TECHNICAL APPENDIX 8.3

Protected Mammal Survey Report

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Summary

ITPEnergised was appointed by Scottish Power Renewables to undertake a protected mammal survey, including but not restricted to otter (*Lutra lutra*), water vole (*Arvicola amphibius*) badger (*Meles meles*), pine marten (*Martes martes*) and red squirrel (*Sciurus vulgaris*) of an area of land north of Glentrool Village, and southwest of the town of Barr (hereafter referred to as the 'Site'). The Site is approximately 5474 hectares, the majority of which comprises marshy grassland and coniferous forestry, ranging from recently clear-felled to mature plantation. The A714 road runs along the south of the Site and a number of watercourses run through the application area and provide potential support for protected species.

The purpose of the survey was to investigate all suitable habitat within the Site and a wider 250m study area (where accessible) for any evidence of use by protected mammals. The survey results are intended to facilitate the identification of potential constraints to development and where mitigation and/or further survey work may be required to inform a future planning application, as appropriate.

Two otter spraints, comprising fish bones, were found on the Thumb Loop and the Cairnfore Burn, within the Site boundary. No evidence of holts or hovers were identified within the Site Boundary and 250m buffer.

Two water vole burrows were identified within the Site boundary. A burrow, feeding evidence and droppings were identified on Muck Water and a burrow and feeding evidence were identified on the Polmaddie Burn.

Badger prints were identified just outside the Site boundary and a badger skull was found in the north of the Site.

No evidence of pine marten or red squirrel was identified within the Study Area; however, there is suitable habitat, such as coniferous plantation woodland, for both species within the Study Area.

1 Introduction

1.1 Overview

1.1.1 ITPEnergised was appointed by Scottish Power Renewables to undertake a protected mammal survey, including but not restricted to otter (*Lutra lutra*), water vole (*Arvicola amphibius*), badger (*Meles meles*), pine marten (*Martes martes*) and red squirrel (*Sciurus vulgaris*), in an area of land north of Glentrool Village, and southwest of the town of Barr (hereafter referred to as the 'Site'). The Site centres on Ordinance Survey Grid Reference NX 33444 84947 and straddles both Dumfries and Galloway Council and South Ayrshire Council.

1.1.2 The Site is approximately 5474 hectares (ha), the majority of which comprises marshy grassland and coniferous forestry, ranging from recently clear-felled to mature plantation. The A714 road runs along the south of the Site and a number of watercourses run through the Site and provide potential habitat for protected species.

1.1.3 The purpose of the survey was to investigate all suitable habitat within the Site and a wider 250m study area (where accessible) for any evidence of use by protected mammals.

1.1.4 The survey results are intended to facilitate the identification of potential constraints to development and where mitigation and/or further survey work may be required to inform a future planning application, as appropriate.

1.2 Development Proposal

1.2.1 The protected mammal survey was undertaken to inform the planning application for Clauchrie Windfarm ('the Proposed Development').

2 Legislation and Guidance

2.1 Legislation

Otter

2.1.1 Otter is protected under Schedule 5 of The Wildlife and Countryside Act 1981 (as amended) and receives protection under Section 9 of the Act. Otter is also strictly protected as a European Protected Species under the Conservation (Natural Habitats, &c.) Regulations 1994. As such, it is an offence to deliberately or recklessly:

- Capture, injure or kill an otter;
- Harass an otter or group of otters;
- Disturb an otter in a holt or any other structure or place it uses for shelter or protection;
- Disturb an otter while it is rearing or otherwise caring for its young;
- Obstruct access to a holt or other structure or place otters use for shelter or protection, or otherwise deny the animal use of that place;
- Disturb an otter in a manner or in circumstances likely to significantly affect the local distribution or abundance of the species; and
- Disturb an otter in a manner or in circumstances likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young.

2.1.2 It is also an offence to:

- Damage or destroy a breeding site or resting place of such an animal (whether or not deliberately or recklessly); and to
- Keep, transport, sell or exchange, or offer for sale or exchange any wild otter (or any part or derivative of one) obtained after 10 June 1994.

2.1.3 It should be noted that otter shelters are legally protected whether an otter is present or not.

2.1.4 Otter is also included on the Scottish Biodiversity List (SBL), where it is listed for avoidance of negative impacts (The Scottish Government, 2013). It is also listed as a key species for Ayrshire in the Ayrshire Local Biodiversity Action Plan (LBAP) (Biodiversity in Ayrshire, 2008) and as a mammal of high importance in the Dumfries and Galloway Local Biodiversity Action Plan (LBAP) (Dumfries & Galloway Biodiversity Partnership, 2009).

