

# Clashindarroch Wind Farm, Aberdeenshire Vattenfall UK



# **Pre-Construction Ecology Report: Planning Condition 55**

# **CONFIDENTIAL**

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#### Pre-Construction Ecology Report: Planning Condition 55 Report reference: XREPORT\_E\_1003908\_1\_C2

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# **Revision History**

Issue	Date	Changes
А	10/10/2012	First issue
В	17/12/2012	Second issue
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#### 1. INTRODUCTION

This document outlines the methodologies used by Natural Power Consultants (NPC) for discharging ecological planning conditions issued by the Aberdeenshire Council as part of the consent for Clashindarroch Wind Farm, and also outlines the results of pre-construction ecology surveys carried out at the site in 2011 and 2012, in order to meet the requirements of planning condition 55 (PC 55) which states:

**PC 55:** That no construction works shall take place until all the pre-construction wildlife surveys have been carried out as specified by Scottish Natural Heritage (SNH) in their letters dated 5<sup>th</sup> August 2009<sup>1</sup> and 23<sup>rd</sup> March 2010<sup>2</sup>

#### Reason: In the interests of nature conservation

The letter of 5<sup>th</sup> August 2009<sup>1</sup> includes reference to protected wildlife, including otter, bats and wildcat, all of which are European Protected Species (EPS), and also red squirrel, pine marten, water vole and badger. For all of these protected species, SNH supported recommendations made in the Clashindarroch Wind Farm Environmental Statement (ES)<sup>3</sup> (RPS 2009) that adequate further surveys be carried out immediately prior to construction or felling activities, and specified that these must cover all areas of suitable habitat where impacts might arise. The letter of 23rd March 2010<sup>2</sup> refers specifically to bats, and stipulated that a pre-construction re-survey of the proposed development area for bat roosts should be carried out, and that there should be development of measures to reduce construction impacts on bats. This report therefore also proposes mitigation measures for each of these species, designed to satisfy ecological planning conditions.

Clashindarroch Wind Farm, comprising 18 turbines (49.5MW) received planning consent in 2010<sup>4</sup>. The site is located on Forestry Commission Scotland (FCS) land in an area of coniferous plantation, south-west of Huntly, Aberdeenshire (see Figure 1, Appendix A). The construction of the wind farm which is due to commence in May 2013 will require felling of approximately 460 ha of coniferous plantation. This

<sup>&</sup>lt;sup>1</sup> Scottish Natural Heritage (5<sup>th</sup> August 2009): letter to Aberdeenshire Council. SNH Reference CNS/REN/WF-Clashindarroch <sup>2</sup> Scottish Natural Heritage (3<sup>RD</sup> March 2010): letter to Aberdeenshire Council. SNH Reference CNS/REN/WF-Clashindarroch

<sup>&</sup>lt;sup>3</sup> Clashindarroch Wind Farm Environmental Statement. RPS (2009).

<sup>&</sup>lt;sup>4</sup> Aberdeenshire Council (14 December 2010): Marr Area Committee Report. Reference M/APP/2009/1380

change in habitat, combined with the potential disturbance caused by an operational wind farm, required up-to-date surveys on the status of protected mammal and raptor species on the site.

Previous ecological surveys carried out at the site are included within the ES<sup>3</sup> (RPS, 2009). These surveys report evidence of otter, red squirrel, badger, pine marten and wildcat. There are also historical records for the site of goshawk (including breeding pairs), hen harrier, merlin, short-eared owl and common and Scottish crossbill. Suitable habitat for water vole and bats was also identified, although no signs of presence were recorded.

NPC surveyed the wind farm area in 2011 and 2012 for evidence of protected mammals - specifically bats, otter, water vole, red squirrel, badger, pine marten, wildcat and birds specifically, goshawk, other Schedule 1 raptors and crossbill. The legal status of each species is outlined below:

#### 1.1. Protection Status

# 1.1.1. Bats

All bat species found in Scotland are classed as European Protected Species (EPS) and are fully protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)<sup>5</sup>. This makes it illegal to deliberately or recklessly kill, injure, take, disturb or harass a wild bat or group of bats. It is also an offence to damage, destroy or obstruct access to a roost site or resting place (e.g. shelter). Additionally, it is an offence to disturb a wild bat in a manner that is or circumstances which are likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young or to significantly affect the local distribution or abundance of that species.

# 1.1.2. Otter

Otters are EPS and are protected under EC Habitats Directive through the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)<sup>5</sup>. This makes it illegal to deliberately or recklessly kill, injure, take, disturb or harass an otter. It is also an offence to damage, destroy or obstruct access to a breeding site or resting

<sup>&</sup>lt;sup>5</sup> Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) http://www.legislation.gov.uk/uksi/1994/2716/contents/made

place (e.g. shelter). Thus, otter shelters are legally protected whether or not an otter is present.

#### 1.1.3. Water vole

Water voles are not EPS but are protected under Section 9 of the Wildlife and Countryside Act 1981 (as amended)<sup>6</sup>. This protection makes it a legal offence to "intentionally kill, injure or take (capture)" this species. The habitat of water voles is also protected under this legislation making it a legal offence to "intentionally or recklessly damage, destroy or obstruct access to any structure or place, which water voles use for shelter or protection or disturb water voles while they are using such a place."

#### 1.1.4. Red squirrel

Red squirrels are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended)<sup>6</sup>. This makes it illegal to kill, injure, take, or disturb a red squirrel. It is also an offence to damage, destroy or obstruct access to a breeding site or resting place which a red squirrel used for shelter or protection (e.g. drey).

## 1.1.5. Badger

Badgers are protected under Schedule 6 of the Wildlife & Countryside Act 1981 (as amended)<sup>6</sup> and have full protection under The Protection of Badgers Act (1992)<sup>7</sup>. This makes it an offence to (or attempt to) kill, take, injure or disturb a badger or its sett (shelter) without a licence from the appropriate statutory body, in this case SNH.

#### 1.1.6. Pine marten

Pine martens are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended)<sup>6</sup>. This makes it illegal to kill, injure, take, or disturb a pine marten. It is also an offence to damage, destroy or obstruct access to a breeding site or resting place which a pine marten uses for shelter or protection (e.g. a nest or den).

<sup>&</sup>lt;sup>6</sup> Wildlife and Countryside Act 1981, as amended: <u>http://jncc.defra.gov.uk/page-1377</u>

<sup>&</sup>lt;sup>7</sup> The Protection of Badgers Act (1992) http://www.legislation.gov.uk/ukpga/1992/51/contents

#### 1.1.7. Wildcat

The Scottish wildcat is protected under the Wildlife and Countryside Act 1981 (as amended)<sup>6</sup>, and is identified as an EPS on the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)<sup>5</sup>. The Scottish wildcat is classified as Vulnerable by the International Union of Conservation of Nature [IUCN] Red List 2000<sup>8</sup>. The European wildcat is also listed under Appendix II of the Bern Convention 1979<sup>9</sup>. This makes it illegal to deliberately or recklessly kill, injure, take, disturb or harass a wildcat. It is also an offence to damage, destroy or obstruct access to a breeding site or resting place (e.g. shelter).

#### 1.1.8. Goshawk

Goshawk is listed on Schedule 1 (Part 1) of the Wildlife and Countryside Act (1981, as amended)<sup>6</sup>, under which there are special penalties for contravention of the provisions of the Act, including for disturbance to breeding birds. For Schedule 1 bird species, a licence is required from the appropriate Statutory Country Conservation Agency (in this case, SNH) to carry out activities that may disturb birds while they are building a nest or are in, on or near a nest containing eggs or young; or disturbance of the dependent young. As the survey proposal includes nest searches and monitoring, appropriate Schedule 1 licences were obtained prior to these survey elements being undertaken. Goshawk was also identified as a Valued Ornithological Receptor (VOR) of national importance in the Clashindarroch Wind Farm ES<sup>3</sup> (RPS, 2009).

#### 1.1.9. Other raptors

Raptor species also recorded at the site previously during surveys undertaken for the Environmental Statement are hen harrier, merlin and short-eared owl. Hen harrier and merlin are protected under Schedule 1 (Part 1) of the Wildlife and Countryside Act 1981 (as amended)<sup>6</sup>; and Annex 1 of the Council Directive 79/409/EEC on the conservation of wild birds, as amended by Directive 94/24/EC ('Birds Directive')<sup>10</sup>, and short-eared owl is legally protected under Annex 1 of the Birds Directive<sup>10</sup>. Species listed on Annex I of the Birds Directive are the subject of

<sup>&</sup>lt;sup>8</sup> The International Union of Conservation of Nature [IUCN] Red List 2000 http://www.iucnredlist.org/

<sup>&</sup>lt;sup>9</sup> Convention on the Conservation of European Wildlife and Natural Habitats

http://conventions.coe.int/Treaty/en/Treaties/html/104.htm

<sup>&</sup>lt;sup>10</sup> Council Directive 79/409/EEC on the conservation of wild birds, as amended by Directive 94/24/EC ('Birds Directive'): http://ec.europa.eu/environment/nature/legislation/birdsdirective/index\_en.htm

special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution.

