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Ecological Impact Assessment for Protected Mammals
A report to AMEC Wind
from Heritage Environmental Ltd

CLASHINDARROCH WIND FARM

**ECOLOGICAL IMPACT ASSESSMENT FOR
PROTECTED MAMMALS**

SUPPLEMENTARY ECOLOGICAL REPORT
Report 1 of 3

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A Report to:
AMEC Wind Energy

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SUMMARY

Introduction

This report presents the results of an independent study by Heritage Environmental Limited (HEL) to provide an Ecological Impact Assessment for Protected Mammals for the proposed wind farm scheme at Clashindarroch Forest, 5 miles southwest of Huntly, Aberdeenshire. The study was commissioned by AMEC Wind Energy. This survey follows the submission of an Environmental Statement for the proposed scheme by AMEC Wind Energy and a subsequent request from The Scottish Executive Ecological Advisors (EAU) for further protected mammal species survey.

A detailed survey was undertaken for signs of Wildcat *Felis sylvestris*, Pine marten *Martes Martes* and Badger *Meles meles*, and a walkover survey was carried out for signs of Red Squirrel *Sciurus vulgaris*, Water Vole *Arvicola terrestris* and Otter *Lutra lutra*.

The scheme would involve construction of 47 turbines and associated infrastructure, between Leids Hill in the south, to Black Hill in the east, Cloichedubh Hill, Grumack Hill, and Craigend Hill in the north. The proposed development would involve clear fell of the majority (689 ha) of the existing plantation within the main study site. This clear fell would take place over 3 years.

Access to the site from the north will be from the A920, along the unclassified road at Malach (GR NJ 452387), and an upgraded and part re-routed existing forestry road to the north of Brown Hill (GR NJ 440373).

The specific details of survey results in Appendix 1 and Map 2 have been provided to statutory consultees in a separate annex to prevent potential mammal disturbance.

Site Designations

There are no designated sites for protected mammal species within or in the vicinity of the study site. Craigs of Succoth Site of Special Scientific Interest (SSSI) covers an area of 225 hectares and lies at the north of the study site. The proposed access road from the north will pass through 100 metres of the SSSI (at GR NJ 430360). The site is designated on account of its botanical interest.

Summary methods

A search was carried out by experienced mammal surveyors, throughout the proposed clear fell area and a 200m corridor along the proposed access track for signs of Wildcat, Pine Marten, Badger, Water Vole, Otter and Red Squirrel, in areas of suitable habitat. This involved the field worker searching for all evidence of current habitat utilisation by these species including faces, footprints, dens, resting up sites, prey remains, sightings, tracks, etc. In addition, notes were made of habitat suitability throughout the study site. The survey was undertaken in January 2004 and involved over 9 person days in the field.

Consultation

Scottish Natural Heritage (Dr Sue Lawrence, Area Officer) was consulted regarding proposed mammal survey methodologies. A number of potential concerns were raised regarding the survey and these are addressed within the report. To overcome any potential limitations with the survey work, for example due to the extensive nature of the dense coniferous plantation, a precautionary approach has been taken throughout.

Wildcat

Enhanced statutory protection for Wildcat *Felis silvestris* in Britain is provided under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended). Britain also has an international responsibility to protect the Wildcat under the EC *Habitats and Species Directive*. This is transposed in UK law by the Conservation (Natural Habitats &C) Regulations 1994. The species is designated a *European Protected Species* under this legislation, and is given an enhanced level of protection beyond that conferred by the *Wildlife and Countryside Act 1981*. It is an offence to deliberately disturb a Wildcat anywhere (not just in its place of shelter), and to damage or destroy a breeding or resting site whether deliberately or not. This legislation means that Wildcat is fully protected in Britain, and that any planned activity, which might affect Wildcat, requires prior consultation with the appropriate statutory nature conservation organisation (SNH).

Licences may be granted for certain purposes that would otherwise be illegal; such licences for development work must be applied for from the Scottish Executive.

No Wildcat signs were recorded within the study site. However, potential dens sites are present within boulder fields, e.g. the boulder field south of Mount of Haddoch and Cloichedubh Hill, Craigs of Succoth and a disused quarry west of Tods Hill. Desk records indicate that Wildcat are present within Clashindarroch Forest and they have been sited within the study site. A precautionary approach is therefore adopted with mitigation measures.

Pine Marten

Enhanced statutory protection for Pine Marten *Martes martes* in Britain is provided under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended). This makes it an offence to kill, injure or take a Pine Marten or to intentionally damage, destroy or obstruct access to any place used for shelter or for breeding. Disturbance to a Pine Marten in its place of shelter also constitutes an offence under the Act.

The presence of Pine Marten using the study site was not confirmed by field signs. However, potential dens may occur within the limited number of boulder fields or within tree holes or squirrel dreys. Desk records indicate that Pine Marten have been sited on one occasion in Clashindarroch Forest. It is therefore possible that they may be present at low densities within the study site. A precautionary approach is therefore adopted with mitigation measures.

Badger

The legal situation for Badgers *Meles meles* is unique, being covered by their own Act - The Protection of Badgers Act 1992. Under the legislation it is an offence to damage or disturb a Badger sett.

Evidence of Badger foraging was confirmed during the survey. Signs of foraging of Bees/Wasps nests were discovered within the coniferous plantation in the vicinity of Craigwater Hill and Craigend Hill. Forestry Commission records show Badger setts to the east of the study site located at approximately 500 and 1.5km from the site. It is likely that foraging evidence was linked to these setts. In addition, further setts may be present closer to the site or small setts within the study site. A precautionary approach is therefore adopted with mitigation measures.

Red Squirrel

Enhanced statutory protection for Red Squirrel *Sciurus vulgaris* in Britain is provided under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended). This makes it an offence to kill, injure or take a Red Squirrel or to intentionally damage, destroy or obstruct access to any place used for shelter or for breeding. Disturbance to a Red Squirrel in its place of shelter also constitutes an offence under the Act

Extensive Red Squirrel survey and habitat analysis was undertaken as part of the Environmental Statement. Forestry Commission Scotland and North-East Biological Records Centre confirmed that Red Squirrel are known to be present within the woodland in the area. During the walkover survey, evidence of Red Squirrel was limited to signs of feeding remains in the vicinity of Craigwater Hill. Much of the plantation throughout the study site is too immature to provide potential feeding habitat.

Due to the presence of Red Squirrel within the study site, a precautionary mitigation approach is recommended.

Water Vole

Enhanced statutory protection for the Water Vole *Arvicola terrestris* is afforded under Schedule 5 - in respect of section 9 (4) only - of the *Wildlife and Countryside Act 1981* (as amended). This makes it an offence to disturb or damage any Water Vole resting place or habitat. Any planned activity which might affect Water Vole requires prior consultation with the appropriate statutory nature conservation organisation (SNH) and appropriate mitigation.

No populations of Water Vole were confirmed during the walkover survey, although survey was undertaken outwith the optimal survey season. Water Vole are known to be historically present in the vicinity of the study site and therefore it is possible that Water vole are present within areas of suitable habitat, which include a number of the burns that are present in open rides where good vegetative cover is present such as the *Three Burns* burn, *Burn of Greenknowe* and the burn that runs through *The Shank*.

Burns flowing through areas of dense conifer plantation were assessed not to provide suitable habitat as little bankside cover is present.

Due to the possible presence of Water Vole within the study site, a precautionary mitigation approach is recommended.

Otter

Enhanced statutory protection for Otter *Lutra lutra* in Britain is provided under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended). Britain also has an international responsibility to protect the Otter under the EC *Habitats and Species Directive*. This is transposed in UK law by the Conservation (Natural Habitats &C) Regulations 1994. The species is designated a *European Protected Species* under this legislation, and is given an enhanced level of protection beyond that conferred by the *Wildlife and Countryside Act 1981*. It is an offence to deliberately disturb an Otter anywhere (not just in its place of shelter), and to damage or destroy a breeding or resting site whether deliberately or not. This legislation means that Otter is fully protected in Britain, and that any planned activity, which might affect Otter, requires prior consultation with the appropriate statutory nature conservation organisation (SNH).

Licences may be granted for certain purposes that would otherwise be illegal; such licences for development work must be applied for from the Scottish Executive.

Evidence of Otter was recorded along the Craig Water, as indicated by a single sprainting site on a rock next to a culvert. The watercourses within the study area and associated habitats are considered to provide relatively poor habitat for this species, in terms of foraging. The burns within the study area are relatively small, and foraging opportunities are likely to be limited due to the lack of available fish or other prey items. However potential resting-up and holt sites are present within areas of dense plantation and boulder fields, although no sites were confirmed. In addition, some of the burns are likely to be used as travelling routes. Otters may travel large distances along travelling route, which can include dry or small burns and these routes can be an important component of an Otter's habitat.

Due to the presence of Otter within the Study Site a precautionary mitigation approach is recommended.

Key General Recommendations

Pre-Construction Survey in Potentially Sensitive Areas

A precautionary approach is recommended due to the potential limitations associated with aspects of this survey and the possibility that the protected mammal resource may change before the completion of construction, which could be 3 or more years time.

It is recommended that all potentially sensitive areas (see Map 3) are surveyed by a suitably trained ecologist, prior to clear fell or other works at an appropriate time of year. These procedures could form part of a Section 75 Management agreement produced as part of Planning Conditions, as has been proposed for Red Squirrel survey pre-felling.

Should any resting up sites be identified for protected species, appropriate mitigation would need to be put in place, dependant on the species, in agreement with SNH or SEERAD if required, as detailed within the report.