Water Vole

2.1.5 Water vole receives partial protection through its listing on Schedule 5 of The Wildlife and Countryside Act 1981 (as amended). In Scotland, this legal protection is currently restricted only to the water voles' places of shelter or protection; it does not extend to the animal itself. It is an offence to intentionally or recklessly:

- Damage, destroy or obstruct access to any structure or place that water voles use for shelter or protection; or
- Disturb a water vole while it is using any such place of shelter or protection.

2.1.6 Water vole is a Priority Species on the SBL where it is listed for both conservation action and for avoidance of negative impacts. This species has suffered significant declines in recent decades, mainly due to habitat loss and degradation, population fragmentation and predation by American mink (*Mustela vison*).

2.1.7 Water vole are listed as a key species for Ayrshire and have a species action plan in the Ayrshire LBAP (Biodiversity in Ayrshire, 2008). They are also listed as a mammal of high importance in the Dumfries and Galloway LBAP (Dumfries & Galloway Biodiversity Partnership, 2009).

Badger

2.1.8 Badgers are fully protected under the Protection of Badgers Act 1992 amended by the Wildlife and Natural Environment (Scotland) Act 2011, which makes it an offence to:

- Take, injure or kill a badger;
- Possess or cruelly ill-treat a badger;
- Interfere with a badger sett;
- Sell and possess a live badger; and
- Mark and ring a badger.

2.1.9 Interfering with a badger sett includes:

- Damaging or destroying a sett or any part of it;
- Obstructing access to a sett;
- Disturbing a badger whilst it is in a sett; and
- Causing or allowing a dog to enter a badger sett.

2.1.10 Should such actions be undertaken, despite having no intention to do so, they would still be considered an offence.

2.1.11 The 1992 Protection of Badgers Act defines a badger sett as "any structure or place which displays signs indicating current use by a badger". A sett in an occupied territory is therefore classified as being in current use even if it is only used seasonally or occasionally by badgers, and it is afforded the same protection as an inhabited sett.

2.1.12 Badger is mentioned in several habitat action plans within the Dumfries and Galloway LBAP and are considered important to the Scottish public in the Scottish Biodiversity Strategy, but not considered to be locally threatened (Dumfries and Galloway Biodiversity Partnership, 2009).

Pine Marten

2.1.13 Pine marten (*Martes martes*) are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Additionally, certain methods of killing or taking pine martens is illegal under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended).

2.1.14 It is an offence to intentionally or recklessly:

- kill, injure or take a pine marten;
- damage, destroy or obstruct access to a nest or den – i.e. any structure or place which such an animal uses for shelter or protection; and
- disturb such an animal when it is occupying a nest or den for shelter or protection (except when this is inside a dwelling house).

2.1.15 It is also an offence to:

- possess or control, sell, offer for sale or possess or transport for the purpose of sale any living or dead pine marten or any derivative of such an animal; and
- knowingly cause or permit any of the above acts to be carried out.

Red Squirrel

2.1.16 It is an offence to intentionally or recklessly:

- kill, injure or take a red squirrel (*Sciurus vulgaris*);
- damage, destroy or obstruct access to a drey or any other structure or place which a red squirrel uses for shelter or protection; and
- disturb a red squirrel when it is occupying a structure or place for shelter or protection.

2.1.17 It should be noted that this protection does not apply to areas where red squirrels only feed.

2.1.18 It is also an offence to:

- possess or control, sell or offer for sale, or possess or transport for the purpose of sale any living or dead red squirrel or any derivative of such an animal;
- release a grey squirrel into the wild; and
- knowingly causing or permitting any of the above acts to be carried out is also an offence.

2.2 Good Practice Ecological Guidance

2.2.1 As part of the protected species survey, cognisance has been taken of the following good practice guidelines and survey method publications:

Otter

- Competencies for Species Survey: Otter (CIEEM, 2013a); and
- Monitoring the Otter *Lutra lutra* (Chanin, 2003).

Water Vole

- Competencies for Species Survey: Water Vole (CIEEM, 2013b); and
- The Water Vole Mitigation Handbook (Dean et al., 2016).