#### 1.1.10. Crossbill

All three crossbill species, which commonly occur in the UK are protected under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended)<sup>6</sup>, and Scottish crossbill is also listed under Annex 1 of the Council Directive 79/409/EEC on the conservation of wild birds, as amended by Directive 94/24/EC ('Birds Directive')<sup>10</sup>. In addition, Scottish crossbill is:

- A UK Biodiversity Action Plan (UKBAP)<sup>11</sup> Priority Species, and is protected through the implementation of a Species Action Plan, which aims to maintain the current population by conserving and restoring the native pinewoods on which these species depend;
- A species of European conservation concern (SPEC 1) (BirdLife International/European Bird Census Council, 2000)<sup>12</sup>;
- On the North East Scotland Local Biodiversity Action Plan (LBAP)<sup>13</sup>; and
- Amber listed on the UK Birds of Conservation Concern list (Eaton *et al.*, 2009)<sup>14</sup> (along with parrot crossbill).

## 2. SURVEY METHODOLOGY

2.1. Bats



<sup>&</sup>lt;sup>11</sup> UK Biodiversity Action Plan (UKBAP): <u>http://jncc.defra.gov.uk/default.aspx?page=5155</u>

<sup>&</sup>lt;sup>12</sup> BirdLife International / European Bird Census Council (2000) Bird Populations: estimates and trends. BirdLife Conservation Series No. 10. BirdLife International, Cambridge.

<sup>&</sup>lt;sup>13</sup> North East Scotland Local Biodiversity Action Plan (LBAP): <u>http://www.nesbiodiversity.org.uk/</u>

<sup>&</sup>lt;sup>14</sup> Eaton, M. A., Brown, A. F., Noble, D. G., Musgrove, A. J., Hearn, R., Aebischer, N. J., Gibbons, D. W., Evans, A. and Gregory, R. D. (2009) Birds of Conservation Concern 3: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man. British Birds 102: 296-341.

<sup>&</sup>lt;sup>15</sup> Hundt L. (2012). Bat Surveys: Good Practice Guidelines, 2nd edition, Bat Conservation Trust



2.2. Otter



<sup>16</sup> Bang, P. & Dahlstrøm, P. 2001 Animal Tracks and Signs. Oxford University Press, Oxford.
 <sup>17</sup> Sargent, G. & Morris, P. 2003 How to find & Identify Mammals. The Mammal Society, London.



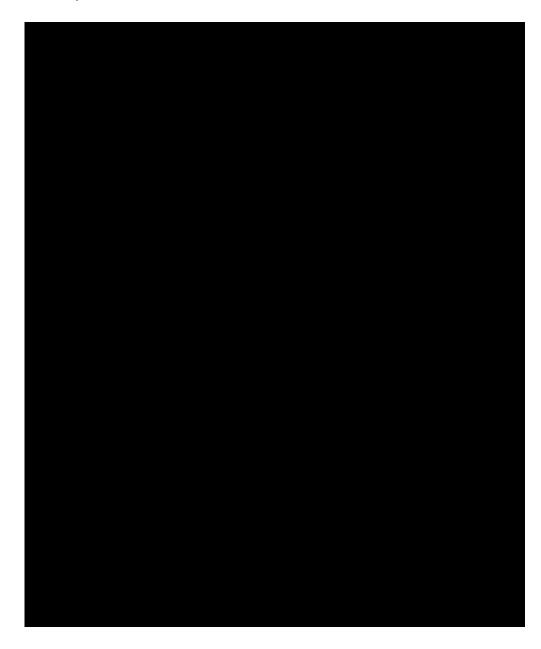
2.3. Water vole



<sup>18</sup> Strachan, R. & Moorhouse, T. 2011 *The Water Vole Conservation Handbook*. Third Edition, Wildlife Conservation Research Unit, University of Oxford, Oxon



# 2.4. Red squirrel



<sup>&</sup>lt;sup>19</sup> Gurnell, J., Lurz, P., McDonald, R., Pepper, H. Practical Techniques for Surveying and Monitoring Squirrels. Forestry Commission Scotland (October 2009)

# 2.5. Badger



2.6. Pine marten



<sup>20</sup> Neal, E. & Cheeseman, C. (1996). *Badgers*. Poyser Natural History, London.



#### 2.7. Wildcat

Wild cat surveys were carried out by Adrian Davies of Naiad Consultancy in January and February 2012. All areas of land incorporating a 500 m buffer from felling and infrastructure as outlined in Figure 2 (Appendix B) were surveyed for signs of wildcat.

Identification of Scottish wildcat is complex due to their ability to interbreed with domestic and feral cats. Scottish wildcat features and recognition are summarised in research by Kitchener *et al.*, 2005<sup>21</sup>, however with live cats in the field positive identification via visual characteristics is problematic because of the difficulty in observing cats due to their shy nature, fear of man and previous persecution. In addition it is believed from field research that true wildcats are now very rare with very low populations in many areas with much larger feral populations now present. As such there are currently no guidelines for surveying or assessing wildcats in the field. Naiad Ecology has discussed wildcat monitoring proposals with SNH but no standard methods have currently been produced. However, in the interim Naiad Ecology has devised a methodology based on seven years of research

<sup>&</sup>lt;sup>21</sup> Kitchener, A.C., Yamaguchi, N., Ward, J.M. & Macdonald, D.W. (2005) A diagnosis for the Scottish wildcat (Felis silvestris): a tool for conservation action for a critically endangered felid. Animal Conservation 8: 223-237

on wildcats on known sites. Several steps were followed in order to determine wildcat presence or absence in the survey area, as follows:

- Liaising with SNH and local residents, for information on any sightings or recorded signs of Scottish wildcat in the area. This involved a questionnaire/ discussion with keepers and land managers about cats in the area.
- Initial scoping surveys in the field normally carried out mainly in winter, especially in snow.
- Following consultations the Scottish wildcat survey was undertaken, within the survey area shown in Figure 2, Appendix B. Surveyors looked for the following signs:
  - o Dens;
  - o Prints;
  - o Scat;
  - o Scratching posts; and
  - o Sightings.
- In areas where there were signs of cats, or where wildcats have previously been seen, camera traps were used to try and verify presence and also to prove if a wildcat/hybrid or feral cat is present based on pelage characters. Camera traps were put in places where wildcats have been recorded previously and where cat signs were evident such as paw prints or droppings. Two sets of camera traps were used adjacent to where cat signs (paw prints) were observed in snow. These were placed approximately 100 m apart on a tree some 2-3 m metres high. Camera traps were left on site to get better coverage of the area during February to May 2012.
- A brief survey was carried out for wildcat dens within 10 m each side of the access route. However there is also a danger that wildcat den searches can disturb wildcats therefore great care must be given to the timing of this and methods used which are less intrusive. These surveys were therefore conducted in winter and stopped in early April prior to the breeding season (to avoid any potential disturbance to cats and their potential den sites).

Any evidence of Scottish wildcat presence was recorded onto 1:10,000 scale survey maps in the field. The location of all signs was also recorded via the use of a handheld GPS and photographs taken to visually catalogue the record.



#### 2.8. Goshawk





<sup>22</sup> Scottish Natural Heritage (2005 - revised 2010) Survey methods for use in assessing the impacts of onshore windfarms on bird *communities (Guidance note).* Scottish Natural Heritage, Edinburgh, Scotland. <sup>23</sup> Natural Power Consultants (2012) Goshawk and Crossbill Mitigation Plan: Planning Condition 53. XREPORT\_E – 1002507 – 1 –

Β1



2.10. Crossbill



3. RESULTS

3.1. Bats



<sup>24</sup> Buckland, S. T., Summers, R. W., Borchers, D. L. and Thomas, L. (2006) Point transect sampling with traps or lures. *Journal of Applied Ecology* 43: 377-384.



3.2. Otter



3.3. Water Vole



3.4. Red Squirrel



3.5. Badger





#### 3.6. Pine Marten

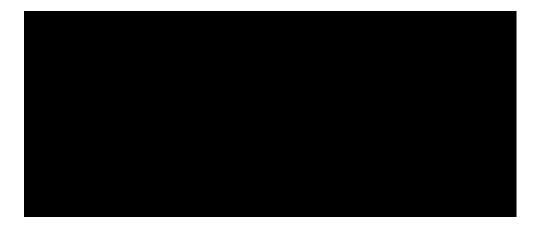


#### 3.7. Wildcat

Initial protected mammal species surveys carried out between 22<sup>nd</sup> and 26<sup>th</sup> September 2011 recorded a cat scat at NJ42657 32252 within the wind farm site, at the northern tip of the turbine core area (Figure 6, Appendix F). Cat droppings and paw prints were also observed in several locations throughout the survey area during initial wildcat surveys on 2<sup>nd</sup> and 3<sup>rd</sup> February 2012. Cat prints were observed in the snow during the winter (from February - March 2012) on several access tracks (see see Figure 6, Appendix F and Table 6, Appendix J), these prints suggested cat presence along the forestry tracks as well as badgers and pine martens (see Tables 4 & 5, Appendix J). Camera traps were set up following the initial visit to gain further information on the presence of wildcat on site. Two camera traps were set on 3<sup>rd</sup> February 2012 at places where cat droppings and cat prints were observed in snow. Initial images and a check of the cameras on 2<sup>nd</sup> March revealed no cats in these locations. Cameras were left out a further two months but no cat images were captured.

