at recording mammal use when placed on open hill habitats such as found within the proposed Turbine Area, potentially leading to false negatives and an under-recording of mammal activity.

Bushnell Camera Trap deployment targeting the turbine area 24 hours a day over the following period: 20th May – 10th June 2022, a total of ca. 900 hours per camera:

- Camera 1: NM 97445 26484;
- Camera 2: NM 97361 25649;
- Camera 3: NM 98265 26941; and
- Camera 4: NM 98029 26015.

The motion triggered Bushnell cameras used were new edition colour imaging versions capable of recording tens of thousands of images on a single installation and were used in static infra-red triggered mode rather than in video mode.

Otter and water vole

The otter is listed on Appendix 1 of CITES, Appendix II of the Bern Convention and Annexes II and IV(a) of the EC Directive 92/43/EEC (the Habitats Directive). The Habitats Regulations state that the otter, as a European Protected Species, has been given special protection and it is an offence to deliberately capture, kill or disturb the otter, or to damage or destroy a breeding or a resting site of the otter. The otter gains further protection under Schedule 6 of the Wildlife & Countryside Act (1981) as amended by the Nature Conservation (Scotland) Act 2004.

The water vole received legal protection in 1998 through its inclusion on Schedule 5 of the Wildlife & Countryside Act (1981) (as amended). This provided protection for the water voles'

places of shelter or protection. Water voles themselves were not protected until 2008 when the legislation was changed to give them full protection under the Wildlife and Countryside Act (1981) (as amended). It is now illegal to intentionally or recklessly kill, injure or take a water vole from the wild.

Otter and water vole surveys were conducted during suitable weather conditions (during and after a prolonged period of several days of dry weather) during June 2022, following standard survey guidance (Table 1). This gave a reasonable period of prolonged low water, so that otter and water vole signs (spraints, latrines etc.) would have had time to build up and not get washed away. All watercourses and their riparian habitats within the Study Area were systematically surveyed for otters and water voles. The proposed access track route was also surveyed in January and February 2023 (outside the recognised survey window for recording recent water vole activity).

Surveyors walked the stream corridors searching for otter and water vole signs including holts, other resting sites, spraints and tracks for otters and distinctive water vole field signs including burrows, runways through vegetation, piles of feeding remains and faecal latrines. A search was made of potential otter spraint sites such as ledges at bridges and culverts, and elevated features including grass tussocks, rocks and tree stumps on banks. Muddy and sandy areas were checked for otter footprints. Suitable cover includes rock piles, tree roots, areas of dense vegetation and banks suitable for digging were checked for the presence of holts or other resting sites.

Based on the site boundary, topography and the habitat requirements of otters and water voles, the following named watercourses were selected for otter and water vole survey:

- Allt Carnaich, Laggan Burn, Allt Ruadh and Allt na Seabhaig; and
- Several unnamed watercourses.

Red squirrel

The red squirrel is protected under the Wildlife and Countryside Act 1981 as amended by The Nature Conservation (Scotland) Act 2004. Under this legislation it is illegal to intentionally kill, injure or disturb a red squirrel or to damage, destroy or obstruct access to a drey.

Trees potentially likely to be affected were assessed as to their general suitability for red squirrels, based on published accounts of habitat use (e.g. Bryce *et al*., 2005). Surveys for the presence of red squirrel included visual scans for dreys (where possible) and searches for feeding signs e.g. stripped cones on the ground in suitable habitats using standard survey methods (Table 1).

Results

Terrestrial walkover survey for badger, pine marten and wildcat

No signs of wildcat were found within the Study Area during walkover surveys. Eight pine marten scat locations were recorded in the Study Area; one within the proposed turbine area and seven within the proposed access track area (Table 2). A single old badger scat was recorded within the proposed access track area (Table 2). Illustrative photos of scats are provided in Appendix 1 Target Notes.

Mammal Sign	Location
Pine marten scat	NM 98887 25739
Pine marten scat	NM 97301 29389
Pine marten scat	NM 98058 27890
Pine marten scat	NM 98293 27374
Multiple pine marten scats	NM 98150 28150
Pine marten scat	NM 98125 28333
Two old pine marten scats	NM 98119 23361
Multiple pine marten scats	NM 98079 28400
Badger scat	NM 98043 29008

Table 2: *Pine marten and badger signs recorded within the Study Area.*

Bushnell Camera trap surveys

Bushnell cameras took several hundred photographs that were triggered by motion between 20th May and 10th June 2022. Almost all of these were of vegetation moving strongly in the wind. The remainder were of red deer and sheep. No specially protected terrestrial mammals were recorded during this period. An example of the camera trap images is shown in Photo 1.