Badger

- Competencies for Species Survey: Badger (CIEEM, 2013c); and
- Surveying for Badgers: Good Practice Guidelines (Scottish Badgers, 2018).

Pine Marten

- Competencies for Species Survey: Pine Marten (CIEEM, 2013d);
- National Pine Marten Survey of Ireland 2005 (O'Mahony, O'Reilly and Turner, 2006); and
- A guide to Identifying evidence of Pine Martens in Wales (Vincent Wildlife Trust, 2017).

Red Squirrel

- Red squirrel conservation: Field study methods (Gurnell and Pepper, 1994); and
- Practical Techniques for Surveying and Monitoring Squirrels (Gurnell *et al*., 2009).

3 Methods

3.1.1 The field survey of the Site and 250m buffer was undertaken on 30-31 July and 01 August 2019.

3.2 Otter

3.2.1 A thorough search was undertaken of the riparian zone and up to 20m away from the water's edge (where suitable habitat was found to be present). Throughout the survey, overhanging banks, cavities, bankside vegetation and riparian features, such as boulders and mud, were searched for the following signs of otter use:

- Spraints – otter dung, which is used for marking territories, is often located on prominent features within the channel or on the bank (including weirs, bridges, rocks, tree roots, watercourse confluences, etc.); and
- Footprints – located in soft mud, silt or sand banks.

3.2.2 Other potential evidence of otter presence was also searched for in the survey. The following signs, when interpreted in conjunction with spraints and footprints, can provide data to support an assessment of otter activity on a site. They cannot, however, be used in isolation to definitively indicate otter presence/absence:

- Resting-up places – comprising couches (areas of flattened vegetation) or hovers (lay-up areas, including ledges under rocks or hollows under fallen trees or roots).
- Potential holt sites – holes or dens;
- Runs and trails – pathways from the water into dense cover or around bankside trees;
- Slides – down banks as an entry to waterbodies; and
- Feeding remains – e.g. remains of fish and amphibians.

3.3 Water Vole

3.3.1 A thorough search was undertaken in the riparian zone and up to 20m away from the water's edge for evidence of water voles.

3.3.2 Potential evidence of water vole searched for included the following:

- Latrines – water vole droppings are often concentrated in discreet latrine sites near the nest, at range boundaries and places where they regularly enter and exit the water;
- Feeding stations and feeding remains – feeding remains in the form of neat piles of chewed lengths of vegetation are often found in runways and at haul-out platforms;
- Tunnel/burrow entrances – these are typically found along the water's edge on top of the bank up to 5m from the water's edge. Holes on top of the banks often have grazed 'lawns' around them;
- Paths and runs at the water's edge;

- Footprints – these may be identified in soft mud or silt;
- Sightings and or sounds of water voles entering the water; and
- Droppings – while most droppings will be deposited in latrines, some may also be found scattered along runways in vegetation.

3.3.3 Specifically, for watercourses, the approximate depth and speed of water flow, the waterway width, bankside vegetation and surrounding land use, was also recorded, as these factors may determine the suitability of habitat for supporting water voles.

3.3.4 It should be noted that any single field sign recorded in isolation, especially when ambiguous (e.g. a burrow or footprints) would not be definitive in confirming presence.

3.4 Badger

3.4.1 As part of the survey, field signs including setts, day beds, badger faeces in dung pits, evidence of foraging, badger paths, scratching posts, hair and footprints were actively searched for. The survey was based on the methods described by Scottish Badgers (2018). The survey included all hedgerows, field boundaries, watercourses, paths and other linear features within the Site and an additional 250m survey buffer.

3.4.2 On identification of a badger sett, the observer noted the number of entrances, in addition to a description of the activity level and status of the sett. The status of a sett was evaluated and determined based on descriptions presented in Scottish Badgers' good practice guidelines (2018), which assigns setts into one of four categories:

- Main sett (used throughout the year and constitutes the main breeding sett);
- Annexe sett (forms part of the main sett area, but is not directly linked by an underground passage to the main sett, either due to a barrier (e.g. separated by a watercourse or ditch) or by distance);
- Subsidiary sett (offers an alternative large sett complex to the main sett but is usually although not always at least 50m away and are not always obviously linked by a well-used path); and
- Outlier sett (often comprising just one or two holes and is infrequently used by badgers).