A brief survey was carried out for wildcat dens within 10 m each side of the access route. No wildcat dens were recorded.

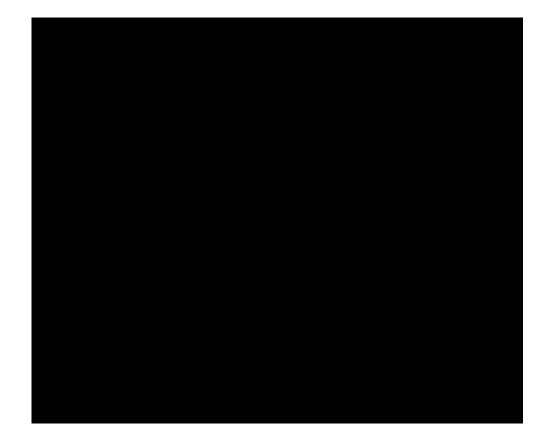
#### 3.8. Goshawk



# 3.9. Raptors



# 3.10. Crossbill



# 4. CONCLUSIONS AND MITIGATION

The surveys undertaken by NPC in 2011 and 2012 in the survey area outlined in Figure 1 (Appendix A), found evidence of the following species:

- Otter;
- Red squirrel;
- Badger;
- Pine marten;
- Possible wildcat;
- Goshawk;
- Hen harrier; and
- Crossbill.

It is important for all contractors and operators on site to be aware of ecological sensitivities on site. As such, general mitigation to cover all protected species on site will consist of:

- Inductions for all site personnel, to include regular toolbox talks by the Ecological Clerk of Works (ECoW);
- Additional felling/construction surveys by the ECoW;
- Regular presence of the ECoW on site to monitor construction and ensure compliance to legislation;
- A poster will also be displayed within the site compound which will remind operators of the environmental sensitivities onsite and good working practice.

## 4.1. Ecological Clerk of Works (ECoW)

The ECoW will liaise with the Balance of Plant (BoP) contractor to ensure that all construction practices comply with best practice guidance and all relevant ecological legislation, and that all planning conditions are adhered to. The ECoW will ensure that all mitigation measures such as silt traps, exclusion zones etc. (see Sections 4.2 - 4.12) are working effectively and where applicable make recommendations on where improvements could be made or communicate any failures of construction mitigation measures to the appropriate personnel or statutory body.

In order for the ECoW to use their time on site most effectively, they will liaise with the resident engineer/site foreman at the end of each week to find out what construction work will be taking place and where. This will be in addition to the standard site checks that the ECoW will be responsible for each week, such as water quality inspections.

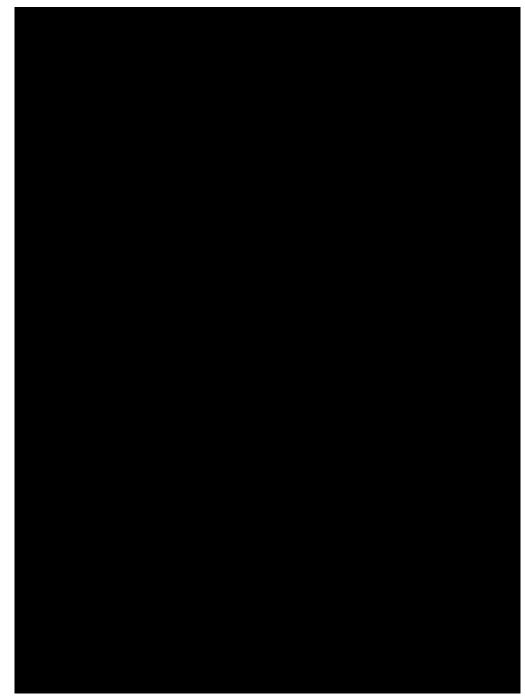
The ECoW will ensure that both the planning conditions and the commitments made within the ES (RPS 2009)<sup>3</sup> are fully implemented on site. Routine inspections will be carried out by the ECoW, particularly for works within the vicinity of watercourses, where the ECoW will carry out visual inspections of the surface water environment. The employment of the ECoW will allow mitigation measures to be applied in a flexible and pro-active manner as dictated by the site conditions at the time.

The ECoW will provide toolbox talks to all site personnel. This will ensure site personnel are aware of the species that may be encountered on site (what they look like, signs of these species, etc), and the relevant legislation and legal requirements surrounding each species, the mitigation measures in place on site for each species (see 4.2 - 4.12), and the role of site personnel in implementing them. All site workers will be given the ECoWs contact details and told to report any signs or sightings of protected species to the ECoW on days that the ECoW is on site, or if the ECoW is not on site, to notify the resident engineer/site foreman who will notify the ECoW. In addition, any required exclusion zones or restricted construction access required as part of the mitigation for protected species would be set up, monitored and enforced by the ECoW, as agreed with the relevant statutory bodies.

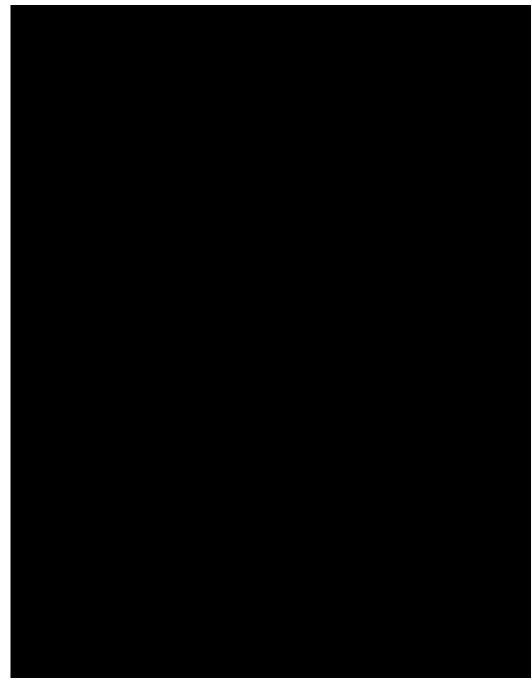
The ECoW will keep a weekly log of significant activities and incidents on site which will be submitted to the resident engineer/site foreman. The ECoW will also provide monthly update reports during the construction period to the resident engineer/site foreman and the BoP contractor. These reports will contain information such as: results of onsite ecological monitoring, results of water quality monitoring, information on additional inspections, information about any environmental incidents, health & safety and compliance with the construction method statement (CMS), e.g. avoidance of ecological buffers and pollution prevention measures. At the end of each monthly report, if applicable, a list of corrective actions will be issued to the contractor and during subsequent visits the ECoW will check that the contractor has completed these actions accordingly.

The ECoW will be responsible for contacting SNH to discuss specific mitigation measures. In such instances the ECoW will initially provide a written mitigation proposal (an e-mail would be sufficient) for consideration. All other suitable courses of action will be considered before any application is made to SNH for a license.

Specific mitigation measures that are currently required during construction and felling activities are summarised below.



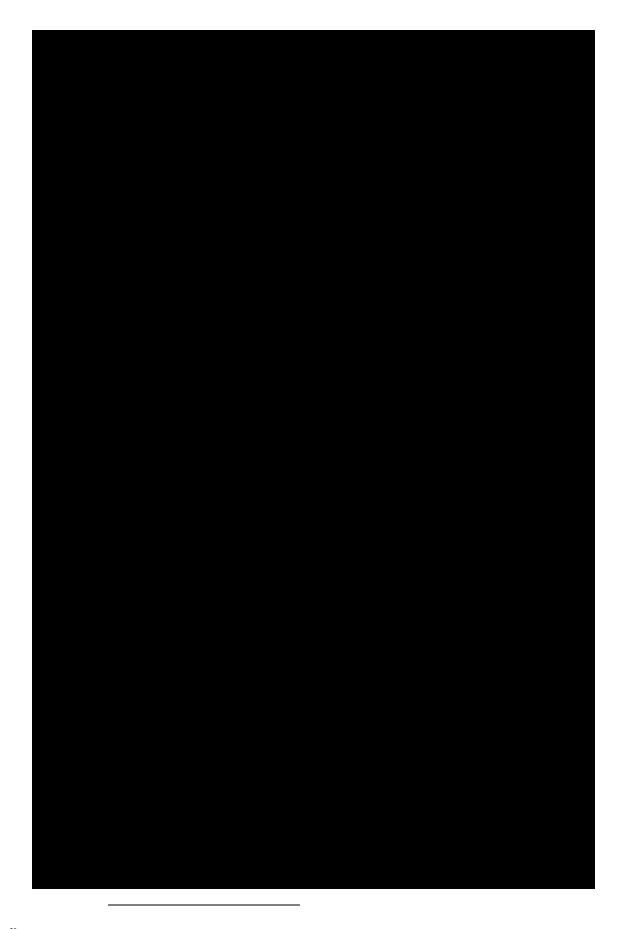
# 4.2. Bats







<sup>25</sup> Natural Power Consultants (2011) Clashindarroch Wind Farm: Water Management Plan. 208\_R\_NPC\_VATT\_13.