Site Environmental Management Procedure

A Site Environmental Management Procedure will be put in place during the construction phase of the works. The procedure should include the following in relation to protected mammal species:

- An emergency procedure for site workers to follow should Wildcat, Pine Marten, Otter, Badger, Red Squirrel or Water Vole be encountered during the course of the works. The key to the procedure should be that all works be stopped within 30m of the areas and specialist advice sought. SNH and SEERAD may need to be consulted.
- A procedure that ensures all site workers are inducted in relation to ecological requirements on the site including the above emergency procedure and any exclusion zones if present.

Ecological Watching Brief

An Ecological Watching Brief will be in place to ensure that due consideration is being given to ecological requirements throughout the construction phase, operational phase and habitat creation phase.

Habitat Management Plan

A Habitat Management Plan is already proposed for the site (see submitted Environmental Statement). The production of a detailed Habitat Management Plan may form part of a Section 75 Agreement. The plan would be agreed by SNH and Forestry Commission Scotland (FSC). It is recommended that greater consideration is given to creating habitat for protected mammal species that are known to be present within Clashindarroch Forest as detailed below. The main aim of the Plan should be to create a positive habitat enhancement for these species. Monitoring should take place as part of the Management Plan to assess the effectiveness of the habitat creation on the protected mammal resource. In summary key recommended habitat requirements are as follows:

Greater planting of native woodland and scrub including the planting of species such as Scots Pine to provide a food source for Red Squirrel. Increased woodland planting would also provide improved habitat for species such as Pine Marten and Wildcat in providing cover and a greater potential abundance of prey.

Mitigation During Construction

General mitigation recommendations have been made for the construction operation, including the following:

- Working practices should be followed to minimise the risk of any pollution incidents. Care should be taken to ensure that sediments are not washed into the surrounding burns. Machinery should only be refuelled in a designated safe area away from the river. Reference should be made to Pollution Prevention Guidelines issued by the Scottish Environmental Protection Agency (SEPA), particularly the following guidelines.
- Access tracks crossings over burns should be constructed as single span or oversized boxed culverts (rather than pipe culverts) to ensure continuity of riparian habitat and aid movement of Otter and potentially Water Vole.

- The felling of trees near Burns and wetland areas should ensure dead trees or brashings are not left over burns and wetland areas.
- Any tree clearance works that are programmed in Red squirrel sensitive areas, should be undertaken outwith the sensitive Red Squirrel breeding period, i.e. mid January – September (inclusive).

Other Fauna

Other species of recorded within the site were: a dead Water Shrew *Neomys fodiens*; Mountain Hare *Lepus timidus* on moorland areas; Roe Deer *Capreolus capreolus*, Red Deer *Cervus elephus* and Red Fox *Vulpes vulpes* throughout the study site. However, these species are generally widespread in this area and not subject to any enhanced statutory protection.

Conclusions

Protected mammal species including Wildcat, Pine Marten, Badger and Otter are present at very low densities within the study site. There will be a short term negative impact on these species as a result of the clear felling operations. However, if the recommended precautionary mitigation measures are put in place and the Habitat Management Plan finalised with greater due consideration to protected mammal species it is considered that in the long-term there would be a potential positive enhancement of the protected mammal resource on the site.

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Appendix 1 Target Notes **INCLUDED IN SEPARATE ANNEX ONLY**

Map 1 Proposed Wind Farm Scheme and Study Area

Map 2 Protected Mammal Resource **INCLUDED IN SEPARATE ANNEX ONLY**

Map 3 Potentially Sensitive Areas for Mammal Resource

2 INTRODUCTION

2.1 Terms of Reference and Scope of Study

The following report presents the results of an independent study by Heritage Environmental Ltd. (HEL) to provide an Ecological Impact Assessment (EcIA) for Protected Mammals for the proposed Wind farm scheme at Clashindarroch Forest, Huntly, Aberdeenshire. This work was commissioned by AMEC Wind Energy in December 2003.

In accordance with the Client brief in order to satisfy requirements of The Scottish Executive Ecological Advisors (EAU) who commented on the ecological aspects of the Environmental Statement for the proposed windfarm site, the scope of consultancy services required in the project was defined as follows:

- Provision of detailed survey for Wildcat *Felis sylvestris*, Pine Marten *Martes Martes* and Badger *Meles meles* within the clear fell/development area and proposed access road.
- Provision of walkover survey for, Water Vole *Arvicola terrestris* and Otter *Lutra lutra* within the clear fell/development area and proposed access road.
- Provision of an impact assessment of the proposed development in relation to the above species.
- Provision of ecological mitigation and compensation recommendations (where required) in order to reduce and/or eliminate any potential negative impacts on the protected mammal resource as a consequence of the proposed wind farm scheme.
- In addition, incidental observations of any other fauna of note, including Red Squirrel *Sciurus vulgaris*.

2.2 Study Site and General Site description

The study site lies within the 5,607 ha Clashindarroch Forest, which lies 5 miles southwest of Huntly (see Map 1) in Aberdeenshire. The study site, includes the main development area of 966 ha and the proposed access route from the north. The study site runs for approximately 10 kilometres north to south between the A920 and A941, and consists mainly of coniferous plantation intermingled with areas of Heather moorland. The forest is multi-age dating back to the 1930s. Steady afforestation has taken place since the 1970s. Much of the forestry within the study site is less mature Sitka spruce plantation. Within the main study site approximately 724 ha is plantation forest and 242 ha open areas. Other habitats within the site include small

burns, blanket bog, and an area of serpentine rock outcrops at Craigs of Succoth, along the proposed access route. The site is bordered to the west by Heather moorland and to the east by a continuation of the Clashindarroch Forest plantation.

2.3 Summary of Development Proposals

Locations of the proposed wind turbines and access roads used in this report are taken from the Environmental Statement (ES) Figure 3 Site Layout (1:50,000). Map 1 shows the study site and layout of the proposed wind farm scheme at Clashindarroch Forest.

The scheme would involve construction of a wind farm of 47 turbines with associated infrastructure i.e. turbine bases, access tracks, borrow pits etc. The proposed development area is located between Leids Hill (GR NJ 414270) in the south, to Black Hill (GR NJ 419307) in the east, Cloichedubh Hill (GR NJ 438306), Grumack Hill (GR NJ 429435), and Craigend Hill (between GR's NJ 447358 and NJ 455345) in the north.

Access to the site from the north will be from the A920, along the unclassified road at Malach (GR NJ 452387), and an upgraded and part re-routed existing forestry road to the north of Brown Hill (GR NJ 440373).

The proposed development would involve clear fell of the majority (689 ha) of the existing plantation within the main study site. This clear fell would take place over 3 years. It is proposed that approximately 50 ha in the southern extremity of the study site is 'topped' with the aim of retaining snow cover for the cross country skiing.

A post felling Habitat Management Plan will be put in place on the site. No re-stocking will take place in the first 2 years following felling, when clear fell residues will be left to degrade. Target habitats have been produced as part of the ES (Figure 29). The dominant proposed habitats are areas of scrub with a heath and acid grassland mosaic and areas of Blanket Bog. In addition, smaller areas of scrub and Larch with a heath and acid grassland mosaic and heath and broadleaved woodland are proposed.

3 APPRAISAL METHODOLOGY

3.1 Consultation

Scottish Natural Heritage (Dr Sue Lawrence, Area Officer, City of Aberdeen and Aberdeenshire Central) was consulted regarding proposed mammal survey methodologies. A number of potential concerns were raised:

- The difficulty of finding signs for Wildcat, Pine Marten and Badger within the extensive dense conifer plantation
- The difficulty of distinguishing between Wildcat and Feral Cat
- The difficulty of distinguishing Pine Marten scats from Fox scats
- The need for adequate referencing to the scientific literature in relation to habitat suitability for Wildcat and Pine Marten.

These concerns are addressed within appropriate sections of the report.

3.2 Desk Study

The following were consulted for any historic records for protected mammal species on the site:

- Existing information within the Environmental Statement
- Scottish Natural Heritage (Dr Sue Lawrence, Area Officer)
- Dr Xavier Lambin (Water Vole expert, Aberdeen University)
- Chris Strachan (National Water Vole Project Officer)
- Forestry Commission Scotland
- North East Scotland Biological Records Centre (Janet Imlach, Biological Recorder).

3.3 Protected Mammal Survey

A protected mammal survey was undertaken to provide a detailed assessment for Wildcat *Felis sylvestris*, Pine Marten *Martes Martes* and Badger *Meles meles*, and a walkover survey for Red Squirrel *Sciurus vulgaris*, Water Vole *Arvicola terrestris* and Otter *Lutra lutra* within the proposed clear fell and a 200m corridor along the proposed access track.

This included the following:

3.3.1 Wildcat Survey

A search was carried out for signs of Wildcat in areas of suitable habitat. This involved the field worker searching for all evidence of current habitat utilisation by this species. The locations of any activity, a description, with a GR, determined using GPS, were marked on a suitably scaled map. The following evidence was recorded:

- Faeces
- Claw sharpening marks (scratching posts)
- Footprints

- Dens
- Sightings
- Prey remains

Limitations

The Wildcat survey was undertaken in late January 2004. With home ranges occupied by cats throughout the year there were no limitations associated with the timing of the survey. There were no limitations associated with accessing most areas of the site, although dense vegetation within parts of the coniferous plantations may have obscured some signs.

In addition, because of the confusion in identifying feral domestic cat from Wildcat (and their interbred off-spring), it is recognised that field evidence is difficult to definitively determine the presence of true Wildcat. A precautionary approach is therefore taken to the identification of this species.