3.4.3 Each sett entrance is classified according to its degree of usage:

- Well used: are clear of vegetation and debris, sides worn smooth but not necessarily excavated recently;
- Partially used: not in regular use and have debris in the entrance; and
- Disused: not in use for some time, are partially blocked and could not be used without considerable effort.

3.4.4 It should be noted that the status of a badger sett can change over a relatively short period of time. For example, some badger social groups will move the location of the main sett to other less used setts within their territory in response to external factors, such as disturbance.

3.5 Pine Marten

3.5.1 As part of the survey, field signs, including scats and potential den sites, were actively searched for. Differences between field signs of pine marten and other species can be determined in a number of different ways.

- Scat – Found in areas of woodland and forest tracks and are used as territorial markers. Pine marten scats can be differentiated from other similar species such as fox due to aroma, size and constituent parts as they tend to be made up of a variety of food including eggs, insects, berries and bone, although definitive identification can require DNA testing;
- Footprints – Pine marten are mustelids so have five toes compared to species that may be mistaken including fox and dog, both of which have four toes; and
- Den Sites – Pine martens prefer to utilise woodland habitats where they can use their climbing abilities to access tree cavities, squirrel dreys and areas of wind-throw. Evidence of use may also be seen from prey remains surrounding den sites including feathers and small mammal bones.

3.6 Red Squirrel

3.6.1 As part of the survey, all suitable red squirrel habitat within the Study Area was searched for:

- Dreys or dens (hereafter "dreys");
- Prints; and

Evidence of feeding activities, such as gnawed pine cones.

3.7 Survey Limitations

3.7.1 It is recognised that the badger survey was undertaken out with the optimal time of year (which is from February to April, inclusive) when there is typically a peak in territorial activity.

3.7.2 Site conditions were suitable for survey, with no heavy rain preceding survey to potentially wash away field evidence of notable otter. As such no further survey limitations were identified.

4 Results

4.1.1 Figure TA 8.3.1 presents the survey results, including the location of Target Notes (TNs), which are detailed in Annex A.

4.2 Otter

4.2.1 As shown on Figure TA 8.3.1, two spraints, comprising fish bones, were recorded within the Site boundary on the Thumb Loop and Cairnfore Burn (TN18 and TN19). No evidence of holts or hovers were identified within the Site Boundary and 250m buffer. No other evidence of otter presence was identified during the survey.

4.2.2 The river valley of the Muck Water is suitable for holt construction. However, most of the Site is unsuitable for holt construction, due to the flat topography and wetland habitat.

4.2.3 There was evidence of frogs and toads, both of which are otter prey species, throughout the survey area. Galloway Fisheries Trust carried out a fish survey of the Site and identified trout and/or salmon on the Laniwee Burn, High Cree, Farden Burn tributary, Cairnfore Burn, Polmaddie Burn, Fardin Burn, Clauchrie Burn and Scalloch Burn (Galloway Fisheries Trust, 2019). Given the connectivity of the Site to the wider area, and the presence of prey species, otter may enter the Site from outside areas to forage in watercourses throughout the Site and/or to commute across.

4.3 Water Vole

4.3.1 Two water vole burrows were identified within the Site boundary. A burrow, feeding evidence and droppings were identified on the Muck Water (TN20) and a burrow and feeding evidence were identified on the Polmaddie Burn (TN21). No other evidence of water vole presence was identified during the survey.

4.3.2 Watercourses including the Goat Burn (TN1), Plumbjordan Burn (TN3), Roughlea Burn (TN7 and TN8), the tributaries associated with Muck Water (TN12, TN13 and TN16), Water of Minnoch (TN5 and TN6), the tributaries of Cairnfore Burn (TN10) and Fardin Burn (TN14) are heavily vegetated or have stone banks making them sub-optimal for water vole. Sprit Strand was also heavily vegetated and was fast flowing at the time of survey.

4.3.3 Gowan's Burn (TN11), Laggan Burn, the tributaries leading to the Water of Gregg and the section of Muck Water in the area of open ground to the north of the Site have suitable banks for creating burrows and the water courses were suitable for water vole.

4.3.4 Larger watercourses, including the Clauchrie Burn, Shalloch Burn, Laniewee Burn (TN2), Thumb Loop (TN4), Cairnfore Burn (TN15), Polmaddie Burn and the western section of the Muck Water were all faster-flowing, although there were sections throughout that were slower or pooled and would make suitable habitat for water vole.

4.4 Badger

4.4.1 Badger prints were identified 32m west of the Site boundary (TN23) and a badger skull was found in the open area at the north of the Site (TN22). No associated evidence of badger, such as an active or disused sett, was identified near the skull; as such, the skull had probably been moved to the location by a predator or scavenger. No other evidence of badger presence was identified during the survey.

4.4.2 Badgers could construct setts within the coniferous plantations throughout the Site as well as the river valley of the Muck Water and open areas at the north of the Site. The surrounding wetland habitat is unsuitable for sett building.

4.4.3 Given the high mobility of badger, individuals could enter the Site from areas out with the Survey Area. However, foraging opportunities are nevertheless suboptimal across most of the Site, with notably the coniferous plantation and wetland habitats being unlikely to support good prey numbers.

4.5 Pine Marten

4.5.1 No evidence of pine marten was recorded during the survey. Pine marten could use the coniferous plantation woodland within the Study Area to forage, commute and construct dens (particularly in areas of wind-throw).

4.6 Red Squirrel

4.6.1 No evidence of red squirrel was recorded during the survey. Squirrels could use the coniferous plantation woodland within the Study Area to forage and construct dreys.

4.7 Other Species

4.7.1 No other evidence of protected species was identified during the survey.

5 Conclusion

5.1.1 No otter holt or other resting place was recorded in the survey, but spraints were recorded suggesting that otters may forage within the Site and/or commute across it. Otters use Thumb Loop and Cairnfore Burn. As such, it is concluded that otters are likely to be occasional within the Site.

5.1.2 Water vole are present on Muck Water and Polmaddie Burn, and suitable habitat is present elsewhere on the Site. However, the evidence suggests that numbers are very low.

5.1.3 No evidence of current badger use of the Site was recorded, but the survey documented activity west of the Site. Badgers are highly mobile and could move throughout the Site, although foraging opportunities are likely to be suboptimal.

5.1.4 No evidence of pine marten or red squirrel was identified within the Study Area; however, there is suitable habitat, such as coniferous plantation woodland, for both species within the Study Area.

6 References

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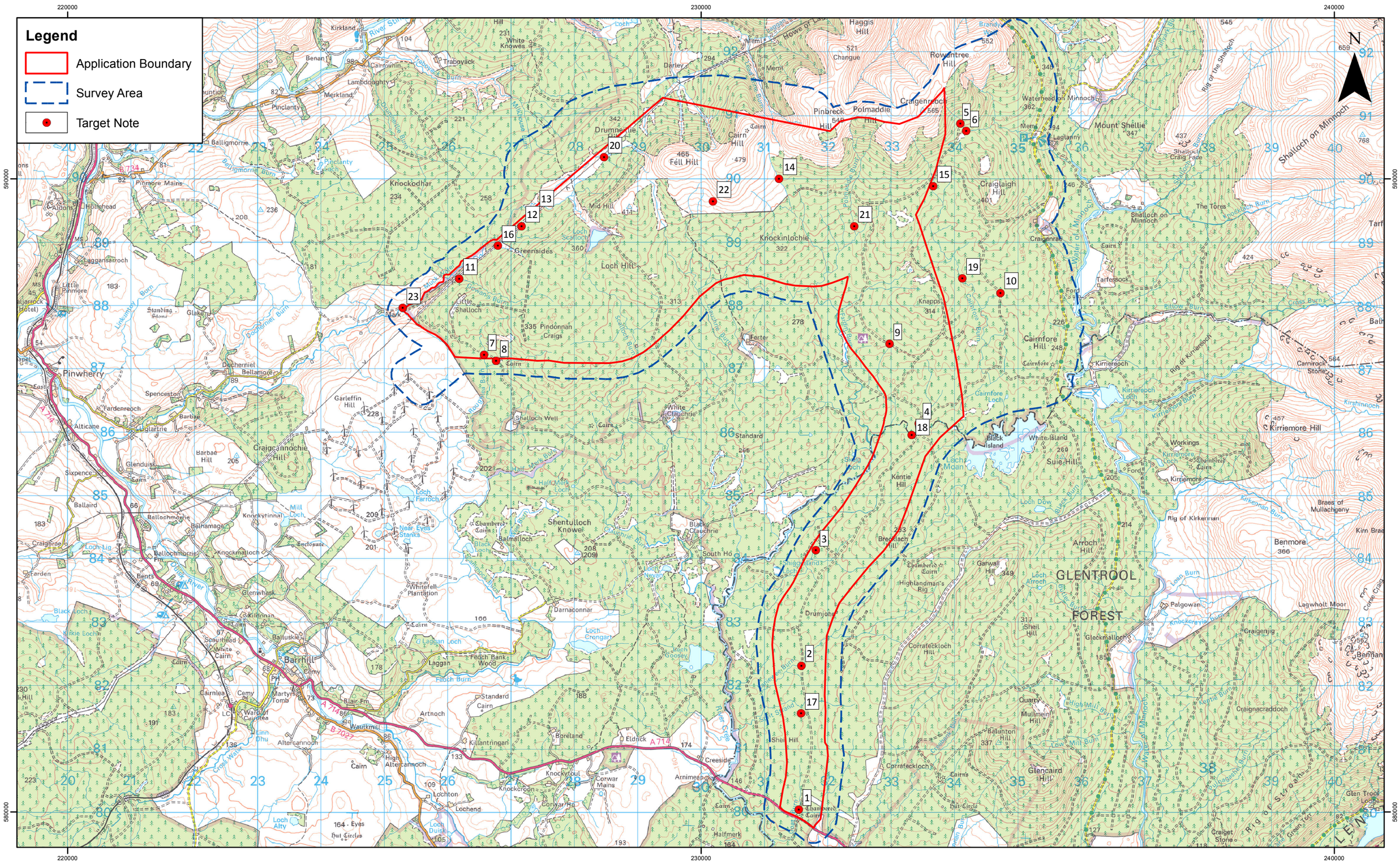
Scottish Government (2013). Scottish Biodiversity List. Available online at: https://www.gov.scot/Topics/Environment/Wildlife-Habitats/16118/Biodiversitylist/SBL (accessed September 2019)