<sup>&</sup>lt;sup>26</sup> Forestry Commission Scotland (2009) FCS Guidance Note 35c: Forest operations and otters in Scotland. Forestry Commission Scotland, Edinburgh



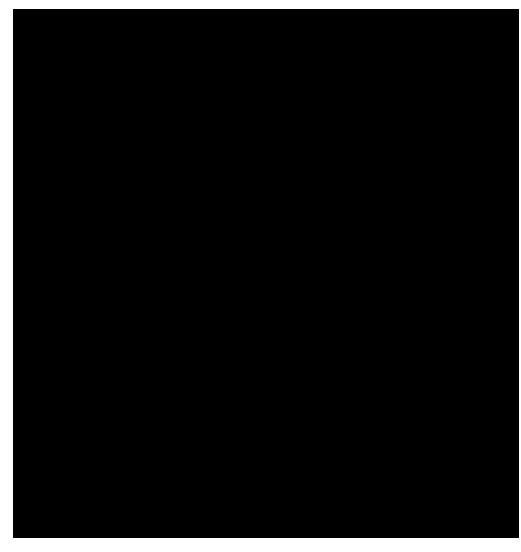
4.4. Water Vole



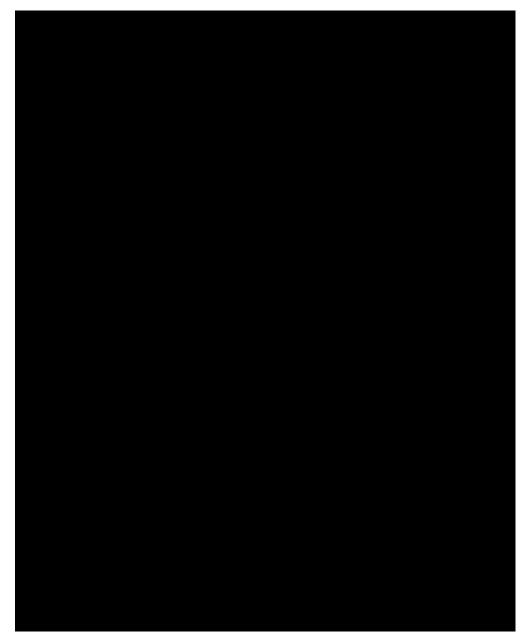


4.5. Red Squirrel

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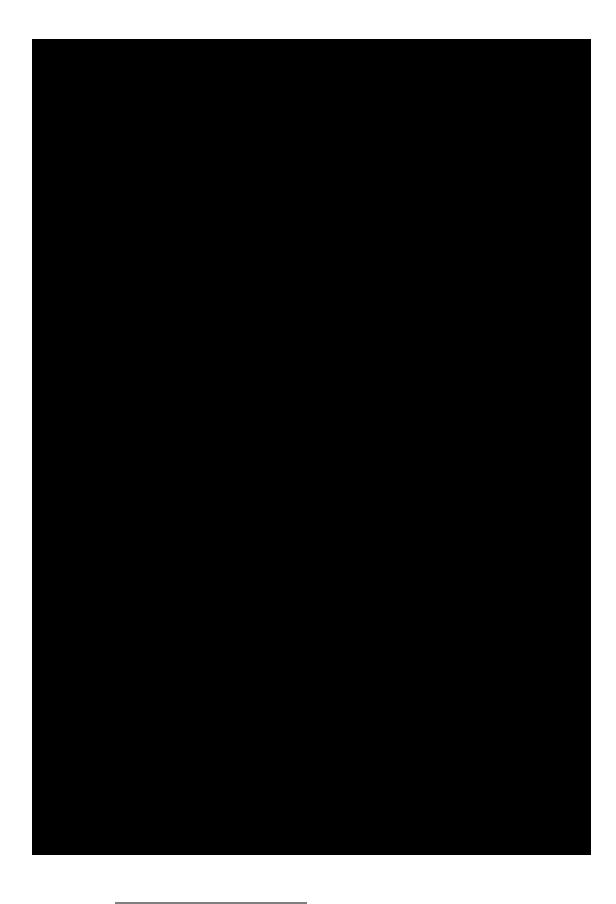
<sup>&</sup>lt;sup>27</sup> Forestry Commission Scotland (2006) FCS Guidance Note 33: Forest operations and red squirrels. Forestry Commission Scotland, Edinburgh



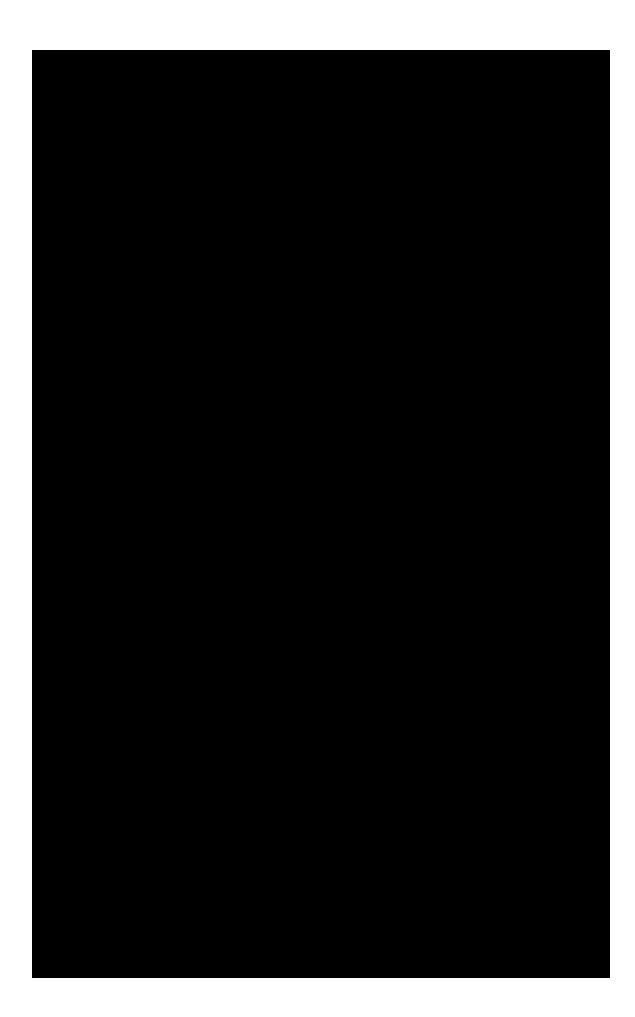
4.6. Badger



<sup>&</sup>lt;sup>28</sup> Scottish Natural Heritage (2001). Scotland's Wildlife: Badgers and Development. SNH, Battleby.



 <sup>&</sup>lt;sup>29</sup> Forestry Commission 1995 Forestry Practice Guide 9: Forest Operations and Badger Setts
 <sup>30</sup> Forestry Commission Forestry Practice Guide 9: Forest Operations and Badger Setts





4.7. Pine marten



# 4.8. Wildcat

Using the precautionary principle wildcats may be present at Clashindarroch on the northern limits of the site where access is proposed. It is possible that a wildcat or a feral/hybrid cat has a territory along the northern section of the access track, but no dens or resting places were found (within 10 m either side of the proposed access route). There were no signs of cats in the turbine locations and in the immediate access routes near the higher part of the site. Given previous records

within the area it is possible wildcats are present. However our surveys tend to suggest that cat activity in the area is low.

#### 4.8.1. General protection measures

Although no den sites were found access routes should be carefully planned to avoid gorse scrub, forest margins and woodland areas which are most sensitive. Where possible long established old trees and banks should be retained and dead wood left to provide cover and shelter. Practices such as removal of gorse and scrub should be resisted within core cat areas (within 2-3 km of cat locations). Extra care should be taken while undertaking development activities during the wildcat breeding season (from approximately April to late July). However it is possible cats can breed later than this or in fact have a second litter therefore care must be taken during development to minimise risk to wildcats even in late summer. Although no den sites were found within 10 m either side of the existing tracks, there were possible suitable den sites in the forest areas beyond these corridors. Works should be avoided at night and at dawn and dusk.

#### 4.8.2. Procedure in the event of discovering a suspected wildcat den

As per Forestry Commission guidance (FCS Guidance Note 35d)<sup>31</sup>, if wildcat activity is suspected or fresh signs are discovered during operations (especially around likely dens), work will stop immediately within 200 m and the ECoW and SNH will be informed. Operations within that 200 m buffer will not recommence until it can be established by a suitably qualified expert whether it is in fact a wildcat den and whether it is likely to be in use.

#### 4.8.3. Procedure for a confirmed wildcat den

As per Forestry Commission guidance (FCS Guidance Note 35d)<sup>30</sup>, if physical evidence of a den site is found, an exclusion zone of 200 m around the site will be marked and strictly enforced. Ideally, woodland operations in the vicinity will be carried out between August and January when wildcats are not breeding. If dens are found during operations, work will be halted immediately and an appropriate mitigation scheme will be put in place in consultation with SNH. If there is no other satisfactory solution than to fell around the den, an application for a license from SNH will be submitted. Continuation of work will only be authorised once suitable

<sup>&</sup>lt;sup>31</sup> Forestry Commission Scotland Guidance Note 35d: Forest Operations and Wildcats in Scotland

mitigation has been agreed with SNH and confirmation from SNH has been received in writing (including e-mail).