3.3.2 Pine Marten Survey

A search was undertaken for Pine Marten evidence. This involved the field worker searching for all evidence of current habitat utilisation by this species. The locations of any activity, a description, with a GR, determined using GPS, were marked on a suitably scaled map. The following evidence was recorded:

- Footprints
- Pathways
- Scats
- Dens
- Sightings

Limitations

The Pine Marten survey was undertaken in late January 2004. With home ranges occupied by Pine Marten throughout the year there were no limitations associated with the timing of the survey. There were no limitations associated with accessing most areas of the site, although dense vegetation within parts of the coniferous plantations may have obscured some signs. This species can have a large home range (up to 32 km² for males – in upland plantations Balharry, 1993 cited in Birks 2002) and occasional foraging within the study site may have been missed.

Tree nesting sites in tree holes may also have been missed if present. In addition, there is known potential for confusing Fox scats and Pine Marten scats (British Wildlife 2003).

3.3.3 Badger Survey

A search was undertaken for Badger evidence. All evidence of current habitat utilisation by this species was recorded. The suitability of the habitat for Badger and likely feeding areas were assessed throughout. The locations of activity, a description, with a 10-figure

GR, determined using GPS were recorded. The following evidence/activity was recorded:

- Setts (including status i.e. main sett, annexe sett, outlier etc. and activity levels)
- Bedding
- Fresh spoil
- Scratching trees
- Paths/tracks
- Prints
- Guard Hairs
- Latrines
- Dung
- Foraging signs

Limitations

The Badger survey was undertaken in late January 2004. Badgers are becoming more territorial at this time of year, and are active throughout their territories. There were no limitations associated with timing of this survey. There were no limitations associated with accessing most areas of the site, although dense vegetation within parts of the coniferous plantations may have obscured some signs. In addition, Badgers can have a home range of over 2km and therefore and occasional foraging within the study site may have been missed.

3.3.4 Red Squirrel Survey

A walkover search was carried out for all signs of Red Squirrel within any suitable areas of habitat e.g. mature coniferous forest or mixed broad-leaved woodland. The following evidence was recorded:

- Sightings
- Dreys
- Feeding remains
- Footprints

Limitations

The Red Squirrel walkover survey was undertaken in late January 2004. Limitations associated with the survey were confined to areas of dense vegetation within the coniferous plantations. However, as previous Red Squirrel survey has been undertaken as part of the ES, the main aim of the survey was to record any incidental observations.

3.3.5 Water Vole Survey

A walkover search was undertaken for Water vole evidence within suitable areas of habitat, i.e. ditches, burns and wetland areas. This involved the field worker searching for evidence of current habitat utilisation by this species. The locations of any activity, a description, with a GR, determined using GPS, were marked on a suitably scaled map. The following evidence was recorded:

- Footprints
 - Run-ways in vegetation
 - Burrows
 - Lawns
 - Nests
 - Feeding stations
- Faeces and latrines

Limitations

The Water Vole survey was undertaken in late January 2004. This is outwith the recognised survey period of April-October (inclusive) when this species actively mark their territories with latrines. In addition, the survey was performed when the water levels were relatively high, and therefore, there were assessed to be limitations associated with the survey. However, the main aim of the survey was a walkover survey recording incidental observations and habitat suitability.

3.3.6 Otter Survey

A search was undertaken for Otter evidence within suitable areas of habitat, i.e. burns and wetland areas and associated areas. The locations of activity, a description, with a 10-figure GR, determined using GPS were recorded. The following evidence/activity was recorded:

- Spraints
- Sign heaps
- Rolling places
- Slides
- Footprints
- Holts
- Sightings

Limitations

The Otter walkover survey was undertaken in late January 2004. Otter surveys may be performed at any time of the year in upland areas of Britain and, therefore, no serious limitations were associated with the timing of the survey. However, water levels were relatively high at the time of survey, which may have obscured or washed away recent evidence. However, the main aim of the survey was a walkover survey recording incidental observations and habitat suitability.

3.4 Other Fauna

During the survey, target notes were made of the presence or potential habitat suitability for any other protected species or species of note, e.g. Water Shrew, Fox etc.

4 DESCRIPTION OF ECOLOGICAL RESOURCE

4.1 Designated Sites

The desk study identified that Craigs of Succoth Site of Special Scientific Interest (SSSI) lies partly within the study site (see Map 1).

The SSSI citation states that Craigs of Succoth is one of the few areas in North East Scotland where serpentine rocks outcrop at the surface. Soils and groundwater derived from these rocks contain relatively high concentrations of certain minerals and give rise to rich and unusual flora.

4.2 Wildcat

4.2.1 Desk Study

There have been eleven recorded Wildcat sightings within the whole of Clashindarroch Forest by Forestry Commission staff between 13/10/99 and 13/10/03. No GRs were provided. The only Wildcat sighting within the study area was in the vicinity of Cloichedubh Hill in 2001.

4.2.2 Field Survey

Wildcat signs were not positively identified during the field survey. However, many areas within the study site provide potential foraging habitat (i.e. moorland and coniferous woodland) for this species and potential resting up sites within boulder fields.

Along the proposed access track at Craigs of Succoth SSSI (GR NJ 431360) and at a former quarry adjacent to the track (at GR NJ 45077,38210) to the west of Tods Hill, there are rock outcrops and areas of boulder field present that could provide potential den sites.

Within the main windfarm site the most suitable potential habitat for den sites, where rock outcrops and boulder fields are present in an open area south of Mount of Haddoch (GR NJ 416277) and on Cloichedubh Hill (GR NJ 43086 30380 to NJ 42813 30339) where areas of boulder fields are present within the heather moorland.

4.3 Pine Marten

4.3.1 Desk Study

Forestry Commission records show a single sighting of Pine Marten on the public road at the entrance to Clashindarroch Forest. There are no desk records of Pine Marten within the study area.

4.3.2 Field Survey

Pine Marten signs were not positively identified during the field survey. However, rock outcrops and limited areas of boulder field are present that could provide potential den sites. These potential den areas are as described for Wildcat in *Section 4.2.2*. In addition, Pine Marten are also known to have dens within dreys and tree holes (Birks 2002) and therefore dens could be present within other areas of the study site.

4.4 Badger

4.4.1 Desk Study

There are three known Badger setts, lying approximately 0.2-0.9km to the east of Craigend Hill (Forestry Commission records 2001). Three sightings of Badger have been recorded in Clashindarroch Forest by Forestry Commission staff between 13/10/00 and 13/10/02. In addition there is a record of Badger sett approximately 1.5km to the south east of Cloichedubh Hill.

4.4.2 Field Survey

Foraging signs within the study area confirmed the presence of low levels of Badger using parts of the study area. No setts were identified within the study site, although a potentially outlying sett was identified c. 150m to the west of the proposed access route. Evidence of Badger foraging in the study area was limited to three excavated wasps/bees nests near the Craig Water (GR NJ 42787,30904), near Bogrotten Burn (GR NJ 42900,31839), and on a track at the north side of Craigend Hill (GR NJ 45020,34821).

The setts to the east of Craigend Hill were visited during the survey and these were found to be active and a likely main sett with subsidiary/annexe and outlying setts.

4.5 Red Squirrel

4.5.1 Desk Study

The Forestry Commission provided ten records of Red Squirrel sightings within Clashindarroch Forest site between 13/10/99-13/10/03, although no grid references were provided. Janet Imlach of the North East Scotland Biological Records Centre has provided twelve records of Red Squirrel recorded within Clashindarroch Forest. Three records may occur within the study area. These are near Cloiche Dubh at GR NJ 3042, north of Craigend Hill at GR NJ 4535, and close to Malach at GR NJ 4538.

As part of ecological survey undertaken for the Environmental Statement (ES), Red Squirrel survey was undertaken in 2003. In addition, an assessment was made of habitat suitability throughout the study site. Red Squirrel feeding signs were recorded at GR NJ 423310, to the south west of Craigwater Hill. Stripped cones were found along the edge of a ride in an area with reasonable coning on Sitka Spruce. Much of the study site was assessed to be of little or no value to Red Squirrel, with little or no coning in these areas of more immature plantation (see Figure 30 of ES).

4.5.2 Field Survey

Evidence of Red Squirrel was limited to signs of stripped Lodgepole Pine cones next to the Craig Water at GR NJ 425311, and stripped Sitka Spruce cones next to the Craig Water at GR NJ 423309, and on the northeast side of Craigwater Hill at GR NJ 4278,3170.

No dreys were seen within the area of the proposed wind farm site, although the survey was limited to a walkover survey and dreys could have been missed.

4.6 Water Vole

4.6.1 Desk Study

In the 1989-1990 Water Vole *Arvicola terrestris* survey (Strachan and Jefferies 1993) randomly selected 10km squares were surveyed. The proposed wind farm site is within 10km squares NJ 42 and NJ 43 that were surveyed in the 1989-1990 survey. Three occupied sites for Water Vole *Arvicola terrestris* was found in 10km square NJ 42 and none in NJ 43. The closest occupied site to the study site was at NJ 432272 on the Burn of Little Blackmiddens where activity was recorded in the 1989-90 survey and 1996-98 survey (Strachan, C. personal communication).

During the 1989-1990 survey, the Deveron catchment, located between approximately 5km to the west of the study site, was found to hold Water Vole throughout but nowhere very common. Mink *Mustela vison* signs were noted at some of the sites in this area.

Water Vole survey has also been undertaken to the north of the study site (Dr Xavier Lambin, personal communication) and no evidence was recorded. No further details of the survey were obtained.

4.6.2 Field Survey

The presence of Water Vole *Arvicola terrestris* was not confirmed within the study site, although the survey was limited to a walkover survey undertaken outwith the optimal survey period. However, some areas of potentially suitable habitat are present in the form of small burns within the wider forest rides, where luxuriant bankside vegetation of rushes and grasses is present.

Along the proposed access route from the north the following potential sites were noted: near the Dry Burn (GR NJ 4428,3475) and along the upper stretches of the Burn of Playlands.