Figures



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Clauchrie Windfarm

EIA Report

Protected Mammals Survey Results

Drg No	EDI_1263_EIAR	
Rev	A	Datum: OSGB36 Projection: TM
Date	12/11/19	
Figure	TA_8.3.1	

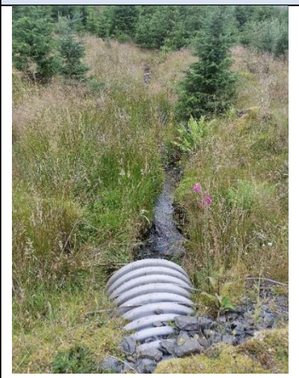
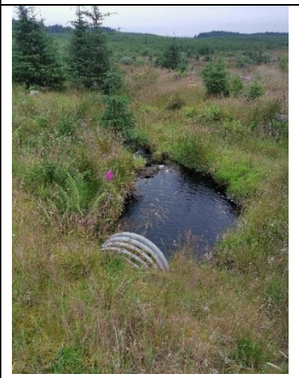
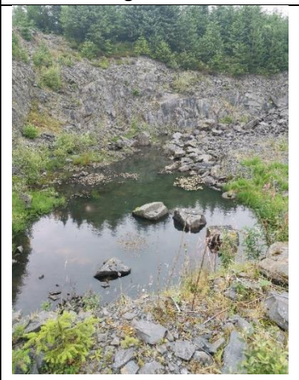
SCOTTISHPOWER RENEWABLES

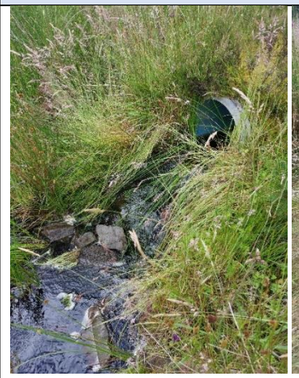
Annex A: Target Notes

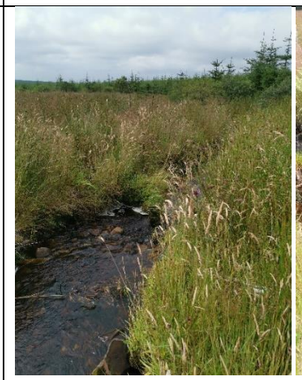
Target Note (TN)	Grid Reference	Description
1	231544 580039	   Goat Burn flows through the south of the Site. The burn is surrounded by dense vegetation dominated by rush making it sub-optimal for water voles.
2	231582 582314	 

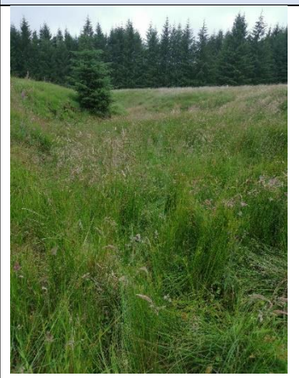
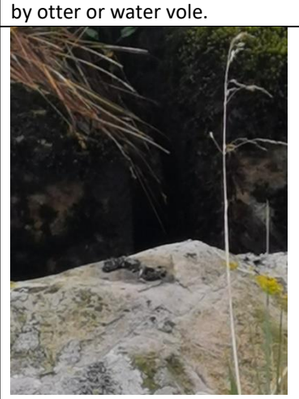
Target Note (TN)	Grid Reference	Description
		 Laniewee Burn flows through the South of the Site and passes under the forest track. The Burn has rocks that could be used for otter sprainting and the banks are heavily vegetated.
3	231814 584133	 Plumbjordan Burn flows through a break in the plantation forestry in the South of the Site. There was little water flow at the time of survey and the banks were heavily vegetated making it sub-optimal for water voles.
4	233438 586138	

Target Note (TN)	Grid Reference	Description
		 The Thump Loop flowed from Loch Moan towards the River Cree through the south of the Site. The banks were heavily vegetated with areas dominated by gorse scrub and there were rocks and boulders that could be used for otter sprainting throughout.
5	234092 590869	 A tributary of the Water of Minnoch flows under the forest track.
6	234189 590752	  A tributary of the Water of Minnoch originated in the north-east of the Site and flowed east until reaching Water of Minnoch out with the Study Area. There were several rocks and boulders that could be used for otter sprainting. The tributary flowed through areas that have been recently felled and as such there were several trees that had fallen over the tributary. The base and banks were dominated by stone and rocks.

Target Note (TN)	Grid Reference	Description
7	226573 587225	 Roughlea Burn originates in the Study Area and flows south under the forest track. There are fallen trees across the Burn in some areas.
8	226764 587124	 A tributary originates in the Study Area and flows south under the forest track towards Roughlea Burn.
9	232976 587391	 A body of water identified off the forest track in an area previously quarried with limited vegetation.

Target Note (TN)	Grid Reference	Description
10	234727 588199	  A tributary flowing west towards Cairnfore Burn was heavily vegetated and fast flowing at the time of survey making it sub-optimal for water voles.
11	226184 588421	 Gowan's Burn originates amongst coniferous plantation woodland and flows north-west towards Muck Water. After leaving the ride amongst the plantation the valley is steep sided.
12	227164 589251	  A tributary of Muck Water flows through the vegetation in a north-westerly direction. The heavily vegetated banks make the tributary sub-optimal for water vole. A pond is also present in the same location.

Target Note (TN)	Grid Reference	Description
13	227131 589270	  A tributary of Muck Water flows north-west with heavily vegetated banks making it sub-optimal for water voles. .
14	231229 590001	 A tributary of Fardin Burn was heavily vegetated banks, and trees had fallen over the watercourse in some areas making it sub-optimal for water voles.
15	233667 589883	  Cairnfore Burn flows south through areas of marshy grassland and coniferous plantation woodland. The plantation woodland could be used by pine marten, red squirrel and badger. Some areas of the coniferous plantation had been felled. The Burn could be used by ottter to forage and commute as well as water vole.

Target Note (TN)	Grid Reference	Description
16	226791 588943	 A tributary of Muck Water flowed through grassland in a north-westerly direction, the heavily vegetated banks make it sub-optimal for water voles.
17	231578 581558	 A pond was identified south of Sprit Strand. There was no evidence to suggest use by otter or water vole.
18	233323 585956	 Otter spraint comprising fish bones found on bank-side rock of theThumb Loop
19	230189 589642	Otter spraint comprising fish bones found on bank-side rock of the Cairnfore Burn

Target Note (TN)	Grid Reference	Description
20	228456 590334	 Water vole burrow, feeding evidence and droppings found on bank of the Muck Water.
21	232418 589249	Water vole burrow and feeding evidence identified on bank of the Polmaddie Burn.
22	230189 589642	 Badger skull identified in the open area to the north of the Site. No other evidence surrounding the skull was identified, indicating that it was most likely moved by a predator.
23	225287 587959	Badger prints identified on the track across Muck Water in the west of the Study Area

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