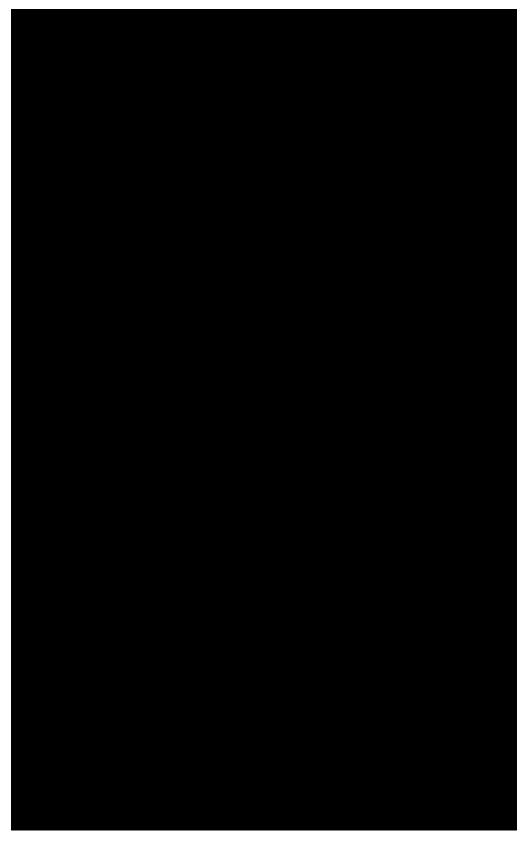
## 4.9. Goshawk



4.10. Other Schedule 1 raptors



<sup>&</sup>lt;sup>32</sup> Ruddock, M. and Whitfield, D. P. (2007) A Review of Disturbance Distances in Selected Bird Species. Natural Research (Projects) Ltd Report to Scottish Natural Heritage.



4.11. Crossbill



#### 4.12. Other mitigation requirements

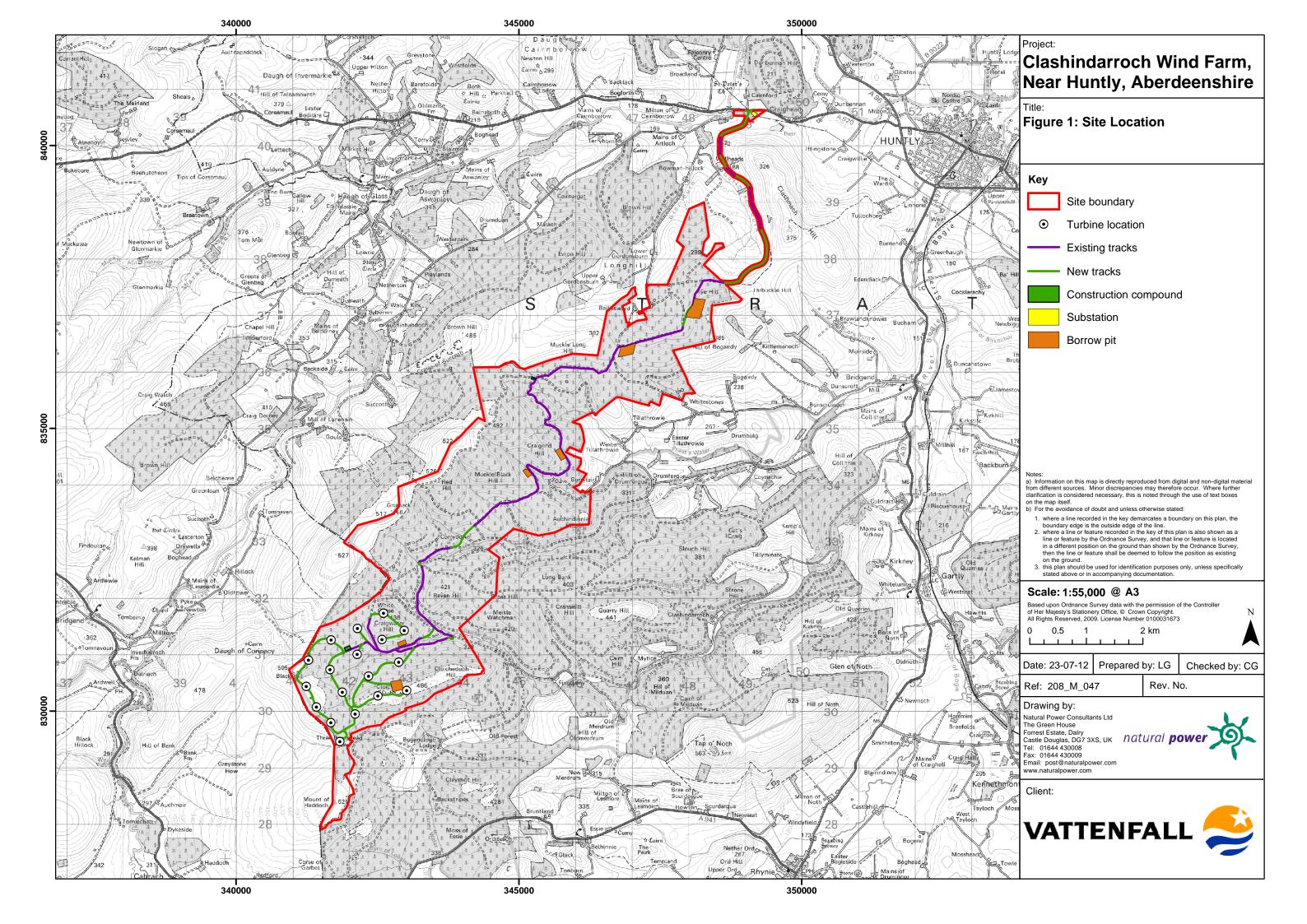
Any further mitigation requirements during felling and construction will be identified and reported on by the appointed ECOW.

Construction of the wind farm was initially due to commence earlier in 2012 but is now planned to commence in May 2013. Repeat surveys for protected species may be necessary to ensure up-to-date and valid survey data is available prior to construction commencing.

Through discussion with SNH (Sue Lawrence), it was agreed that a brief preconstruction survey to check for protected species would be sufficient, rather than repeating all surveys undertaken in full. The site ecologist will walk the site once it has been felled, and check for presence of protected species. The ECOW will advise any necessary mitigation measures during felling and construction operations. The appointed ECoW will work closely with the Forestry Commission to ensure that all areas of the forest are thoroughly checked for signs of protected mammals prior to felling. Each forestry coupe will be checked for squirrel dreys, pine marten dens, badger setts, otter holts/couches, wildcat dens and Schedule 1 raptor nests (in the latter case unless felling takes place between September and March). If any of these signs are identified, work should be halted until appropriate exclusion zones or other mitigation that the ECoW advises upon, are implemented.