Within the main windfarm site the following potential sites were noted: Burn of Greenknowes, Three Burns (GR NJ 418294), burn near the Shank that flows into the Bogrotten Burn (GR NJ 4270,3242) and around Mount Haddoch (GR NJ 4180,2848) where an area of peat hags is present providing low suitability habitat.

4.7 Otter

4.7.1 Desk Study

The Otter Survey of Scotland 1991-1994 (Green and Green 1997) indicates that 91% of sites surveyed in Grampian in 1994 were positive for signs of Otter. Forestry Commission records show a single sighting of an Otter in the area of White Geese and The Shank on 10/07/03.

4.7.2 Field Survey

Evidence of Otter was limited to a single spraint on a rock next to the Craig Water (GR NJ 428310). The high water levels at the time of survey meant that other rocks in and alongside burns might have been cleansed of evidence of Otter presence.

An area identified as a potential travelling route for Otter was near The Shank (at GR NJ 4270,3242). Again it was difficult to ascertain any signs of Otter here as the burn had recently been in spate.

No areas amongst the coniferous plantations were identified with potential for Otter holts or resting-up sites, although boulder fields as described in *Section 4.4.2* could provide resting up or holt sites, although no signs were noted. Holt sites can be located several hundred metres from the nearest watercourse (Osborn, personal observation).

4.8 Other Fauna

No other species of note were recorded on the site. The presence of Water Shrew, Mountain Hare, Roe Deer, Sika Deer and Red Fox were confirmed throughout the study site. However, these species are widespread in this area and not subject to any enhanced statutory protection.

5 EVALUATION OF ECOLOGICAL RESOURCE

5.1 Levels of Value

In this section each resource is assigned a value, using adapted draft guidelines for assessing nature conservation value (IEEM, 2002) and shown in Table 5.1.

Table 4-5.1 Value of Ecological Resources.

(Where species or habitats occur in more than one category, the highest value is applicable)

Level of Value	Examples
International	Internationally designated or proposed sites such as Ramsar Sites, Special Protected Areas, Biosphere Reserves and Special Areas of Conservation, or otherwise meeting criteria for international designation. Sites supporting viable breeding populations or critical habitat components of internationally important species.
National	Nationally designated sites such as SSSI's, or non-designated sites meeting SSSI selection criteria, NNR's, Marine Nature Reserves, NCR Grade 1 sites. Those containing viable areas of any key habitat identified in the UK BAP. Sites supporting viable breeding populations of Red Data Book species (excluding scarce species), or supplying critical elements of their habitat requirements.
Regional	Sites containing viable areas of threatened habitats of importance within a regional context i.e. SNH West, East or North area, comfortably exceeding SINC criteria, but not meeting SSSI selection criteria. Sites supporting viable breeding populations of Nationally Scarce species or those included in the Regional BAP (if present) on account of their rarity, or supplying critical elements of their habitat requirements.
High Local	Sites meeting the criteria for a county area designation (such as SINC), which may include amenity and educational criteria in urban areas. Ancient semi-natural woodland. Designated Local Nature Reserves. Sites containing viable areas of any key habitat identified in the County LBAP. Sites supporting viable breeding populations of species known to be county rarities (e.g. featuring in a county 'red data book' or included in the county LBAP), or supplying critical elements of their habitat requirements.
Moderate Local	Undesignated sites, or features or species considered to appreciably enrich the resource within the context of the Parish (i.e. approx. 10km radius from the site).
Low Local	Undesignated sites, or features or species considered to appreciably enrich the habitat resource within the immediate environs of the site (e.g. a species-rich hedgerow).
Negligible	Low grade and widespread habitats or species.

5.1.1 Designated Sites for Nature Conservation

Craigs of Succoth SSSI lies partly within the study site, along the proposed access route. Evaluation of the SSSI has been undertaken in a separate report.

5.2 Wildcat

5.2.1 Legislative Overview

Enhanced statutory protection for Wildcat in Britain is provided under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended). This makes it an offence to kill, injure or take a Wildcat or to intentionally damage, destroy or obstruct access to any place used for shelter or for breeding. Disturbance to this species in its place of shelter also constitutes an offence under the Act.

Britain also has an international responsibility to protect the Wildcat under the *Bern Convention* and the EC *Habitats and Species Directive*. The latter is transposed in UK law by the Conservation (Natural Habitats &C) Regulations 1994. The species is designated a *European Protected Species* under this legislation, and is given an enhanced level of protection beyond that conferred by the *Wildlife and Countryside Act 1981*. It is an offence to deliberately disturb a Wildcat anywhere (not just in its place of shelter), and to damage or destroy a breeding or resting site whether deliberately or not. This legislation means that Wildcat is fully protected in Britain, and that any planned activity, which might affect Wildcat, requires prior consultation with the appropriate statutory nature conservation organisation (SNH).

Licences may be granted for certain purposes that would otherwise be illegal; such licences for development work must be applied for from the Scottish Executive. There is no provision for development as such. However under Regulation 44 (2e) of the Conservation (Natural Habitats, &c.) Regulations 1994 licences may be granted for:

- Preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment.

However a licence will not be granted unless importantly under 44 (3) the appropriate licensing authority is satisfied:

- a) That there is no satisfactory alternative.
- b) That the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

5.2.2 UK and Regional Evaluation

Wildcats are uncommon in Britain, but have increased in both numbers and range in Scotland in the past century and have benefited from afforestation and decreased persecution. In the Highlands, Wildcats are considered to be widespread although confusion with wild living cats (feral and hybrids) makes absolute identification in the field impossible. This species is found mainly in upper valley slopes and steep hillsides, on moorland peat land and in rough grassland or forest, as well as in the lowland margins and it generally occurs at altitudes below 500 metres (Kitchener 1995). Little is known regarding home range size, but it will vary with the habitat. Male home ranges have been recorded from 1.75km² to 14.7 km² (cited in Kitchener 1995).

5.2.3 Study Site Evaluation

The range of habitats within the study site is considered to be suitable for Wildcat. Most of the upland habitat within the site is at or below 500 metres, and consists of forested (coniferous plantation), open and rocky areas, that are preferred habitat. Clearings as well as dense shrubby vegetation and rock crevices are also present, and offer potential hunting and shelter for Wildcats. The more extensive areas of plantation will offer

less prey abundance for Wildcat and therefore lower quality habitat. Both Rabbit and rodents are the favoured food of Wildcat (Kitchener 1995).

No definite evidence was found within the study site and it is likely that if present, Wildcat are in very low densities. The focus of habitat use within the study site may be in the vicinity of Cloichedubh Hill where a Wildcat was sighted in 2001. Other boulder fields and rocky areas as described in *Section 4.2.2.* are areas where possible den sites may occur.

The study site is considered to be of potentially *Moderate Local Value* for Wildcat.

5.3 Pine Marten

5.3.1 Legislative Overview

Enhanced statutory protection for Pine Marten in Britain is provided under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended). This makes it an offence to kill, injure or take a Pine Marten or to intentionally damage, destroy or obstruct access to any place used for shelter or for breeding. Disturbance to a Pine Marten in its place of shelter also constitutes an offence under the Act.

There is no provision for licensing the intentional destruction of Pine Marten dens or shelters for development. This must be covered by the appropriate defence in the Act, which permits otherwise illegal activities if they are the incidental result of a lawful operation and could not be reasonably avoided. In practice due attention must be paid to the presence of this species and appropriate actions taken to safeguard the places they use for shelter. It is therefore essential that if required, appropriate mitigation is put in place and that SNH are in agreement with any proposed mitigation.

5.3.2 UK and Regional Evaluation

Pine Marten are present throughout much of northern Scotland although rare in most other parts of the UK. Following historic persecution, their spread southwards from the Highlands and in southwest Scotland seem to be continuing (Balharry 1993). The preferred habitat of Pine Marten is usually coniferous or mixed woodland (Balharry 1993), although they will live in open rocky ground and cliffs. Dens are generally found in hollow trees, or rock crevices (Birks 2002). The dens may be scattered throughout this species home range with possibly half a dozen used regularly.

5.3.3 Study Site Evaluation

The desk record sighting of a Pine Marten near the study area, indicates that Pine Marten may be present within the study site at very low densities. However, no field signs were found, although potential den sites may occur within areas of boulder fields as described in *Section 4.2.2* or within old Squirrel dreys or tree holes. However, the paucity of dead mature wood within the study site would reduce the likelihood of tree den sites being present. The dense conifer plantation, although it provides potential cover, will offer a relatively limited abundance of prey species

and home ranges are likely to be large, to compensate for the low quality habitat.

The study site is currently considered to be of *potentially Moderate Local Value* for Pine Marten.

5.4 Badger

5.4.1 Legislation Overview

The legal situation for Badgers is unique, being covered by their own Act - The Protection of Badgers Act 1992. The legislation is primarily concerned with protection against intentional cruelty and was not put into place on account of their rarity in the UK.

The legislation makes it an offence to:

- Wilfully kill, injure, take, possess or cruelly ill treat a Badger or to attempt to do so
- To interfere with a sett by damaging or destroying it
- To obstruct access to, or any entrance of a Badger sett
- To disturb a Badger when it is occupying a sett

The legislation defines a Badger sett as '*any structure or place, which displays signs indicating current use by a Badger*'. SNH define 'current use' as "any sett within an occupied Badger territory regardless of when it may have been last used" (SNH 2001). Therefore seasonally or occasionally used setts are afforded the same protection in law as well used setts.

In addition, there is the potential for interpretation of the legislation to include other factors that could be interpreted as 'cruel ill treatment'. This could include disturbance to habitat that is of value in maintaining viable social groups, e.g. foraging areas and access routes between setts and foraging areas. However the legislation is not clear-cut with regard to these factors and has, as yet, not been tested in court. Despite this uncertainty it is best practice for developments to take into account the effect the work will have on the territory of each social group and the impact of the loss of foraging.

Unlike the Wildlife and Countryside Act 1981, the Protection of Badgers Act 1992 allows for licensing, for the purposes of development, of activities that would otherwise be prohibited. This allows developments, as defined in the Town and Country Planning (Scotland) Act 1997, to interfere with a Badger sett within an area specified in the licence by any means so specified. Licences must be applied for from SNH.

5.4.2 UK and Regional Evaluation

Badgers are generally common throughout the UK (Harris *et al.* 1995) with high levels in areas such as the southwest of England, although they are absent from most of the offshore islands. They are less common in Scotland, particularly in central and western Scotland (Cresswell *et al.* 1990).

It is now widely recognised that in recent years Badger populations have grown noticeably throughout the UK. This growth has been tentatively attributed to the success of protection laws and conservation practices and policies. The increase in local reports and road traffic accident reports to organisations such as Local Biological Recording Centres and Scottish Badgers confirm the increased numbers.

5.4.3 Study Site Evaluation

No definite Badger setts were confirmed during the protected mammal survey, although evidence of foraging was recorded. Recorded foraging at Craigend Hill is likely to be linked to known setts outwith the study site to the east. Badger territories in low population density areas of Scotland can be as much as 1.8km² if not larger (Clark 1992). Evidence of foraging in the vicinity of Craigwater Hill and Cloichedubh Hill is also likely to be linked to setts to the east of the study site. However, it is possible that small or outlying setts may have been missed within areas of dense plantation. Potentially suitable sites for Badger setts were noted on the steep bank between the Bogrotten Burn and Craigwater Hill.

In general habitat suitability within the study site is low. Dense conifer plantation does not provide optimal foraging habitat for Badger. More suitable foraging habitat will be present within the more lowland areas beyond the study site boundaries where there is a mix of forestry and farmland and where there will be a greater supply of the Badger's favoured food, the Earthworm *Lumbricus terrestris*.

The study site is currently considered to be currently of *Moderate Local Value* for Badger.

5.5 Red Squirrel

5.5.1 Legislative Overview

Enhanced statutory protection for Red Squirrel in Britain is provided under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to kill, injure or take a Red Squirrel or to intentionally damage, destroy or obstruct access to any place used for shelter or for breeding. Disturbance to a Red Squirrel in its place of shelter also constitutes an offence under the Act.

There is no provision for licensing the intentional destruction of Red Squirrel dreys for development. This must be covered by the appropriate defence in the Act, which permits otherwise illegal activities if they are the incidental result of a lawful operation and could not be reasonably avoided. In practice due attention must be paid to the presence of this species and appropriate actions taken to safeguard the places they use for shelter. It is therefore essential that, if required, appropriate mitigation is put in place and that SNH are in agreement with any proposed mitigation.

The Red Squirrel is listed on the UK and North East Scotland Biodiversity Action Plans as a Priority Species.

5.5.2 UK and Regional Evaluation

The Red Squirrel is essentially restricted to Scotland and northern England, with small isolated populations scattered elsewhere in Britain. There are estimated to be 160,000 Red Squirrel in Britain today (120,000

in Scotland, 30,000 in England and 10,000 in Wales)(Harris *et al.* 1995). This species is found in both coniferous and deciduous woodland. Their use of an individual wood depends heavily on the availability of tree seeds and other food types.

5.5.3 Study Site Evaluation

Detailed habitat suitability analysis was undertaken as part of the ES (see Figure 30). The majority of the site was assessed to be of poor quality habitat or lower. This includes areas of immature stands of Sitka Spruce and other species including European Larch, Lodgepole and Scot's Pine, that currently produce no or few cones. More optimal Red Squirrel habitat is located to the east of the proposed clear fell area.

The largest area of moderate suitability habitat within the proposed clear fell area was identified during this survey and within the ES on and around Craigwater Hill where more mature cone bearing plantation is present and this is the area where evidence of Red Squirrel feeding was recorded during the current survey. No dreys were recorded within the study site, although the survey was limited to a walkover survey and occasional dreys may have been missed.

The study site is currently considered to be of *Moderate Local Value* for Red Squirrel.

5.6 Water Vole

5.6.1 Legislation Overview

The Water Vole *Arvicola terrestris* is afforded enhanced statutory protection under Schedule 5 - in respect of section 9 (4) only - of the *Wildlife and Countryside Act* 1981 (as amended). This makes it an offence to disturb or damage any Water Vole resting place or habitat. This legislation means that Water Vole habitat is comprehensively protected in Britain, and that any planned activity, which might affect Water Vole, requires prior consultation with the appropriate statutory nature conservation organisation (SNH). There is no provision for licensing the intentional destruction of Water Vole burrows for development. This must be covered by the appropriate defence in the Act, which permits otherwise illegal activities if they are the incidental result of a lawful operation and could not be reasonably avoided. In practice due attention must be paid to the presence of this species and appropriate actions taken to safeguard the places they use for shelter. It is therefore essential that appropriate mitigation is put in place and that SNH are in agreement with any proposed mitigation.

The Water Vole is listed on the UK and North East Scotland Biodiversity Action Plan as a Priority Species.

5.6.2 UK and Regional Evaluation

There has been a nationally serious decline in Water Vole populations in recent times. Only 9.6% of sites in Scotland surveyed in a 1996 – 1998 UK wide survey were occupied by Water Vole compared to 32.7% of sites in a 1989 – 1990 UK wide survey (Strachan *et al.* 2000). One active site was recorded less than 1.5km from the study site boundary in the 1996-98 survey (Strachan, personal communication).

5.6.3 Study Site Evaluation

No populations of Water Vole were confirmed during the walkover survey, although survey was undertaken outwith the optimal survey season. Water vole are known to be historically present in the vicinity of the study site and therefore it is possible that Water Vole are present within areas of suitable habitat, as described in *Section 4.6.2*.

Potentially suitable habitat was noted within the proposed wind farm area associated with burns flowing through more open rides and some wetland areas, where good vegetative cover is present. Water Vole are known to be relatively frequent in some parts of Scotland along similar burns in upland areas (Osborn, personal observation).

Burns flowing through areas of dense conifer plantation were assessed not to provide suitable habitat as little bankside cover is present.

The study site is currently considered to be currently of *Potentially Moderate Local Value* for Water Vole.

5.7 Otter

5.7.1 Legislation overview

Enhanced statutory protection for Otter in Britain is provided under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended). This makes it an offence to kill, injure or take an Otter or to intentionally damage, destroy or obstruct access to any place used for shelter or for breeding. Disturbance to this species in its place of shelter also constitutes an offence under the Act.

Britain also has an international responsibility to protect the Otter under the EC *Habitats and Species Directive*. This is transposed in UK law by the Conservation (Natural Habitats &C) Regulations 1994. The species is designated a *European Protected Species* under this legislation, and is given an enhanced level of protection beyond that conferred by the *Wildlife and Countryside Act 1981*. It is an offence to deliberately disturb an Otter anywhere (not just in its place of shelter), and to damage or destroy a breeding or resting site whether deliberately or not. This legislation means that Otter is fully protected in Britain, and that any planned activity, which might affect Otter, requires prior consultation with the appropriate statutory nature conservation organisation (SNH).

Licences may be granted for certain purposes that would otherwise be illegal; such licences for development work must be applied for from the Scottish Executive as described in *Section 5.2.1*.

The Otter is listed on the UK and North East Scotland Biodiversity Action Plans as a Priority Species.

5.7.2 UK and Regional Evaluation

Although having undergone serious declines over most of England and parts of Scotland (Chanin & Jefferies 1978), Otter are widely distributed throughout the North-East of Scotland with 91% of the National Survey Sites (Green & Green 1997) showing signs of occupancy.

The basis for any conservation plan for Otter is habitat protection including cover, holt sites, and food and water quality. Any activity that affects any of these is likely to have some impact on the population.

5.7.3 Study Site Evaluation

The watercourses within the study area and associated habitats are considered to provide relatively poor habitat for this species, in terms of foraging. The burns within the study area are relatively small, and foraging opportunities are likely to be limited due to the lack of available fish or other prey items. However potential resting-up and holt sites are present within areas of dense plantation and boulder fields, although no sites were confirmed.

Evidence from the survey, in the form of a sprainting site, indicates that use of the area by Otter is likely to be limited to occasional use of the burns within the study site, including the Craig Water. These areas are likely to form part of a home range for Otter, with additional habitat continuing in downstream sections of the burns. The home range of an Otter can vary from 4 to 40km of river or burn. A male Otter will often have a larger home range, which overlaps with a family group home range (Chanin 1985).

In addition, some of the burns are likely to be used as travelling routes. Dispersing male Otters may travel large distances along travelling routes (Chanin 1985), which can include dry or small burns and these routes can be an important component of an Otter's habitat.

The Otter resource within the study site is assessed to be of *Moderate Local Value*.

6 IMPACT PREDICTION

6.1 Introduction

The criteria that have been used *in this report* to assess the magnitude of impacts on protected species at Clashindarroch proposed wind farm scheme are summarised in Table 6-1. Each impact is given a magnitude. The magnitude of the impact is then assessed in conjunction with the value of the resource to provide an indication of *Impact Significance*. It should be noted that the assessment of both *Impact Magnitude* and *Impact Significance* are prior to any proposed mitigation recommendations as discussed in Section 7.