Photo 1: *Example photograph of sheep from Camera 1 at NM 98887 25739.*

Otter and water vole surveys

Otter spraints were recorded infrequently across the Study Area (Table 3, Photo 2). One sprainting site was regularly used, as there was a build-up of very old (disintegrated), old, medium aged and fresh scat at NM 97508 29160. Next to this sprainting location an otter run and crossing point ran parallel to a small unnamed burn and crossed the proposed access track (see Appendix 1 Target Notes for illustrative photos).

Potential water vole signs were recorded sparsely across the Study Area (Table 3), These however, did not record any evidence of likely current use of the Study Area.

Mammal Sign	**Location**
Otter spraint	NM 96424 25219
Otter spraint	NM 97841 27227
Otter spraint	NM 97901 26784
Regularly used otter sprainting site and important otter crossing	NM 97508 29160
Old otter spraint	NM 97037 29795
Burrows (potential water vole)	NM 96329 25125
Burrows (potential water vole)	NM 96399 25162
Burrows (potential water vole)	NM 96485 25223

Table 3: *Otter and potential water vole signs recorded within the Study Area.*

Photo 2: *Example photo of otter spraint.*

Red squirrel survey

Visual sightings of red squirrels were seen within the conifer forest part of the proposed access track area and many hundreds of chewed cones littered the forest floor adjacent to the existing

access track. These feeding signs were far too common to plot individually and it should be assumed that red squirrel is omnipresent within the conifer forest part of the Study Area. There were many thousands of mature conifer trees present within the 50m buffer zone along either side the proposed access track and it was simply not possible to search effectively for dreys within these trees.

Mammal signs within the proposed turbine area and camera trap locations are shown in Figure 3. Mammal signs within the proposed access route area are shown in Figure 4.

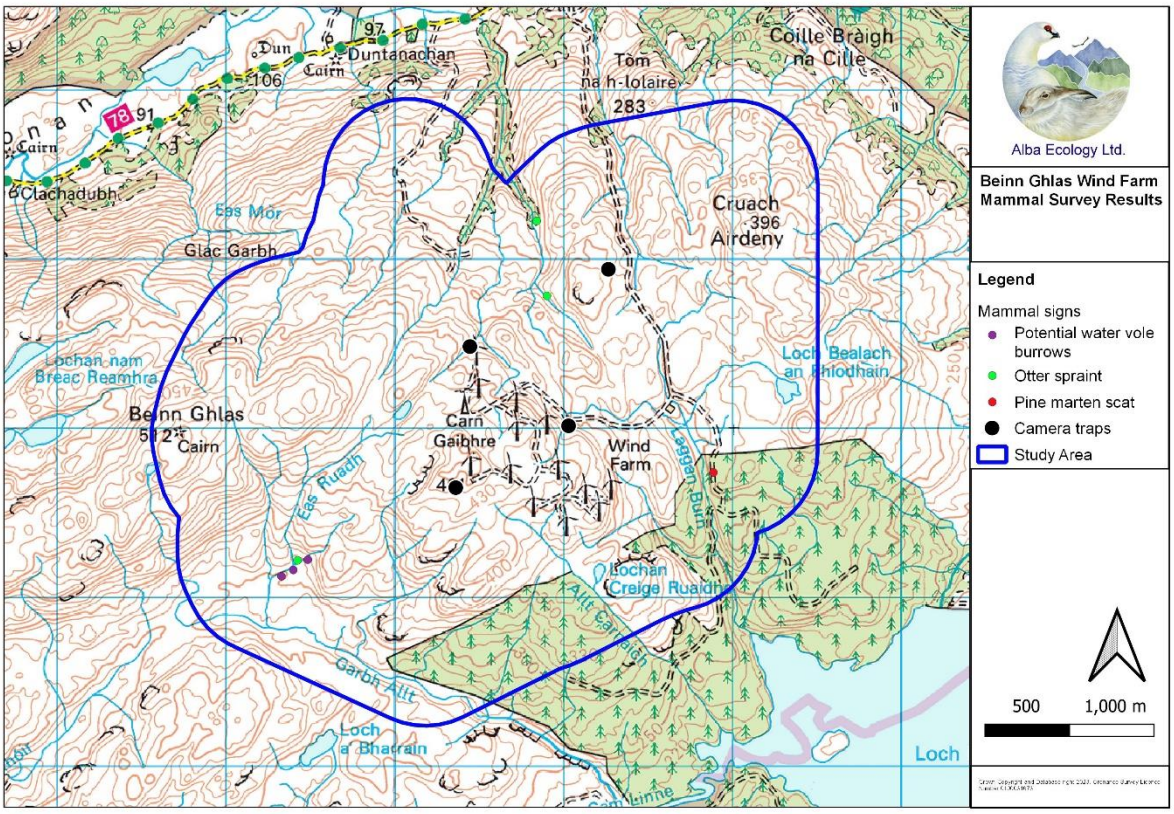

Figure 3: *Map showing locations of protected terrestrial mammal field signs and camera traps in the Study Area around the proposed turbines, 2022.*

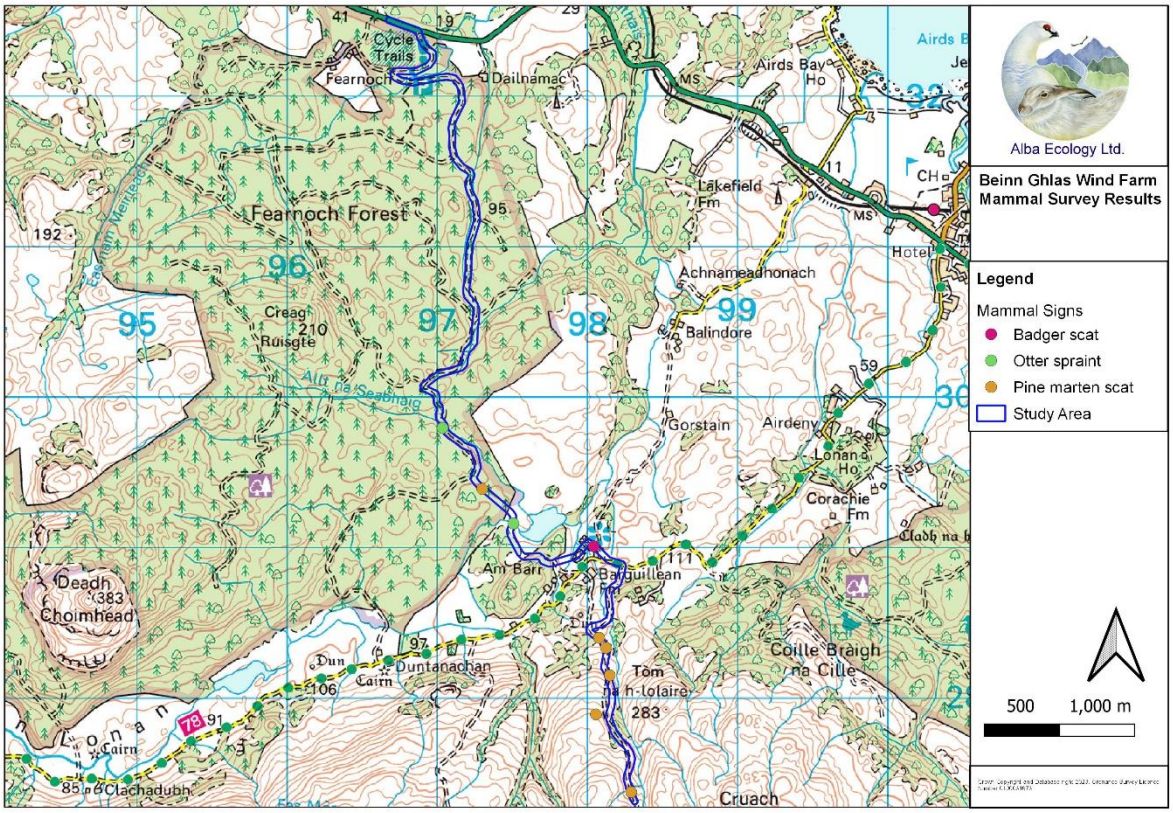

***Figure 4**: Map showing locations of protected terrestrial mammal field signs in the Study Area around the proposed access track, 2023.*

The 2023 surveys of the proposed access track area recorded several mature broadleaved trees with holes or snags some of which had potential to hold pine martens and/or had bat roost potential (Appendix 1). Surveys of the access track area in January-February 2023 also recorded numerous woodant nests, likely Scottish woodant (*Formica aquilonia*) within 50m of either side of the existing access track within the conifer forest (Appendix 1 Target Notes for illustrative photos).

Discussion

The main limitations of this protected terrestrial mammal survey are recognised to apply to most ecological surveys. The protected terrestrial mammal surveys undertaken in the Study Area were sampling techniques, not absolute censi. Results give an indication of numbers and activities of species at the particular times that surveys were carried out. Species occurrence changes over time; so, the results presented in this report are snapshots in time (specifically the 2022 summer season for the proposed turbine area and January-February 2023 for the proposed access track area). Nevertheless, surveys were undertaken during the period of the year when protected mammal activity would likely be high for most species. The only exception to this was the protected terrestrial mammal survey of the proposed access track route in January-February 2023 – this is an unsuitable time of year to survey for recent signs of water voles. Nevertheless, no water voles burrows were recorded along the proposed access track area and so their regular use of this area is considered unlikely.

All protected terrestrial mammal survey reaches were easily accessible. Consequently, survey coverage was considered very good across the entire Study Area.

Wildcat

No evidence of wildcat was recorded within the Study Area. The results from the survey suggest that the Study Area was not important for, or regularly used by wildcat during the period of survey.

Badger

A single badger scat was recorded along the proposed access track area. No evidence of any badger setts was recorded.

Pine marten

There was evidence of pine marten use (scat), with field signs recorded in both parts of the Study Area. However, there was no sign of any pine marten dens (which are specially protected). Consequently, although there is no evidence that would suggest the Study Area is important for pine marten, they do use the Study Area and a pre-construction protected mammal survey should be conducted before any construction work commences and the results should be used to inform a potential constraints map and related technical plans and documents. Should the Proposed Development proceed, a Species Protection Plan will need to be developed (as per NatureScot standing advice) that considers potential construction impacts on pine martens.

Otter

The otter surveys recorded small numbers of otter signs e.g. spraints and a well-used run within the Study Area in 2022-2023. No other evidence of protected otter features, such as holts or couches were recorded. This suggests that while otters used the Study Area occasionally it was not necessarily important for them. Otters can be highly seasonal in terms of their use of an area, for example utilising otherwise unused burns when hunting for frogs and toads or traversing between catchments. Consequently, although there is no evidence that would suggest the Study Area as a whole is important for otters, they do use the Study Area and a pre-construction survey should be conducted before any construction work commences. Watercourse crossing points and any large culverts should use mammal friendly designs. The otter run and crossing point @ NM 97508 29160 is considered regularly used and it crosses the proposed access track route. Should the Proposed Development proceed, this regularly used otter feature should be: (i) marked up on potential constraints map and related technical plans and documents, (ii) track signage alerting vehicle drivers to potential presence of otters should be placed on both sides of the otter crossing, (iii) a reminder of maximum speed limits on both sides of the crossing should be made to reduce the likelihood of otter road traffic mortalities, and (iv) the access track should avoid blocking this important otter crossing point. Should the Proposed Development proceed, a Species Protection Plan

will need to be developed (as per NatureScot standing advice) that considers potential construction impacts on otters.

Water Vole

Potential water vole burrows were recorded in three locations within the Study Area (Table 3). However, there was no evidence of current use by water vole. Assuming the burrows were water vole burrows, the evidence suggests that while water voles have previously been present within the Study Area, it is not an area with a large or permanent population. In upland areas, water voles typically exist in networks of small colonies, made up of one or a few family groups and around 15-20% of these colonies suffer extinction each year (Aars *et al*., 2001; Telfer *et al*., 2001).

The presence of a small number of potential water vole burrows within the Study Area is quite typical of upland water vole habitat use in Scotland. In healthy water vole populations, new colonies are formed annually owing to their exceptional ability to disperse. Dispersing water voles typically travel more than 2km along watercourses and overland, with some individuals dispersing many kilometres (Telfer *et al*., 2001; Lambin *et al*., 2004). Consequently, watercourse crossing points and any large culverts should use mammal friendly designs to facilitate routes for water voles and otters to pass through unimpeded.

Given the time of year of the access track area survey (any water voles will be hibernating), the survey results suggest that water voles are not present within the Study Area. Nevertheless, to conclude that definitively, a water vole survey at the appropriate time of year (spring/summer) would need to be conducted. Regardless, a pre-construction protected mammal survey should be conducted before any construction work commences and the results should be used to inform a potential constraints map and related technical plans and documents, noting that potential use of an area by water voles can vary considerably annually. Should the Proposed Development proceed, a Species Protection Plan will need to be developed (as per NatureScot standing advice) that considers potential construction impacts on water voles.

Red squirrel

Given the presence of red squirrels throughout all the conifer forest part of the proposed access track area, it is important to consider red squirrels. NatureScot advise (Red squirrels and licensing | NatureScot) that they can license activities for social, economic or environmental reasons (including development) that might affect red squirrels, as long as:

- The licensed activity will contribute to significant social, economic or environmental benefit;
- There is no satisfactory alternative; and
- There is no significant negative impact on the conservation status of the species.

This approach has been adopted to allow forestry organisations to harvest conifers. If conifers

along the proposed access track require to be felled, then it is likely that a NatureScot licence for red squirrels will be required. Should the Proposed Development proceed, a Species Protection Plan will need to be developed (as per NatureScot standing advice) that considers potential construction impacts on red squirrels.

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