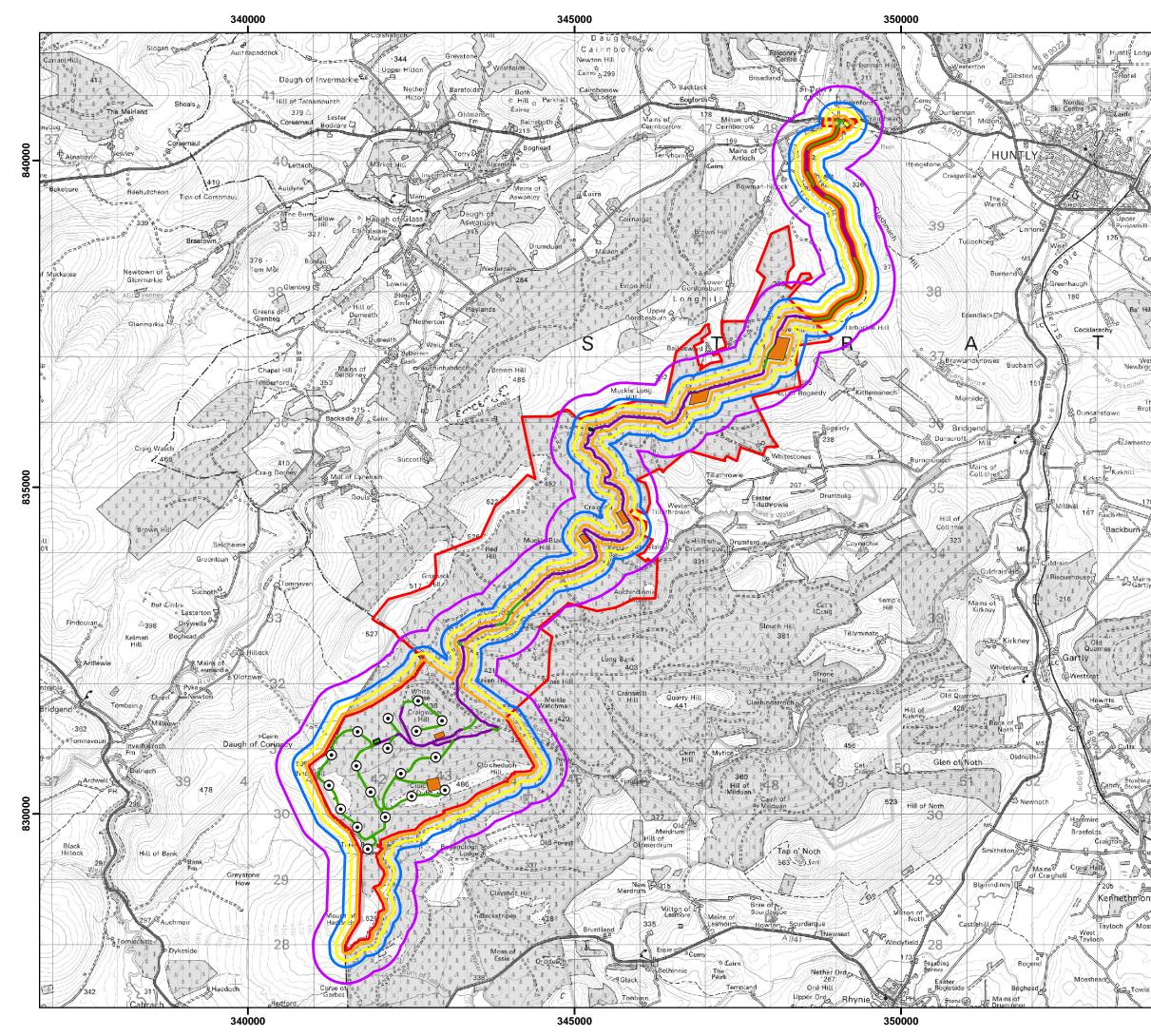
#### APPENDIX A

Figure 1: Site Location



#### APPENDIX B

Figure 2: Protected Mammal Survey Areas

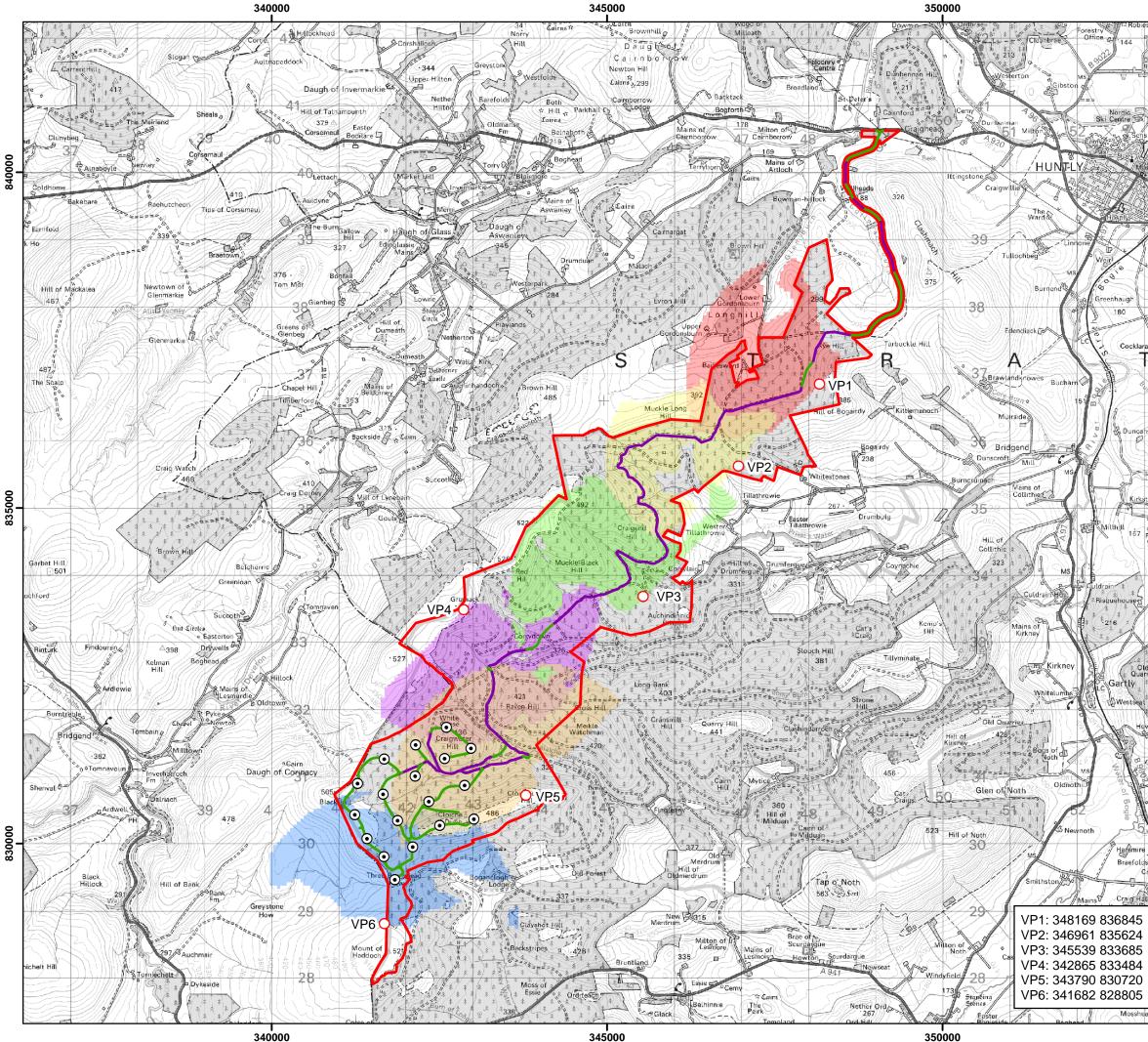


# Project: **Clashindarroch Wind Farm, Near Huntly, Aberdeenshire** Title: Figure 2: Protected Mammal Survey Areas

Key Site boundary  $\odot$ **Turbine** location Existing tracks New tracks Construction compound Substation Borrow pit Red squirrel and pine marten survey area 50m buffer (felling and infrastructure) Badger survey area 150m buffer (felling and infrastructure) Otter and water vole survey area 250m buffer (felling and infrastructure) Wildcat survey area 500m buffer (felling and infrastructure) Notes: a) Information on this map is directly reproduced from digital and non-digital material from different sources. Minor discrepancies may therefore occur. Where further clarification is considered necessary, this is noted through the use of text boxes b) For the avoidance of doubt and unless otherwise stated: 1. where a line recorded in the key demarcates a boundary on this plan, the Where a line fecorded in the key demarcates a boundary on uns prain, me boundary edge is the outside edge of the line.
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#### APPENDIX C

Figure 3: Vantage Point Locations



## Project: Clashindarroch Wind Farm, Near Huntly, Aberdeenshire

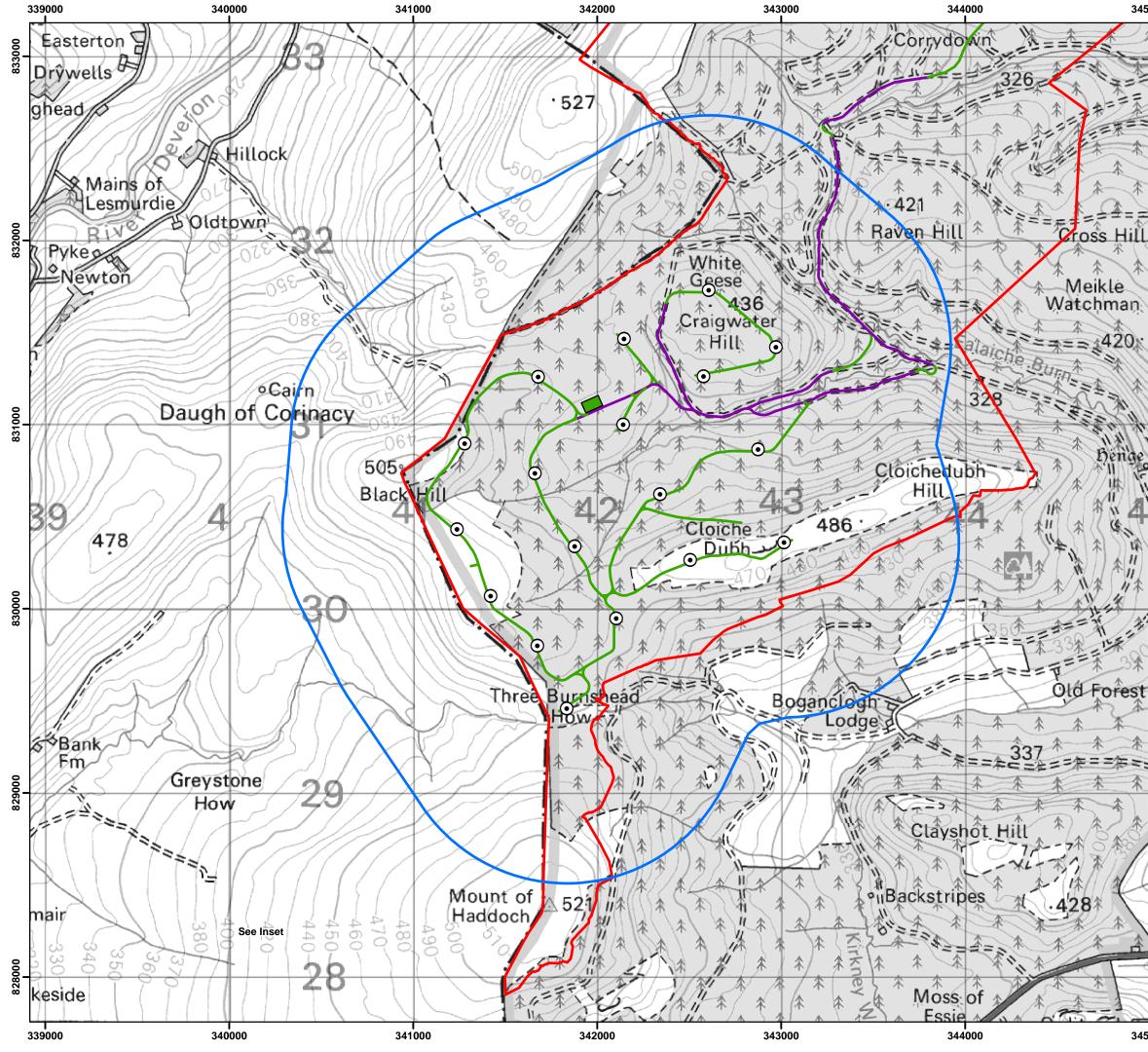
Title:

## Figure 3: Vantage Point Locations

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	Site boundary				
K	<ul> <li>Site boundary</li> <li>Turbine location</li> </ul>				
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$\geq$	New tracks				
	O Vantage point				
	Visibility from VP1				
rachy	Visibility from VP2				
	Visibility from VP3				
all of B	Visibility from VP4				
	Visibility from VP5				
hstowr	Visibility from VP6				
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(CK)					
	*Note: The viewshed analysis was run with the following settings: Observer height set to 1m Above Ground Level (AGL), viewshed height calculated				
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	The Green House Forrest Estate, Dairy				
ralgto	Castle Douglas, DG7 3XS, UK NATURAL power Tel: 01644 430008 Fax: 01644 430009				
	Email: post@naturalpower.com www.naturalpower.com				
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#### APPENDIX D

Figure 4: Raptor Walkover Survey Area

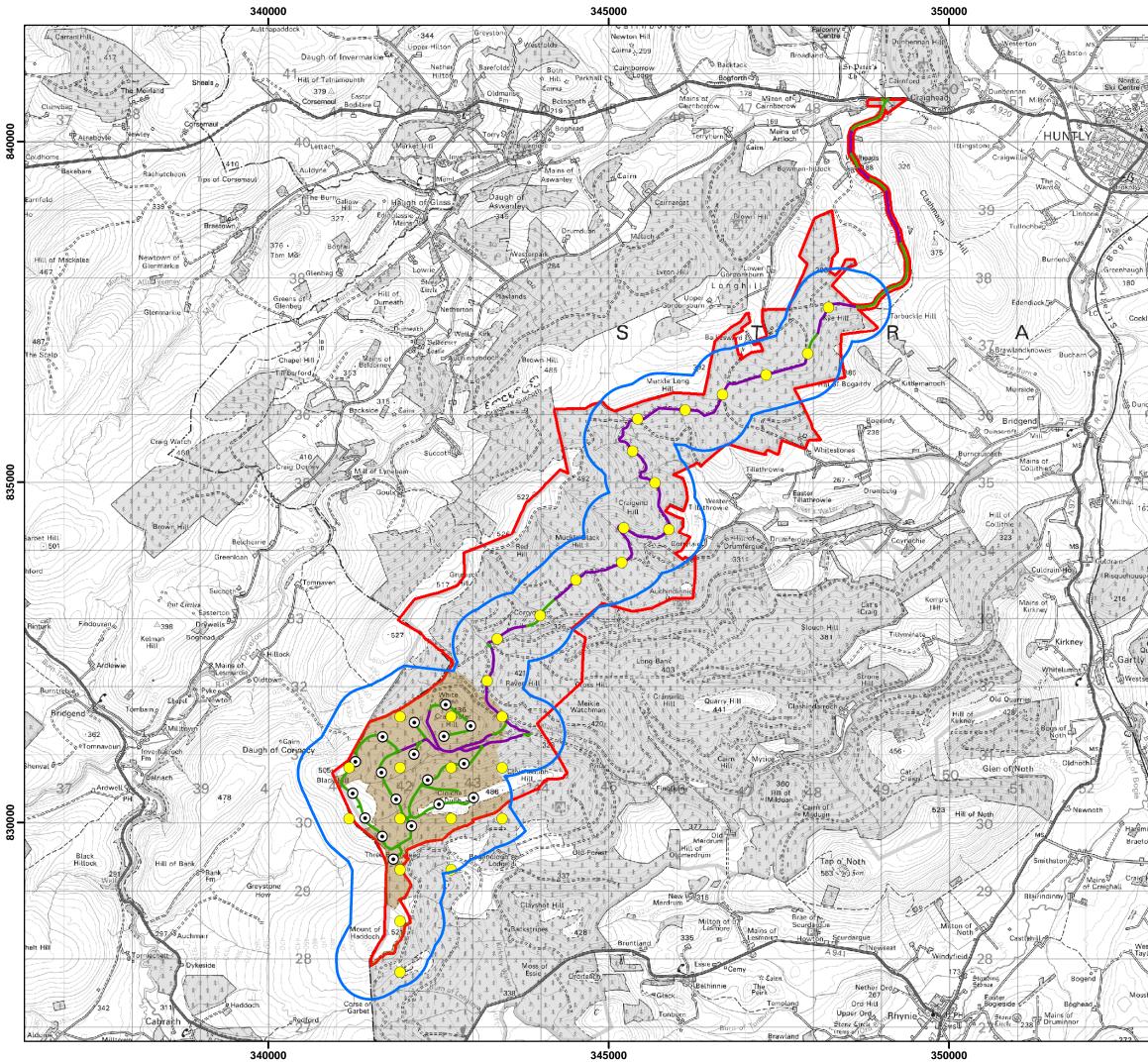


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	Project: Clashindarroch Wind Farm, Near Huntly, Aberdeenshire
KCHHI I	Title: Figure 4: Raptor Walkover Survey Area
HAV H H H H H H	Key         Site boundary         Turbine layout         Existing tracks         New tracks         Construction compound         Schedule 1 raptor survey area (750m buffer of turbines)
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	<ul> <li>Notes: <ul> <li>a) Information on this map is directly reproduced from digital and non-digital material from different sources. Minor discrepancies may therefore occur. Where further clarification is considered necessary, this is noted through the use of text boxes on the map itself.</li> <li>b) For the avoidance of doubt and unless otherwise stated:</li> <li>1. where a line recorded in the key demarcates a boundary on this plan, the boundary edge is the outside edge of the line.</li> <li>2. where a line or feature recorded in the key of this plan is also shown as a line or feature by the Ordnance Survey, and that line or feature is located in a different position on the ground than shown by the Ordnance Survey, then the line or feature shall be deemed to follow the position as existing on the ground.</li> </ul> </li> <li>3. this plan should be used for identification purposes only, unless specifically stated above or in accompanying documentation.</li> </ul>
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	Client: VATTENFALL

#### APPENDIX E

Figure 5: Crossbill Survey Sampling Locations



## Project: Clashindarroch Wind Farm, Near Huntly, Aberdeenshire

Title: Figure 5: Crossbill Survey Sampling Locations

Key				
	Site I	Boundary		
۲	Turbine location			
	Existing tracks (felling 30m wide)			
	New	tracks (fel	ling 30r	n wide)
	Core	turbine fe	lling are	ea
	Survey area (500m buffer of access track within forestry and turbine core area)			
•	Sam	oling locat	ion (750	Om intervals)
<ul> <li>Notes:         <ul> <li>a) Information on this map is directly reproduced from digital and non-digital material from different sources. Minor discrepancies may therefore occur. Where further clarification is considered necessary, this is noted through the use of text boxes on the map itself.</li> <li>b) For the avoidance of doubt and unless otherwise stated:                  <ul></ul></li></ul></li></ul>				
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Client:				
VATTENFALL 😂				

#### APPENDIX F

Figure 6: Protected Mammal Survey Results

#### APPENDIX G

Figure 7: Goshawk Survey Results 2012

#### APPENDIX H

Figure 8: Other Schedule 1 Raptor Survey Results 2012

#### APPENDIX I

Figure 9: Badger Sett Locations and Associated Exclusion Zones



#### APPENDIX J

Survey data

#### Table 1: Protocol for visual inspection of trees due to be affected by aboricultural works (adapted from Hundt L., 2012).

Category	Description		
Known or confirmed roost			
Category 1*	Trees with multiple, highly suitable features capable of		
	supporting larger roosts.		
Category 1	Trees with definite bat potential, supporting fewer suitable		
	features than category 1* trees or with potential for use by		
	single bats.		
Category 2	Trees with no obvious potential, although the tree is of a size		
	and age that elevated surveys may result in cracks or crevices		
	being found; or the tree supports some features which may have		
	limited potential to support bats.		
Category 3	Trees with no potential to support bats.		