Table 5-6.1: Guideline Criteria for assessing magnitude of Impacts

Impact	Guideline Criteria
High	A large permanent reduction in area, numbers or species-richness likely
Medium	Medium term-temporary reduction in area, numbers or species likely; small permanent reduction in numbers or species-richness likely
Low	No reduction in area, numbers or species richness likely, but population made more vulnerable to further impacts; short term, temporary reduction in area, numbers or species richness likely
Negligible	No adverse impacts on a species. Disturbance to species/habitats of a temporary nature that will not affect the longer-term population viability or carrying capacity of a site.

Table 5-6.2 Significance of Impacts in relation to size of impact and value of Ecological resource.

Value of Feature	Magnitude of Impact			
	High	Medium	Low	Negligible
International	1	1	1	2
National	1	1	1	2
Regional	1	2	3	3
High Local	1	2	3	3
Moderate Local	2	3	3	3
Low Local	3	3	3	3
Negligible	3	3	3	3

Table 5-6.3 Guideline Criteria for assessing significance of Impacts

Impact Significance	KEY	Guideline Criteria
High	1	Substantial loss of value on a high local scale, regional or national scale. Loss of conservation value on a national scale (i.e. Scotland), international scale (i.e. Europe) or global scale.
Moderate	2	Substantial loss of conservation value on a moderate local scale, some loss of value on a high local or regional scale.
Low/ Negligible	3	Substantial loss of value on low local scale (i.e. immediate environs of study area), some loss of value on moderate local scale, negligible loss of value on Regional scale.

6.2 Planning Policy

NPPG 14 'Natural Heritage' states that "the presence of a protected species or habitat is a material consideration in the assessment of development proposals. Planning authorities should take particular care to avoid harm to species or habitats protected under the 1981 Act or

European Directives or identified as *Priorities* in the UK *Biodiversity Action Plan*.”

In addition “planning authorities should seek to prevent further fragmentation or isolation (of habitats) and identify opportunities to restore links which have been broken.”

Article 10 of the Habitats Directive requires Member States to encourage the appropriate management of features of the landscape, which are of major importance for wild flora and fauna. The features concerned are those, which, because of their linear and continuous structure or their function as ‘stepping stones’ or ‘wildlife corridors,’ are essential for migration, dispersal or genetic exchange. Features which may be of value in the development of habitat networks include areas of woodland, rivers and burns, lochs, ponds and wetlands, traditional field boundaries such as dykes or hedgerows, unimproved grasslands and herb rich meadows, heaths and peat land and coastal habitats”.

6.3 Scope of Impacts

The potential impacts consist of those that will take place during the construction phase and those that will take place during the operation of the site.

6.3.1 Construction Phase

The following impacts will occur during the construction phase that may affect protected mammal species:

- Clear felling of conifer plantation within main development area, likely to involve approximately 719 ha of clear fell. This will be taking place over 3 years.
- New access roads and upgrades to existing roads
- Borrow Pits
- Wind turbine bases and associated crane pads
- Burial of electrical connections adjacent to site roads
- Construction lay down area
- Construction of temporary site office

It should be noted that an assessment of the impact of the grid connection is outwith the scope of this study.

6.3.2 Operational Phase

The following impacts will occur during the construction phase that may affect protected mammal species:

- Increased human activity and vehicular access to the site due to regular windfarm maintenance operations
- Increased background noise on the site due to the operation of the turbines

- Habitat restoration work following the construction phase (this will be started in the construction phase but will continue for a number of years)
- Increased human access on the site through ongoing vegetation and other monitoring

6.4 Wildcat

6.4.1 Impacts During Felling and Construction Phase

6.4.1.1 Potential Loss of and Disturbance to Dens

Although no den sites were identified, desk records indicate that Wildcat may be present at very low levels and potentially sensitive areas were identified (see *Section 4.2.2*) that will be impacted on during the felling and construction phase with a subsequent potential moderate impact on Wildcat. Due to the difficulty of surveying for Wildcat and the potential for change in the Wildcat resource during the next few years, a precautionary mitigation approach is recommended as described in *Section 7.2.1.1*.

Mitigation Possible: Yes

6.4.1.2 Alteration of Habitat Quality

The proposed clear felling, over a 3 year period, of the majority of the existing forestry plantation with the study site would lead to a significant change of habitat within the study site. For the first 2-3 years clear fell residue will be left in place and habitat creation will follow over a number of years. More extensive open areas are proposed and areas of heath and scrub and small areas of woodland.

It will take a number of years for the habitat restoration to develop. Within the first few years there will be a moderate negative impact on habitat quality – cover will be removed, there will be increased disturbance and prey (Rabbits, Voles etc.) are unlikely to be abundant within the clear fell areas.

However, potential habitat will remain in adjacent areas of forestry that are to remain and it is likely that any Wildcat currently using the study site will also use adjacent land that will be unaffected by the development.

Mitigation Possible: No

6.4.2 Impacts During Operational Phase

6.4.2.1 Potential Disturbance to Dens

The increased human activity on the site could have a negative moderate impact on any Wildcat den sites. Wildcat are known to be particularly susceptible to disturbance by humans (Kitchener 1995). Mitigation recommendations are made in *Section 7.2.2.1*. The impact of noise generated by the turbines is not known, however, as with most species, a constant low background noise would seem unlikely to have a significant effect in the long term.

Mitigation Possible: Partial

6.4.2.2 *Long-term Alteration of Habitat Quality*

Wildcat are known to prefer margins of habitat of moorland with rough grazing and areas of forest (Kitchener 1995). A mixture of habitat types with cover for resting up and a variety of hunting areas where prey is abundant are favoured. The proposed habitat management plan will increase the diversity of habitats within the study site within the longer term and may provide a positive enhancement of the Wildcat habitat in the longer term if suitable habitat types are created.

Mitigation possible: Potential Long-term Positive Enhancement

6.5 Pine Marten

6.5.1 Impacts During Felling and Construction Phase

6.5.1.1 *Potential Loss of and Disturbance to Dens*

Although no den sites were identified, desk records indicate that Pine Marten may be present within the study site at very low levels. Potentially sensitive areas were identified (*see Section 4.3.2*), including boulder fields the possibility of dens in any tree holes. These areas will be impacted on during the felling and construction phase with a subsequent potential moderate impact on Pine Marten.

Due to the difficulty of surveying for Pine Marten over extensive areas of dense plantation forest, and the potential for change in the Pine Marten resource during the next few years, a precautionary mitigation approach is recommended.

Mitigation Possible: Yes

6.5.1.2 *Alteration of Habitat Quality*

The proposed clear felling, over a 3 year period, of the majority of the existing forestry plantation with the study site would lead to a significant change of habitat within the study site. For the first 2-3 years clear fell residue will be left in place and habitat creation will follow over a number of years. More extensive open areas are proposed and areas of heath and scrub and small areas of woodland.

It will take a number of years for the habitat restoration to develop. Within the first few years there will be a reduction in habitat quality and moderate negative impact on the Pine Marten resource. Cover will be removed and large open areas created, a habitat type that is generally avoided by Pine Marten (Birks 2002). Structural diversity of the forest will be lost – Pine Marten tend to favour close canopy woodland, where they are more able to climb trees and avoid predators such as Fox. In addition, there will be increased disturbance and the favoured prey of Pine Marten the Field Voles *Microtus agrestis* is unlikely to be abundant within the clear fell areas during the first few years.

However, potential habitat will remain in adjacent areas of forestry that are to remain and it is likely that any Pine Marten using the study site will also use adjacent land that will be unaffected by the development.

Mitigation Possible: No

6.6 Pine Marten

6.6.1 Impacts During Operational Phase

6.6.1.1 Potential Disturbance to Dens

The increased human activity on the site could negatively affect any Pine Marten resting up sites, if present on the site. Mitigation recommendations are made to avoid this potential problem.

Mitigation Possible: Yes

6.6.1.2 Alteration of Habitat Quality

Pine Marten do not favour open areas (Birks 2002) and it is thought that the proposed habitat plan will increase the presence of open areas and have a potentially moderate negative impact on the Pine Marten resource, particularly in the short term. Mitigation recommendations are made. However, the proposed increase in habitat variety could have a potential positive impact in the long term.

Mitigation possible: Yes

6.7 Badger

6.7.1 Impacts During Felling and Construction Phase

6.7.1.1 Loss of Setts

The only known definite setts are outside the area of the proposed wind farm scheme to the east and these will not be impacted on by the development. However, it is possible that one or two single hole outlying setts could be present within the development area. Due to the difficulty of surveying for Badger over extensive areas of dense plantation forest, and the potential for change in the Badger resource during the next few years, a precautionary mitigation approach is recommended.

Mitigation Possible: Yes

6.7.1.2 Disturbance to Setts

Of the three known setts outside the area of the proposed wind farm scheme, the closest is approximately 500m northeast of proposed turbine 46. As long as the wind farm footprint (including access roads) does not change then this sett will not be affected by works.

However, a precautionary approach is recommended throughout the study site.

Mitigation Possible: Yes

6.7.1.3 Alteration of Foraging Habitat

There will be a significant change of foraging habitat within the study site due to the extensive clear felling. In the short-term (i.e. 3-5 years) this is likely to have a negative impact on the badger foraging habitat within the study site, however this will be of low significance, due to the current sub-optimal foraging habitat quality. These clear fell areas will be relatively inaccessible to Badger and there will be few foraging opportunities.

Mitigation Possible: Not required

6.7.1.4 *Damage to Travelling Routes*

It is possible that known Badger travelling routes may be affected by the proposed access roads and clear fell areas, although no obvious travelling routes were identified during the survey and the impact on Badgers would be low. Badgers would have to establish new runs in areas where they are destroyed.

Mitigation Possible: Not required

6.7.2 *Impacts During Operational Phase*

6.7.2.1 *Loss of or disturbance to setts*

It is considered very unlikely that any Badger setts will be disturbed or lost during the operational phase. However, a precautionary approach is recommended.

Mitigation Possible: Yes

6.7.2.2 *Alteration of Foraging Habitat*

There will be a potential long-term positive enhancement of the quality of Badger foraging due to the greater diversity of habitat types that will be present.

Mitigation Possible: Not required

6.8 Red Squirrel

The potential impact on Red Squirrel has been considered in detail within the ES and therefore is not considered further here. Mitigation recommendations, as described in the ES are summarised in *Section 7.4.1 and 7.4.2*, with some additional recommendations.

6.9 Water Vole

6.9.1 *Impacts During Felling and Construction Phase*

6.9.1.1 *Loss of Habitat and Foraging*

No signs of Water Vole were found throughout the study area. However, there are small areas of potentially suitable habitat within the study site, some of which could be negatively impacted on by the development as a consequence of access roads and clear fell areas. Due to the limitations associated with the timing of the survey and the presence of potentially suitable habitat a precautionary mitigation approach is recommended.

Mitigation Possible: Yes

6.9.2 *Impacts During Operational Phase*

6.9.2.1 *Alteration of Water Vole Habitat*

There is the potential for the long-term enhancement of the habitat quality on the study site for Water vole. Large areas of dense coniferous plantation will be removed, a habitat that Water Vole are rarely found in, due to the shaded nature of the burns and consequent lack of riparian cover. The proposals for more open areas within the study could potentially enhance the habitat for Water Vole. Some best practice mitigation recommendations are made in section 7.6.

6.10 Otter

6.10.1 Impacts During Felling and Construction Phase

6.10.1.1 *Loss of and disturbance to Holts and Resting Up Sites*

No holts (breeding or otherwise) were identified within the study area. However, signs of Otter were identified within the site and potential areas for holt sites and resting up sites are present that would be damaged or destroyed by the proposed clear felling operation.

As the survey was undertaken at a time when the burns in the study area were in spate and due to the potential change in the Otter resource over the next few years, a precautionary mitigation approach is recommended.

Mitigation Possible: Yes

6.10.1.2 *Risk of Pollution during Construction and Operations*

Any chemical or physical (silt deposition) pollution could reduce fish populations downstream that are predated by this species, both in the short and longer term with a potentially high negative impact on the Otter resource. Some potential pollutants including spillage of oil, diesel and hydraulic fluid could also directly affect Otter.

Mitigation Possible: Yes

6.10.1.3 *Increased Road Traffic Injury and Mortality*

Any proposed new access roads and an increase in vehicular movement within the study site would possibly increase the likelihood of Otter mortality. However, it is considered that for the most part traffic would be moving at low speeds and would not pose a significant risk to this species.

Mitigation Possible: Not required

6.10.1.4 *Alteration of Riparian Habitat*

Any felling of the trees or clearing of boulders and construction of access routes may affect cover for potential holt or resting up sites or impact on travelling routes. This would be especially true for tree felling near to the burns. Best practice mitigation recommendations are made in Section 7.7.

Mitigation Possible: Yes

6.10.2 Impacts During Operational Phase

6.10.2.1 *Disturbance to Holts and Resting Up Sites*

It is considered very unlikely that any Otter resting up sites will be disturbed or lost during the operational phase. However, a precautionary approach is recommended as described in Section 7.7.

6.10.2.2 *Alteration of Riparian Habitat*

The long-term habitat creation proposals could lead to a positive enhancement of the site for Otter, assuming some areas of suitable woodland cover remain in the vicinity of watercourses. The removal of dense conifer plantation around some watercourses, may increase their productivity and consequent prey resource abundance for Otter.

6.11 Other Fauna

It is not considered that there would be any other significant impacts on other fauna identified during the survey.

7 MITIGATION RECOMMENDATIONS

Mitigation recommendations are provided where there is a moderate or high impact significance, to fulfil any legal requirements or following best practice guidelines.

7.1 Key General Recommendations

7.1.1 Pre-Construction Survey in Potentially Sensitive Areas

A precautionary approach is recommended due to the potential limitations associated with aspects of this survey and the possibility that the protected mammal resource may change before the completion of construction, which could be 3 or more years time.

It is recommended that all potentially sensitive areas are surveyed by a suitably trained ecologist, prior to clear fell or other works at an appropriate time of year. These procedures could form part of a Section 75 Management agreement produced as part of Planning Conditions, as has been proposed for Red Squirrel survey pre-felling.

Should any resting up sites be identified for protected species, appropriate mitigation would need to be put in place, dependant on the species, in agreement with SNH or SEERAD if required, as detailed below.

7.1.2 Site Environmental Management Procedure

A Site Environmental Management Procedure will be put in place during the construction phase of the works. The procedure should include the following in relation to protected mammal species:

- An emergency procedure for site workers to follow should Wildcat, Pine Marten, Otter, Badger, Red Squirrel or Water Vole be encountered during the course of the works. The key to the procedure should be that all works be stopped within 30m of the areas and specialist advice sort. SNH and SEERAD may need to be consulted.
- A procedure that ensures all site workers are inducted in relation to ecological requirements on the site including the above emergency procedure and any exclusion zones if present.

7.1.3 Ecological Watching Brief

An Ecological Watching Brief will be put in place to ensure that due consideration is being given to ecological requirements throughout the construction phase, operational phase and habitat creation phase.

7.1.4 Habitat Management Plan

A Habitat Management Plan is already proposed for the site (see ES). The production of a detailed Habitat Management Plan may form part of a Section 75 Agreement. The plan would be agreed by SNH and Forestry Commission Scotland. Greater consideration will be given to creating habitat for protected mammal species that are known to be present within Clashindarroch Forest, as detailed below. One of the aims of the Plan will be to create a positive habitat enhancement for these species. Monitoring will take place as part of the Management Plan to assess the effectiveness of the habitat creation on the protected mammal resource.

7.2 Wildcat

7.2.1 Mitigation During Felling and Construction Phase

7.2.1.1 Potential Loss of and Disturbance to Dens

A pre-construction survey will be undertaken within potentially sensitive areas to check for the presence of Wildcat dens or resting up sites.

Should a Wildcat den be identified works will be altered to accommodate the den with a suitable buffer zone as agreed with SNH. Should the access road, scheme layout or felling pattern not be able to be modified a licence would be required from the Scottish Executive and Rural Affairs Department (SEERAD) to destroy or disturb a Wildcat den or resting up site.

In the unlikely event that a Wildcat den site is discovered during the construction phase of the proposed development, post survey, the emergency procedure should be put in place and suitable mitigation agreed with an ecological specialist in conjunction with SNH and SEERAD.

Residual Impact Magnitude: Low

Residual Impact Significance: Low

7.2.1.2 Alteration of Habitat Quality

It is not possible to mitigate for the short-term negative impact on the Wildcat habitat due to the extensive nature of clear-fell that will take place.

Residual Impact Magnitude: High

Residual Impact Significance: Moderate

7.2.2 Mitigation During Operational Phase

7.2.2.1 Potential Disturbance to Dens

Should a Wildcat den site be identified during pre-construction survey, that will be retained within the development, suitable mitigation measures will be put in place to cover potential impacts during the operational phase of the development.

In the unlikely event that a Wildcat den site is discovered during the operational phase of the proposed development, the emergency procedure should be put in place and suitable mitigation agreed with an ecological specialist in conjunction with SNH and SEERAD.

7.2.2.2 Long-term Alteration of Habitat Quality

In principle the proposed habitat creation and greater habitat diversity that is proposed could have a positive enhancement on the Wildcat resource in the longer term.

However, the proposed creation of extensive areas of blanket bog, along with areas of proposed Hawthorn *Crataegus monogyna* and Dog Rose scrub with scattered Larch and Norway Spruce is questionable both in terms of its likely success, the lack of woodland cover and the planting of non-native species. Due to the extensive loss of forest cover, greater replanting of woodland would seem to be more appropriate, a point raised by RSPB in their consultation response to the ES.

In terms of creating suitable habitat for Wildcat a greater emphasis should be placed on creating native woodland habitat in combination with open areas of rough grassland and heath. The issue of habitat creation will be subject to further discussion with Forestry Commission Scotland, SNH, the Councils and RSPB.

Residual Impact Magnitude: Potentially Low

Residual Impact Significance: Potentially Low

7.3 Pine Marten

7.3.1 Mitigation During Felling and Construction Phase

7.3.1.1 Loss of Dens and Potential Disturbance

Pre-construction survey will be undertaken within potentially sensitive areas to check for the presence of Pine Marten dens or resting up sites.

Should a den be identified works will be altered to accommodate the den with a suitable buffer zone. Should the access road, scheme layout or felling pattern not be able to be modified then consultation would be required within SNH to agree proposed mitigation measures. There is no scope for licensing the destruction or disturbance of Pine Marten dens under the Wildlife and Countryside Act (1981). Therefore, suitable mitigation measures must be put in place to ensure that there is no long term loss of or damage to Pine Marten habitat.

In the unlikely event that a Pine Marten den site is discovered during the construction phase of the proposed development, post survey, the emergency procedure should be put in place and suitable mitigation agreed with an ecological specialist in conjunction with SNH.

Residual Impact Magnitude: Low

Residual Impact Significance: Low

7.3.1.2 Alteration of Habitat Quality

It is not possible to mitigate for the short-term negative impact on Pine Marten habitat due to the extensive nature of clear-fell that will take place.

Residual Impact Magnitude: High

Residual Impact Significance: Moderate

7.3.2 Mitigation During Operational Phase

7.3.2.1 Potential Disturbance to Dens

Should a Pine Marten den site be identified during the pre-construction survey, that will be retained within the development, suitable mitigations measures should be put in place to cover potential impacts during the operational phase of the development.

In the unlikely event that a Pine Marten den site is discovered during the operational phase of the proposed development, the emergency procedure should be put in place and suitable mitigation agreed with an ecological specialist in conjunction with SNH.

Residual Impact Magnitude: Low

Residual Impact Significance: Low

7.3.2.2 Long-term Alteration of Habitat Quality

In principle the proposed habitat creation and greater habitat diversity that is proposed could have a positive enhancement on the Pine Marten resource in the longer term.

However, as for Wildcat, the proposed habitat creation is questionable in terms of its benefit for Pine Marten. The main aim of the habitat creation proposals for Pine Marten should be to provide 'prey rich woodland' and resting sites. Therefore it is recommended that greater emphasis is placed on native woodland planting within the proposed habitat creation scheme.

In the short term the woodland on the site will be immature and lacking in potential tree hole cavities and therefore potential den sites. It is recommended that artificial densities are provided, in the form of wooden boxes located in suitable positions which mimic the insulative properties of natural cavities.

Residual Impact Magnitude: Potentially Low

Residual Impact Significance: Potentially Low

7.4 Badger

7.4.1 Mitigation During Felling and Construction Phase

7.4.1.1 Disturbance or loss of Setts

A pre-construction survey should be undertaken within potentially sensitive areas to check for the presence of outlying Badger setts.

Should a sett be identified works will be altered to accommodate the sett with a suitable buffer zone (at least 30m radius). Should the access road, scheme layout or felling pattern not be able to be modified then consultation would be required within SNH to agree proposed mitigation measures. A licence would be required from SNH for any disturbance or destruction of a sett.

In the unlikely event that a Badger sett is discovered during the construction phase of the proposed development, post survey, the emergency procedure should be put in place and suitable mitigation agreed with an ecological specialist in conjunction with SNH.

Residual Impact Magnitude: Low

Residual Impact Significance: Low

7.4.2 Mitigation During Operational Phase

7.4.2.1 Alteration of Foraging Habitat

There is potential for a positive enhancement of the Badger foraging resource on the site within the proposed Habitat Management Plan. The greater diversity of habitats that would be present is likely to lead to greater foraging opportunities for Badger. However, it is recommended that greater emphasis is placed on native woodland planting, which could provide any important foraging habitat for Badger.

Residual Impact Magnitude: Negligible

Residual Impact Significance: Potential Positive Gain

7.5 Red Squirrel

7.5.1 Mitigation During Felling and Construction Phase

As detailed in the ES it is recommended that felling does not take place within areas identified within the ES of good or moderate habitat suitability within the breeding season. The breeding season should be defined as *15 January to 30 September*.

Pre-construction surveys should take place in other areas prior to felling. Should any drey be present within the proposed clear fell area, if possible works should be delayed until after 30 September. If this were not possible then consultation would be required within SNH to agree proposed mitigation measures. There is no scope for licensing the destruction or disturbance of Red Squirrel dreys under the Wildlife and Countryside Act (1981). Therefore, suitable mitigation measures must be put in place to ensure that there is no long term loss of or damage to Red Squirrel habitat.

Residual Impact Magnitude: Low

Residual Impact Significance: Low

7.5.2 Mitigation During Operational Phase

7.5.2.1 Long-term alteration of Habitat Suitability

The current habitat proposals detailed in the ES, would have a possible negative impact on the Red Squirrel resource within the study site, due to the lack of proposed woodland planting, although it is noted that extensive plantation forest will remain to the east of the study site.

The planting of extensive areas of large seeded broad-leaved tree species such as Oak, Beech or Sweet Chestnut should be avoided as they provide Grey Squirrel with a competitive advantage. Species such as Birch, Rowan, Ash and Willow would provide suitable food for Red Squirrel whilst not encouraging Grey Squirrel (Lurz *et al.* 2003). In addition, a mix of coning species including species such as Scots Pine, Larch and Lodgepole Pine should be planted. A mix of species should ensure a dependable seed food supply for squirrels in spring and early summer. Norway Spruce or Sitka Spruce should not be relied upon as Sitka Spruce may shed seeds in the autumn and Norway Spruce only produce mast crops every 8-12 years (Lurz *et al.* 2003).

Residual Impact Magnitude: Medium

Residual Impact Significance: Low

7.6 Water Vole

7.6.1 Mitigation During Felling and Construction Phase

7.6.1.1 Loss of Habitat and Foraging

A pre-construction survey will be undertaken within potentially sensitive areas (wetland areas, burns) to check for the presence of Water Vole

activity. This should include access road crossing points as well as any clear fell areas.

Should Water Vole activity be identified it is recommended that works be altered to accommodate the area with a suitable buffer zone e.g. a 10m buffer zone either side of a watercourse.

Should the access road, scheme layout or felling pattern not be able to be modified then consultation would be required within SNH to agree proposed mitigation measures. There is no scope for licensing the destruction of Water Vole habitat under the Wildlife and Countryside Act (1981). Therefore, suitable mitigation measures must be put in place to ensure that there is no long term loss of or damage to Water Vole habitat.

In the unlikely event that Water Vole activity is discovered during the construction phase of the proposed development, post survey, the emergency procedure should be put in place and suitable mitigation agreed with an ecological specialist in conjunction with SNH.

Best practice recommendations in terms of felling should ensure that trees are felled away from and not over Burns or wetland areas. Burns should not be pipe culverted under access road crossing points. Open span structures or oversized box culverts are recommended. The former allow vegetation to develop under the structure, providing continuity of riparian cover and not deterring movement of Otter or Water Vole. If box culverts are used, earth filled ledges would be recommended within the culvert, above mean water level, where riparian vegetation can develop.

Residual Impact Magnitude: Low

Residual Impact Significance: Low

7.6.2 Mitigation During Operational Phase

7.6.3 Alteration of Water Vole Habitat

The proposed Habitat Management Plan could in principle lead to a positive enhancement of the potential Water Vole habitat on the site. Water Vole are known to be historically present less than 1.5km from the site boundary and therefore the main aim of the proposed habitat creation should be to provide high quality potential Water Vole habitat that may be colonised in the future.

The key recommendation is that the majority of woodland or scrub planting close to Burns should be set back at least 5-10m from the burn edges. Water Vole require extensive riparian cover, that is not present in shaded environments. This cover provides a food supply and protection from predators. It is not considered that any planting of riparian vegetation would be necessary as this would develop naturally.

Residual Impact Magnitude: Negligible

Residual Impact Significance: Potential Positive Gain

7.7 Otter

7.7.1 Mitigation During Felling and Construction Phase

7.7.1.1 Loss of Holts and Lying-up Areas and Disturbance

A pre-construction survey will be undertaken within potentially sensitive areas to check for the presence of Otter holts or resting up sites.

Should an Otter holt or resting up site be identified it is recommended that works be altered to accommodate the site with a suitable buffer zone. SNH guidelines (1997) state that any works within 20 metres of a shelter, i.e. resting-up or lying-up site and within 30 metres of a breeding holt could cause potential disturbance. Therefore these areas should be clearly fenced and marked off at all times during the construction operation. Should the access road, scheme layout or felling pattern not be able to be modified a licence would be required from the Scottish Executive and Rural Affairs Department (SEERAD) to destroy or disturb an Otter holt or resting up site.

In the unlikely event that an Otter resting up site is discovered during the construction phase of the proposed development, post survey, the emergency procedure should be put in place and suitable mitigation agreed with an ecological specialist in conjunction with SNH and SEERAD.

Residual Impact Magnitude: Low

Residual Impact Significance: Low

7.7.1.2 Risk of Pollution during Construction and Operations

Working practices should be followed to minimise the risk of any pollution incidents. Care should be taken to ensure that sediments are not washed into the burns. Machinery should only be re-fuelled in a designated safe area away from watercourses. Reference should be made to Pollution Prevention Guidelines issued by the Scottish Environmental Protection Agency (SEPA), particularly the following guidelines:

- PPG1: General guide to the prevention of water pollution.
- PPG5: Works in, near or liable to affect watercourses.
- PPG23: Maintenance of structures over water.

All works should be undertaken following liaison and agreement with SEPA.

Residual Impact Magnitude: Low

Residual Impact Significance: Low

7.7.1.3 Alteration of Riparian Habitat

Tree felling should take place away from Burns and wetland areas to ensure that riparian habitat is not damaged.

Burns should not be pipe culverted under access road crossing points as described in *Section 7.6.1.1* above.

Residual Impact Magnitude: Low

Residual Impact Significance: Low

7.7.2 Mitigation During Operational Phase

7.7.2.1 Disturbance to Holts and Resting Up Sites

Should an Otter resting up site be identified during the pre-construction survey, that will be retained within the development, suitable mitigations measures should be put in place to cover potential impacts during the operational phase of the development.

In the unlikely event that an Otter resting up site is discovered during the operational phase of the proposed development, the emergency procedure should be put in place and suitable mitigation agreed with an ecological specialist in conjunction with SNH and SEERAD.

Residual Impact Magnitude: Low

Residual Impact Significance: Low

7.7.2.2 Alteration of Riparian Habitat

There is potential, through the removal of areas of coniferous plantation close to watercourses, to enhance the Otter habitat resource on the site. It is recommended that areas of native woodland and scrub are planted close to watercourses. However, planting should not for the most part be extensive or close to the burn edge to avoid any negative impact on potential Water Vole habitat.

Residual Impact Magnitude: Negligible

Residual Impact Significance: Potential Positive Gain

7.8 Upgrade to Public Roads

Due consideration will be given to protected mammal species during any upgrade works to public roads. For example should any bridge upgrades or repairs be required Bat and Otter surveys would be recommended.

7.9 Decommissioning

Due consideration will be given to protected mammal species during decommissioning of the site or should the turbines be replaced following the end of their operational lifetime.

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8.1.1