#### Table 2: Bat Survey Results and Recommendations



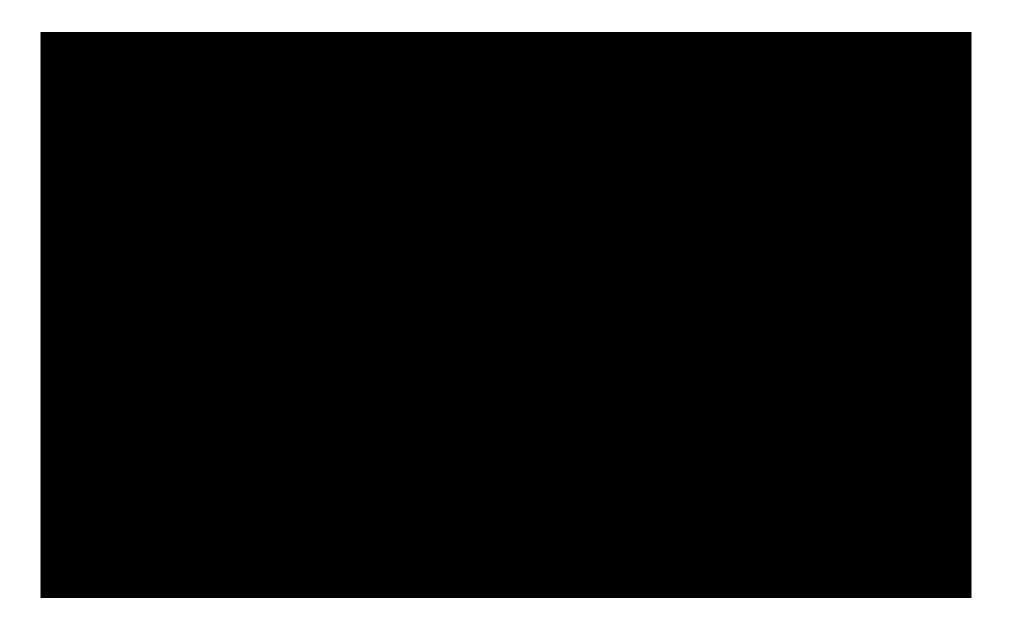


<sup>33</sup> Clashindarroch Environmental Statement Technical Appendix 12A (April 2009)

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Table 3: Red squirrel survey data



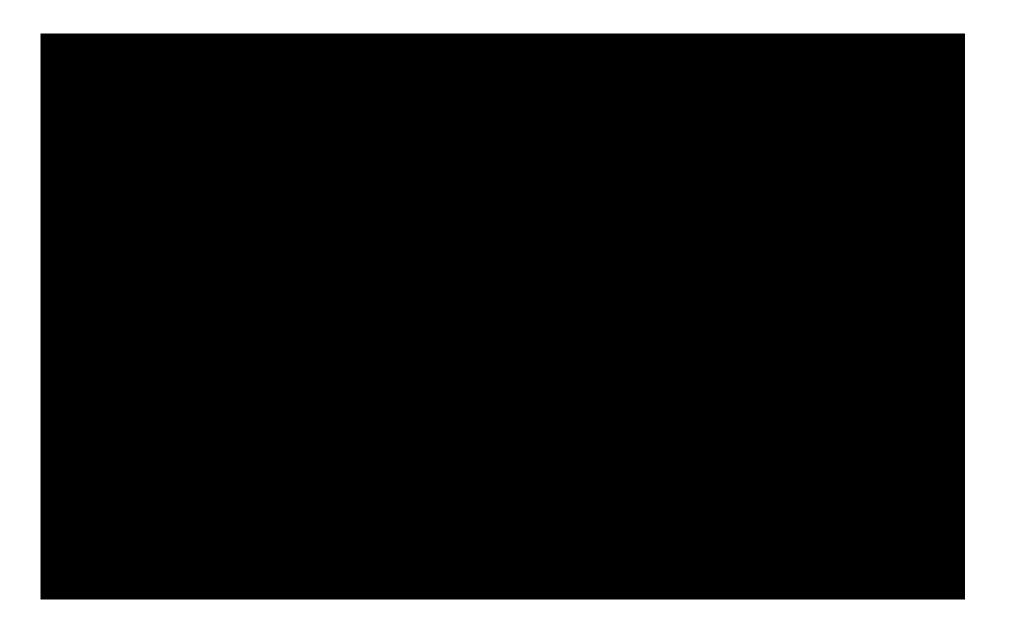
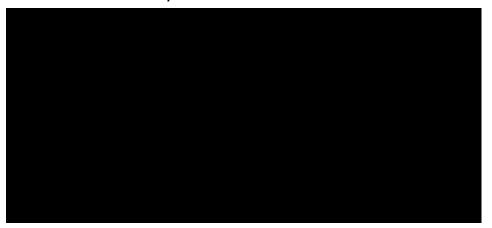






 Table 4: Badger survey results – 22<sup>nd</sup> and 23<sup>rd</sup> September 2011

 Table 5: Pine marten survey results



### Table 6: Wildcat survey results

Date	Grid reference	Comments
03/02/2012	NJ 46769 36542	Several cat prints in snow on forest track
03/02/2012	NJ 46759 36430	Several cat prints in snow on forest track
03/02/2012	NJ 48607 37568	Cat prints and droppings on old grassy track, near gate with badger latrine and prints in snow.
03/02/2012	NJ 48796 37547	Cat droppings in and next to gorse
02/03/2012	NJ 46769 36542	Several droppings on forest track
02/03/2012	NJ 46747 36473	Cat droppings plus pine marten droppings
02/05/2012	NJ 46745 36472	Cat droppings plus pine marten droppings

## Table 7: Goshawk survey results summary.





 Table 8: Schedule 1 raptor vantage point survey result

Table 9: Schedule 1 raptor walkover survey results



Table 10: Crossbill survey results



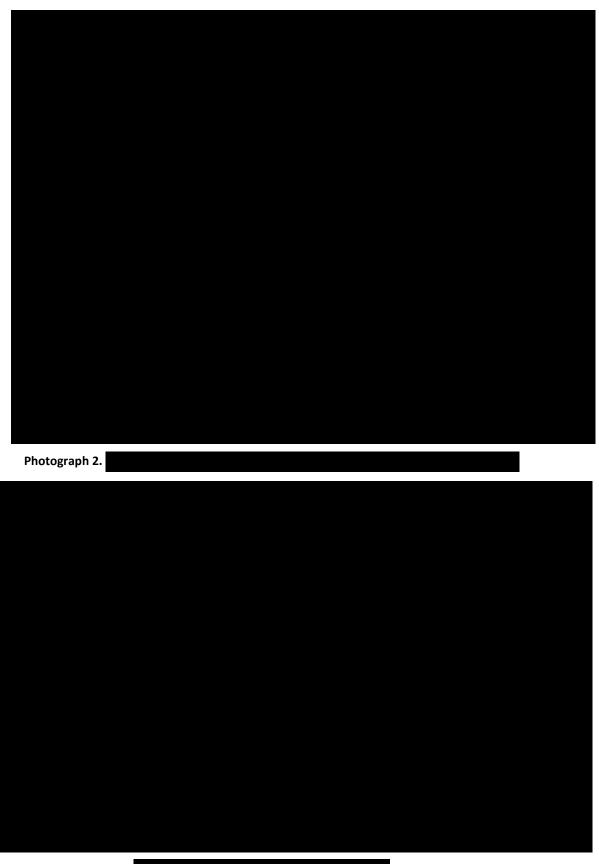
#### APPENDIX K

Photographs

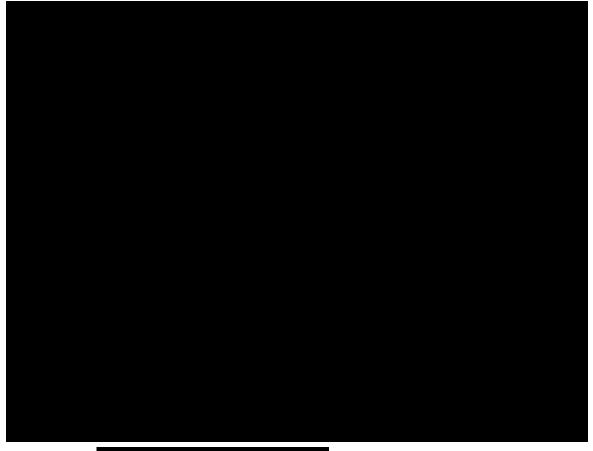
Bat survey



Photograph 1.



Photographs 3 & 4.



Photograph 5.

### Squirrel and pine marten survey



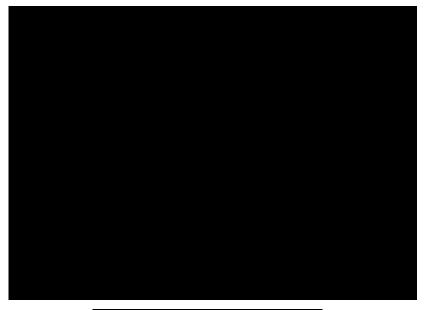
Photograph 6:



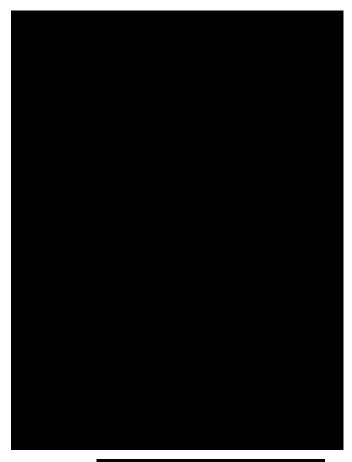
Photograph 7:



Photograph 8:



Photograph 9:



Photograph 10:

**Badger Survey** 

Photograph 11:

Photograph 12:



Photograph 13:

