

GS/379/IK

**Electricity Act 1989**

**Town and Country Planning (Scotland) Act 1997**

**Town and Country Planning (Appeals) (Scotland) Regulations 2008**

**SBA/H/3: HEARING STATEMENT – ORNITHOLOGY**

**for**

**SPEYSIDE BUSINESS ALLIANCE (SBA) and other local objectors**

**For a Public Local Hearing and Inquiry**

into an application for a wind power station at Dorenell, Glenfiddich consisting of 59 turbines, each 126m high and associated facilities and tracks, all proposed to be known as the Dorenell wind farm

DPEA Reference: Dorenell Wind Farm

Submitted 20 September 2010

## **1 Background**

In accordance with the Procedure Notices issued by the Reporter, this Hearing Statement follows on from the Outline Statement of Case for the SBA (and others) and addresses the position of the objectors in relation to the issue of ornithology.

As set out in the Outline Statement of Case, for this Hearing discussion the SBA contributor will be:

- Roy Dennis, MBE

## **2 Previously submitted material**

In relation to the discussion at this Inquiry concerning **ornithology**, SBA refers to the Report by Roy Dennis dated October 2008, and his re-appraisal dated September 2009. Each is annexed to this Statement, as annexes I and II. SBA adopts those reports for the sake of brevity, and relies on their contents.

The ornithology Chapter of the SEI (Chapter 3) has come forward since that work was done. The author of annexes I and II has no further submissions to add in light of the new Chapter 3.

## **3 Summary of argument**

Summarised, SBA's argument is as follows -

- The site is an important habitat and prey area for golden eagle and other raptors
- The site should be an SPA for golden eagles but is not because persecution and disturbance has removed qualifying raptors
- The ES should be declared inadequate, because persecution and disturbance effects would have influenced the survey data and the interpretation of the results, and this is not recognised by the consultants in print. There is no investigation, nor explanation by the consultants of this issue. In short, the environmental information provided on this topic is insufficient.
- There is no true recognition in the ES of the sequential use of the area by eagles from the Cairngorms SPA – considering in particular satellite tracking studies including those relating to “Alma” (see appendix I)
- The survey method for Vantage Point data is flawed for eagle studies
- The proposed mitigation is flawed

- If mitigation worked and breeding eagles were restored there is no evidence led to show the wind farm would not affect them, nor especially the inexperienced young in first weeks of life.

#### **4 Representation**

The SBA and local objectors will be represented at the Ornithology Session by Senior Counsel.

**Submitted 20<sup>th</sup> September 2010**

**On behalf of SBA (and SOS Moray and STOP Dorenell)**

**Ian Kelly MRTPI, Head of Planning, Graham and Sibbald**

**Perth**

**ANNEX I**

**Ornithological Assessment of the  
Dorenell Wind Farm Proposal – Glenfiddich  
with regard to Golden Eagles**



**Roy Dennis MBE**

**2008**

## **Dorenell Wind Farm Proposal – Glenfiddich.**

### **Report by Roy Dennis MBE**

**1. Introduction.** In August 2008, I was instructed by clients to examine the ornithological evidence in the Environmental Assessment for the Dorenell Windfarm, and to give my expert views, particularly in relation to the conservation of Golden Eagles (*Aquila chrysaetos*). I read Chapter 10 (Ornithological Section) of the Environmental Assessment produced by the Company.

I have not seen the confidential index supplied to Scottish Natural Heritage, nor the results of further surveys carried out in 2008. These should be made available to us for scrutiny.

**2. Field knowledge of location.** On 10<sup>th</sup> August, I walked to the summit of Rounamuck Hill (NJ3425), from the Cabrach, and viewed the proposed Dorenell Windfarm site. I spent about one hour at the summit, in excellent weather conditions, scanning the area with my binoculars and taking photographs. I was able to view the location from Scat Hill in the north, south to Cook's Cairn and further on to Thiefsbush Hill and Kneedeep. On 24<sup>th</sup> August, I cycled from the car park at Glenlivet to Suie on Glenfiddich, and then climbed to the summit of Carn na Bruar (NJ2925). I spent over an hour at different parts of the summit scanning with my binoculars and taking photographs, as well as examining the maps of the proposed turbine locations. On my way home, I dropped down the slope so that I could look up into The Eachrach. In the early 1970s, I was taken up Glenfiddich by the estate stalker of the time, and was shown where the eagles nested. I have been aware of the nesting locations of golden eagles in the area over the last four decades through my work with golden eagle surveys and raptor studies.

**3. Expert reference.** Roy Dennis MBE is an ornithologist/ecologist and wildlife consultant. He has worked continuously as a field ornithologist and wildlife manager in the Highlands and Islands of Scotland since 1959, often on the conservation of rare birds and the reintroduction of lost species, such as White-tailed Eagle and Red Kite. He was the RSPB's senior officer in the North of Scotland from 1970 to 1990, but he also directed the Fair Isle Bird Observatory from 1963 to 1970 and is the current Chairman. In 1991, he set up as a consultant on wildlife and the natural environment, with a range of clients including large Scottish estates (ecological and wildlife restoration), Forestry Commission and an innovative project to restore large carnivores on a Highland estate. He is also part-time director of the Highland Foundation for Wildlife where he continues his studies as a field ornithologist, particularly a long term study of ospreys and he played a leading role in the

reintroduction of breeding ospreys to eastern England, Wales, Spain and Italy. His recent satellite studies with his colleagues in HFW on ospreys, honey buzzards and marsh harriers migrating from Scotland to Africa have broken new ground.

His international work includes recovery projects for ospreys in Portugal, Spain, Italy and Japan, a translocation project to restore tree-nesting peregrines in eastern Germany, and the effects of lead poisoning on Steller's Sea Eagles in Japan. He was a founder member of the European Large Herbivore Initiative, is passionately interested in the role of larger mammals in nature and is a strong advocate of the reintroduction of mammals such as beaver, wild boar and lynx. He has served on various boards including as a main board member of Scottish Natural Heritage, a director of the Cairngorms Partnership and a member of the Deer Commission for Scotland. In 1992, he was awarded a MBE for services to nature conservation in Scotland. In 2004, he received the RSPB's centennial Golden Eagle Award, after being voted the most significant nature conservationist in Scotland in the last 100 years. He is a writer, broadcaster and lecturer.

#### **4. Work carried out to assess potential impacts and risks to Golden Eagles.**

- a. Read the ornithological EA, with particular attention to eagles, and prepared a critique which I could use to formulate my opinion (Appendix 3).
  
- b. Assembled data on the status of golden eagles in the Glenfiddich and Glenlivet area (Appendix 1).
  
- c. Examined the movements of a satellite tracked golden eagle from the Cairngorms National Park and produced a report. (Appendix 2).
  
- d. Used the above information to form an expert opinion.

**5. Discussion.** On both of my visits to look at the location, I was struck by its suitability for golden eagles; there was plentiful prey, particularly rabbit, blue hare and red grouse, an ideal mix of mountains, moorland, ridges, valleys and gullies, and a generally quiet wilderness aspect. This tallies with my previous knowledge of upland Moray between Dufftown and the Lecht. The only downside for golden eagles is the

relative shortage of cliffs and large old trees suitable for nesting. In my view, it should be an ideal area for Golden Eagles, both breeding adults and immatures. It is located in a region of Scotland which, without persecution, generally favours the production of well fed viable young eaglets, unlike degraded areas in the central and western Highlands, where the climate is wetter, the underlying soils more impoverished and there are low populations of live prey for eagles.

### **5.a. Status of Golden eagles.**

**Adults.** The information on golden eagles indicates that there were two and probably three historical home-ranges. One was located in Glenfiddich (site A), but has been unoccupied since the 1960s, or possibly early 1970s. This loss was probably due to disturbance caused by the building of hills tracks and greater access for Land Rovers and people, and then re-occupation may have been prevented by disturbance and persecution. The second site (B) is located on the southern march of Glenfiddich estate (and is noted in the windfarm EA) and was regularly occupied by successfully breeding eagles until 1990, then between 1991 and 1998 there were nearly annual attempts to breed leading to failure, which suggested a high level of disturbance and/or nest robbery/persecution. This was followed by occasional reports of eagles near this site, but no breeding, from 1999 to 2008, which suggests illegal persecution and disturbance. The third site (C) is an older record of breeding in the Scors of Blackwater but there have been no reports of breeding, probably since the 1940s.

This data indicates that the Glenfiddich/Glenlivet hills have been (and should be) an important area for breeding golden eagles, and because the habitats are still suitable for golden eagles they have the potential to be re-occupied by breeding eagles given protection from illegal persecution and disturbance.

**5.b Sub-adults and immatures.** I have not seen the field data collected by the EA surveyors on 2008, but the data for 2006 gives 12 sightings. The occurrence of wandering non-breeders is noted in the hill districts (The Birds of Moray and Nairn and The Birds of North-east Scotland Atlas). Other individuals have reported golden eagles in Glen Fiddich and the Cabrach, and these birds are young and sub-adults dispersing from breeding sites in the Cairngorms National Park or further afield.

In Appendix I, I report on the movements of a young golden eagle, named Alma, hatched on Glenfeshie estate in 2007. This individual carried a GPS solar transmitter as part of a conservation project to try to examine the cultural behaviour of eagles and to research the home-range use of the Cairngorms and surrounding mountains by a young eagle bred in the area. The project is a partnership between

the Cairngorms National Park Authority, Scottish Natural Heritage, Glenfeshie Estate and the Highland Foundation for Wildlife.

The reported data consists of a GPS map co-ordinate accurate to 20 metres, flight speed (kilometres per hour – kms/hr), compass heading when the bird is flying, and the bird's altitude above sea level. This data is transmitted to satellites of the Argos CLS system and the results are down-loaded from their data base at CLS headquarters in Toulouse, using coded access via computer. The co-ordinates are then mapped, kind courtesy of the GoogleEarth Plus system which has revolutionised the ability to present geographic mapping of bird movements, and the updated results have been available on a publicly accessible website since autumn 2007.

Alma is still alive and transmitting data (November 2008). The data collection has been very detailed and generally excellent during March to October, but of lesser frequency in winter because the solar array has often not collected enough sunlight to charge the battery. This means that there are gaps in daily information.

This information has allowed me to examine Alma's use of the region, which has relevance to the Dorenell Windfarm proposal.

Alma visited the Ladder Hills for the first time on 24<sup>th</sup> November 2007. She was first in the Blackwater area on 4<sup>th</sup> December and up to the end of October 2008, she was recorded in the Glenfiddich/Blackwater/north Glenlivet on 44 days. She was undoubtedly there more often because of gaps in transmissions before or after dates that she was present, so the use of the area was greater than 44 days.

It was also noticeable that after being in this area, she would then move off to other favoured haunts in the Ladder Hills, south of the Lecht and Donside to Deeside, Glentinar and Balmoral, North Perthshire and Drumochter. The important point from this work is that at least some juvenile/immature eagles are highly mobile, so that any observations of golden eagles on a particular piece of land (e.g. Dorenell Windfarm survey area) do not necessarily refer to the same individual unless specifically identified as the same individual by radio tracking or distinctive plumage characteristics.

The data can also be examined in detail and Appendix 2 gives the daily movements of the satellite tracked eagle which relate to an area where golden eagles would be in or within easy flying distance of the proposed turbines.

Alma was noted within the exact proposed turbine area on 9 dates and roosted overnight within the site on 17<sup>th</sup>/18<sup>th</sup> April 2008. She regularly visited areas just south of the proposed turbine area – Carn na Bruar (9 dates including overnight roosting), Kymah Burn (13 dates) and Bachd Buidhe (3 dates). I also examined her visits to old home-range sites, detailed previously (and in Appendix 1). She visited the hill above the Elf House in Glenfiddich and Corriehabbie Hill (Home range A) on 5 dates, Scors of Blackwater (Home range C) on 10 dates and Home range B on 13 dates. She also regularly visited and roosted in the Carn Dregnie area.

I do not know the dates or presence of EA surveyors on the windfarm area between April and August 2008, but their presence could have dissuaded Alma from over flying, hunting or staying at that site on the days they were present, in which case taking account of that possibility, plus the transmissions lost in bad weather, she would have been there more often than recorded.

Young eagles are influenced in their pattern of wandering (before they breed at four years of age or later) by the presence of breeding adults territorially holding a home range. In the absence of breeding adults at a vacant home range, juveniles will visit these sites and roost there. They are an indicator of continuing suitability of the site and could be in the longer term a precursor of the home range being re-occupied.

The movements of Alma give an indication that sites A, B and C are still of interest to golden eagles, and there could be some evidence that the Carn Dregnie area is also of particular interest to them. (In the 19<sup>th</sup> century, there was even an eyrie on Ben Rinnes).

**From this examination, I hold the expert view that the Glenfiddich hills area is of greater importance for golden eagles than suggested in the EA; and that the potential for re-occupation by breeding golden eagles is high if their conservation and protection were improved.**

#### **5.c Dorenell windfarm**

I have not seen the confidential information which was used to form the applicants' opinions and assumptions, or the survey field data for 2008. I have read the ornithological section of the EA and made some detailed comments (Appendix 3).

#### **Golden Eagle Critique of EA.**

I do not accept that the level and method of surveying eagle use is sufficient for the purpose, nor is there sufficient data or discussion on the status of visiting eagles (adult, immature, non-breeding, future breeding pairs), nor of the origin of eagles observed on the site. For example, how important are the Glenfiddich Hills for young golden eagles reared in the nearby Cairngorms SPA for golden eagles.

There is also no data on the use of the windfarm location by hunting by golden eagles. There appears to have been no attempt to determine golden eagle prey availability within the wind farm study area, nor to carry out transects to determine kills of hares, grouse, rabbit, etc and the availability of deer carrion/grallochs, and thus assess potential use.

The vantage point system used for investigating golden eagle use is flawed. Firstly, the visibility to eagles of the observers standing on vantage points, the technique employed at Dorenell, may account for the low numbers of golden eagle observations. The eagles are deterred from visiting the area while the human observers are in view (this would be normal behaviour for golden eagles) (See Appendix 3 – 10.248). Therefore, we do not believe the accumulated data agrees with eagle use of this part of the Blackwater, Glenfiddich & Glenlivet Hills complex.

Additionally, the data is flawed because of the small number of days, inadequate cover through the whole daylight spread and in inclement weather conditions. In my expert opinion, collisions are more likely to occur in poor daylight and poor weather, when in pursuit of prey.

The surveyors mention the satellite tracked golden eagle. The scientific data, from that individual, indicates the disparity of use between visual data, where the observer may influence the collection of information, and hard data collected by remote means.

There is no doubt that Alma would have been at risk if the wind turbines had been in operation. The other important fact from the GPS data is that young eagles are more mobile than we imagined and in consequence a site like the Glenfiddich Hills will host a much larger number of individual young golden eagles through a year than the observed numbers suggest. Thus the pool of young and naïve golden eagles at potential collision risk, at a site with nearly optimum prey availability, is considerable, and demonstrates why the development is a serious threat to eagles, including individuals from the nearby Cairngorms SPA.

We do not accept the suggested collision risk of 0.1 golden eagles per year, assuming an avoidance rate of 98%, without further detailed explanation of how this figure was derived, and additional calculations of the risk assuming persecution and disturbance were no longer an influence.

The EA concentrates on the present low population of eagles, and does not satisfactorily explain the present absence of eagles. There is some reference to the loss of breeding pairs but it does not report on the potential impact, from disturbance, displacement and collision mortality, of the windfarm in the future on a restored breeding population if past persecution and disturbance were removed. The Glenfiddich/Blackwater/Glenlivet Hills could then hold up to three pairs of breeding golden eagles, living in habitats with a high prey-base and optimum weather conditions, which could result in above-average production of viable young. These future adults would also influence the pattern of use by juveniles and immatures, and could increase their susceptibility to collision risk.

As mentioned in the EA, the study area is located in the SNH Natural Heritage Zone 11 (Cairngorms Massif) but is close to Zone 12 (North East Glens). A recently commissioned report by Scottish Natural Heritage “**A conservation framework for golden eagles: implications for their conservation and management in Scotland**’ (Whitfield et al, 2008), states that the Cairngorms Massif, Natural Heritage Zone 11, had less than 40% of known home-ranges occupied by breeding eagles in

the latest survey year 2003 and had failed the criteria to attain favourable conservation status, yet the breeding success of the occupied sites was high at 0.68 young per pair. The adjacent zone 12, North East Glens, had less than 20% known home-ranges occupied by breeding eagles in the latest survey year 2003 and had also failed the criteria to attain favourable conservation status. It further states that the highest priority for management (of golden eagles) and political initiatives is tackling illegal persecution; and these two zones along with two other areas have been the worst for illegal persecution.

The golden eagle is listed under Annex 1 of the Council Directive on the Conservation of Wild Birds (79/409/EEC), the 'Birds Directive'. Article 4 states that species mentioned in Appendix 1 "shall be the subject of special conservation measures". One of these is the classification of particularly important areas as Special Protection Areas (SPAs) where special safeguards and measures apply. Currently, the UK government is assessing mechanisms whereby Annex 1 species can be adequately protected outwith SPAs and one method that is being pursued is the concept of 'favourable conservation status', a term borrowed from the EU Habitats Directive. Essentially, favourable conservation status is met if the population, range and habitat of any given species are in good heart and the term can be applied locally, regionally or nationally. The species is not in favourable conservation in Glenfiddich/Glenlivet/Blackwater area.

The EA (paragraph 10.231) recognises that the wind farm could have a potentially high enough collision risk to have a significant local affect on the eagles, and to affect reoccupation/expansion. This is very worrying, especially as there is a failure to fully recognise the significance and importance of this area for juveniles, immatures and some adults from the nearby Cairngorms SPA for golden eagles (within the Cairngorms National Park). The impact could be even greater with a restored population.

This is of considerable concern. Fielding et al (2006), in a scientific paper concerning golden eagles and wind energy conflicts, state "...if other constraints have eroded regional conservation status...wind farm development should arguably be less likely to proceed in eagle territories where the regional population's conservation status is already poor due to persecution". Even a small, additional adverse impact will exacerbate the already unfavourable conservation status of golden eagles in the Cairngorms Massif and the Glenfiddich/Glenlivet/Blackwater area.

**There are strategic nature conservation issues within this application. It would seem to be totally unfair to judge potential impacts only on a depleted golden eagle population caused by disturbance and illegal persecution. The EA should also address the potential impacts on an important restored population.**

**In my view, the development of a windfarm on Dorenell has high potential collision risk and disturbance factors for golden eagles, and would not only impact on golden eagles from the Cairngorms SPA and other locations, but would make it all but impossible for successful re-occupation of vacant home-ranges in prime eagle habitats. The application should be rejected.**

**Other species.** This site is important for other species, including three pairs of merlins, peregrine falcon and hen harrier. Like the golden eagle, the EA should have discussed these latter two species in relation to a restored population, recovering from the adverse impacts of previous persecution

**Golden Plover.** The EA shows that the golden plover population is important, at a time when this species is declining. A very recent research report, "Assessing the cumulative impacts of wind farms on peatland birds: a case study of golden plover *Pluvialis apricaria* in the UK" by J.W. Pearce-Higgins, L. Stephen, R.H.W. Langston and J.A. Bright, suggests that wind farms do have an adverse effect on golden plovers, contrary to the view given in the EA. .

**Mitigation and monitoring.** I do not consider that a Habitat Management Plan is capable of addressing the negative impacts of the development and I consider that many of the aims are unrealistic and unattainable in these specialised habitats and exposed locations. The suggested benefits of a management plan for golden eagles are not proven. The proposed monitoring and research do not mitigate the damaging effects of the development and are of no real value unless there were agreed planning conditions which required the close down or removal of the wind turbines if and when a set level of ecological damage occurred. I fail to believe that any competent authority could accept that either the Habitat Management Plan, or the Monitoring & Research proposals, could mitigate the effects of this development on golden eagles.

## Appendix 1. Report on the status of Golden Eagle in the Glenfiddich region

I have brought together information that I could access on golden eagles breeding in or near the area under debate.

**Home Range A.** The main Glenfiddich home range: this used to be centred on the Elf House. Sandy Gordon saw this nest in use in 1952 when there were two chicks. That year he took Charlie Palmer to photograph eagles at this nest site: when they arrived they found that another photographer had been there to take pictures for a national paper. He remembers this as the main nest (on the NW side of glen) above the Elf House. I remember talking with the Glenfiddich estate keeper about this breeding site in the late 1960s/early 1970s, when it was probably still being used, and once I was taken up the glen in autumn, but did not see the nest.

Earlier in the 20<sup>th</sup> century, the nest was in a large birch tree on the right side of the glen, half way up from the bend on the pony path to the Elf House. This nest had been used for a long time and Sandy Gordon thought that it is the nest which is illustrated in Harvie Brown's *A Fauna of the Moray Basin*, which refers to its use in the late 19<sup>th</sup> century. Sandy Gordon did not think the eagles were in that nest in 1946 or 1947, but eagles were protected in Glenfiddich estate at that time.

It is thought that the hill tracks bulldozed up Glenfiddich, probably in the 1970s, would have made disturbance and persecution of eagles much easier. There are no further reports of breeding at the Elf House after the late 1960s or early 1970s.

**Home Range B.** This is on the southern march of Glenfiddich estate, and is the breeding site referred to by the ornithological surveyors in the EA for Dorenell Wind Farm.

This used to be a very successful nest as shown in the following table supplied by Martin Cook, the Moray Bird Report editor. (b/1 means brood one chick reared; c/2 means a nest containing a clutch of two eggs. Standard ornithological shorthand)

|      |                         |
|------|-------------------------|
| 1977 | b/1 fledged             |
| 1978 | c/2 but no young raised |
| 1979 | b/1 fledged             |
| 1980 | b/1 fledged             |

- 1981 b/1 fledged
- 1982 b/1 fledged
- 1983 b/2 fledged
- 1984 b/1 fledged
- 1985 no nests relined or birds seen in early April. A pair in the area later in the year
- 1986 1 adult in the area but no activity at the nests
- 1987 b/1 fledged
- 1988 b/1 fledged
- 1989 b/1 fledged
- 1990 b/1 fledged
- 1991 bird sitting in early April. 2 eggs cold in the nest in mid June.
- 1992 nest lined in early April but no eggs – robbed?
- 1993 nest lined in early April but no eggs – robbed?
- 1994 Pair present in early April but none of the nests subsequently lined or used
- 1995 No activity at nests or birds seen on 3 visits
- 1996 nest lined in early April but no eggs – robbed?
- 1997 Pair present and nest lined in early April but no eggs – robbed?
- 1998 One adult seen and nest relined but nothing on a subsequent visit
- 1999 No nest activity and no birds seen
- 2000 No nest activity and no birds seen
- 2001 Site not visited
- 2002 No nests lined or birds seen in April but one adult in mid August
- 2003 An immature bird in early July. No activity at the nests
- 2004 One bird distantly in June. No activity at the nests
- 2005-8 No nesting activity – occasional reports of single birds in the area

Between 1977 and 1990, an adult pair was present for 13 years and in one year there was a single bird; young were successfully fledged in 11 years with a total of 12 young. No young have been reared since 1990. Between 1991 and 1998, there were nearly annual attempts to breed, with a breeding pair present, nests lined and eggs laid, but these were either robbed or found cold. This suggests a high level of disturbance and/or nest robbery. From 1999 to 2008, there have been occasional reports of eagles near this site but no breeding has occurred, which suggests illegal persecution and disturbance.

**Home Range C.** Sandy Gordon mentions another nest, which he had never seen, but he understands that Arthur Brook, a famous bird photographer, photographed golden eagles at the nest in the Scors of Braulein for one of his books in the 1930s; nowadays called the Scors of Blackwater on the OS map.

## **Appendix 2. Movements of young female golden eagle which have relevance to the Dorenell Windfarm proposal at Glenfiddich Estate.**

**Introduction.** In July 2007, a GPS radio transmitter was fitted to an eaglet in an eyrie at Glenfeshie Estate in the Cairngorms National Park as part of a conservation project to try to examine the cultural behaviour of eagles and to research the home-range use of the Cairngorms and surrounding mountains by a young eagle bred in the area. Using high quality GPS data collected at hourly intervals, the aim was to study how the young bird used its parents' home-range and then to follow its movements into other eagles' home-ranges. Where would it go? How far would it travel? Would it return home? If it got through its first winter where would it summer, and if bird and radio survived for three years where would it start to settle down at a breeding site. In 2008, similar transmitters were fitted to two young male golden eagles in the Cairngorms National Park.

The transmitters are 70 gram Argos GPS solar PTTs manufactured by Microwave Telemetry in the United States. They have a three season variable program which can collect hourly data from dawn to dusk. The data is a GPS map co-ordinate accurate to 20 metres, flight speed (kilometres per hour – kms/hr), compass heading when the bird is flying, and the bird's altitude above sea level. This data is transmitted to satellites of the Argos CLS system and the results are down-loaded from their data base at CLS headquarters in Toulouse, using coded access via computer. The co-ordinates are then mapped, kind courtesy of the GoogleEarth Plus system which has revolutionised the ability to present geographic mapping of bird movements.

The project is a partnership between the Cairngorms National Park Authority, Scottish Natural Heritage, Glenfeshie Estate and the Highland Foundation for Wildlife. Funding for the radios has come, so far, from the Cairngorms National Park Authority (two radios), Scottish Natural Heritage (one radio) and the Highland Foundation for Wildlife.



The female chick was in very good condition when ringed on 2<sup>nd</sup> July 2007, although some fault bars in the big wing feathers showed that food had been scarce during the early part of the summer. BTO ring number ZZ1416. Measurements: wing 465mm; tail 230 mm; bill 38.7 x 27.56mm; head + bill 118.76mm; tarsus 16.37 x 18.29mm; hind claw 49.64mm; spread foot

149mm. Fitted satellite radio 28661.

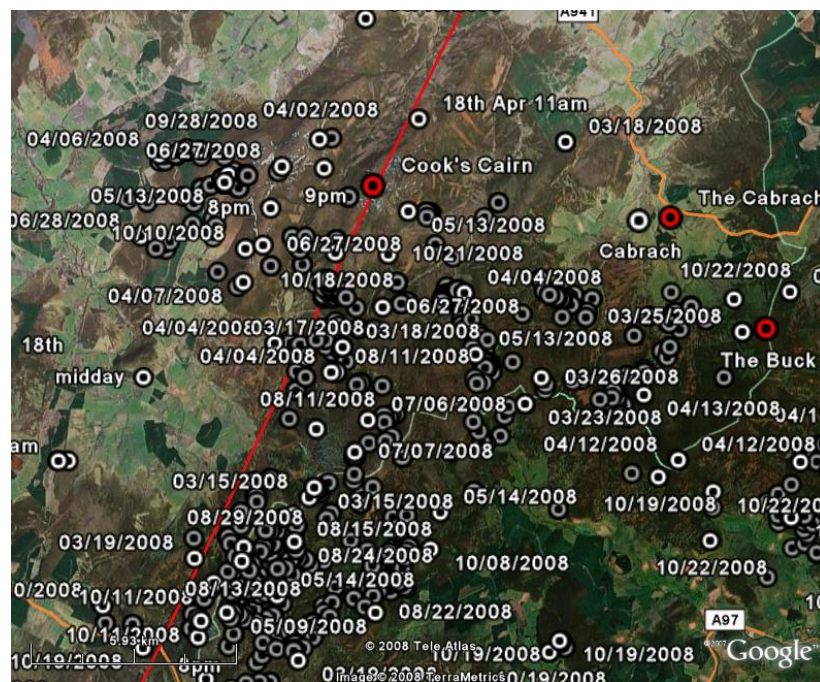
Glenfeshie Estate named the eaglet Alma, and we have followed her for a year as she started her life as Golden Eagle in Scotland. The daily movements were freely available on the website of the Highland Foundation for Wildlife ([www.roydennis.org](http://www.roydennis.org))

**Summary.** The eaglet flew from her nest on or about 28<sup>th</sup> July. She remained in her parents' home range until 9th September, when she moved briefly to Gaick. Until the 15th week she ranged from her natal area to Drumochter and north Perthshire. She moved further east in North Perthshire in her 16th and 17th weeks and her first arrival in the Ladder Hills area of Moray was on 24th November, during her 18th week.

Since then she has moved between areas mainly around the margins of the Cairngorms National Park. The main areas have been Drumochter and Gaick, north Perthshire, Balmoral and Deeside, Loch Builg and Delnadamph and the Ladder Hills to Glenfiddich. She has made longer trips on short visits to Loch Maree in Wester Ross, Easter Ross, the Inverness glens and the Monadhliaths, and has visited her parents' home range on a few occasions.

The detailed information listed below outlines those periods when she visited the areas under discussion. She was often in the Ladder Hills and on the south side of the Moray - Aberdeenshire border, but unless she moved north towards the Glenlivet, Glenfiddich and Cabrach mountains, these data are not detailed in the following section.

**Note on Data.** All the data presented below are accurate GPS positions, with a few non GPS fixes gained by the tracking system using Doppler scanning. The transmitter's battery is charged using a solar panel, and unfortunately the low aspect and weakness of the winter sun in Scotland, as well as the high incidence of overcast days, especially during heavy rain and snow, has meant that many days of data were not gathered, especially between November and February, because the battery was discharged. In these circumstances, the data below represents a minimum of time spent in the study area. The other important fact is that the lines on the Google maps are joining consecutive GPS positions and do not indicate the actual track of the eagle; they are used to give an impression of its travel over the ground. Also note that dates are in American form, with the month first.



**All of Alma's locations in Moray and Aberdeenshire Border**

### Detailed information.

**4<sup>th</sup> December 2007.** Because of very poor weather conditions no signals were received on 28<sup>th</sup> and 30<sup>th</sup> November, and just a poor quality one on 2<sup>nd</sup> December; but after a sunny day on Sunday, the battery was charged and 7 positions were received between 1230 and 1400 hours on 4<sup>th</sup> December, but none were highest quality. It was clear that she was back in the Ladder Hills between Aberdeenshire and Moray. Alma was between the Scors of Blackwater and Monadh Slochd Chaimbel, east of the Lecht road, with a centre of activity in the hill tops northwest of Glenbuchat Lodge.

**10<sup>th</sup> December 2007.** She was still in the same area today, (and had probably been there since the 4<sup>th</sup>) but was a little further north-east towards Glenfiddich. A non GPS signal at 11.17 a.m. was positioned near Tor of Suie in Glenfiddich. Four different signals during the middle of the day suggested she was ranging the tops during the first sunny day for some time.

**6<sup>th</sup> February 2008.** At last a really sunny day, which charged up the transmitter and sent in 4 hourly GPS signals. At midday, Alma was 43 kms NNE of Loch Crannach in Perthshire, over Inchroy; an hour later she was between Craig Veann and Tolm Buirich heading north at 25 kms/hr. At 2 p.m. she was north of the Lecht near Carn Mor in the Ladder Hills flying south at 45 kms/hr, so clearly circling and possibly back hunting white hares. Finally at 3 p.m. she was flying north-west at 32 kms/hr above the south side of the Kymah Burn, headed for The Eachrach. It was very interesting that after a short trip back to Drumochter, Glen Tilt and north-east Perthshire, she returned to the Aberdeenshire/Moray border near Tomintoul. It was exciting that the solar battery had started to charge more effectively, as the sun started rising higher above the southern horizon, this increased the chances of more accurate data again. She roosted overnight at a previously used site on Moss Hill in Strathdon.

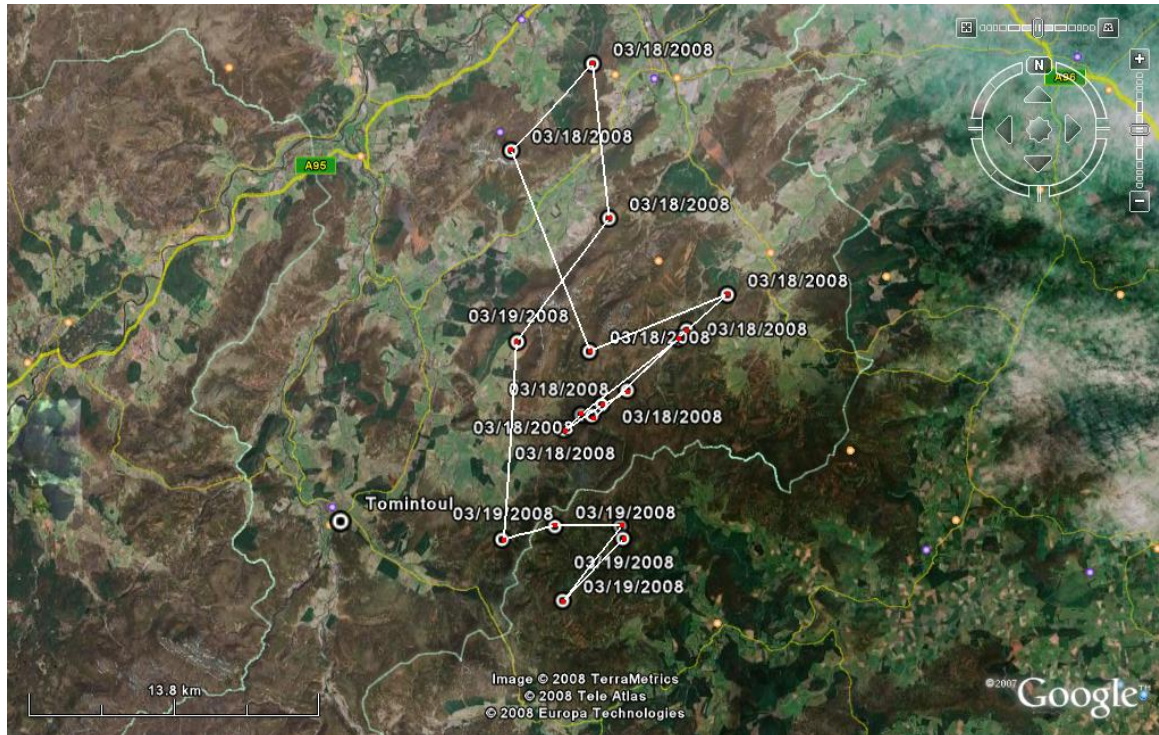
**10<sup>th</sup> February 2008.** Just one signal at 02.18 a.m. (middle of night) when Alma was roosting somewhere in the vicinity of Carn Dregnie, just north of Glenlivet, probably in woodland. This is 11.5 kms NW of her previous roosting sites.

**17<sup>th</sup> March 2008.** The weather had been awful, with strong cold north winds with low cloud, rain and even snow. At 1 p.m., Alma was back on Finlate Hill and at 2 p.m. was heading for Little Geal Charn. By 3 p.m. she had crossed the watershed and was on Bachd Buidhe in Glenlivet. At 4 p.m. she was flying NNW at 35 kms/hr at 577 metres over the Scors of Blackwater, and an hour later was up the Blackwater glen from the Cairnbrallan ruins. At 6 p.m., she was perched between Kneedeep hill and the Kymah Burn.



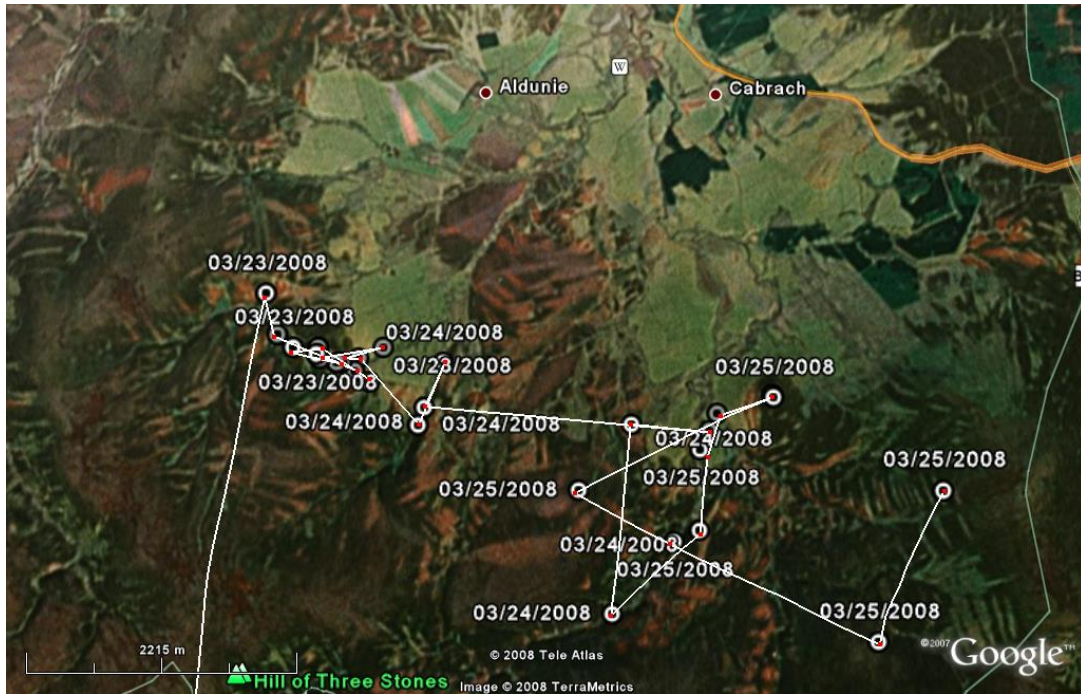
#### **Alma's locations on 17<sup>th</sup> March**

**18<sup>th</sup> March 2008.** This day saw the start of some very interesting movements. Alma roosted overnight near Cairnbrallan, and 7 a.m. she was at Kneedeep hill, and at 8 a.m. was on the north-east rim of the Kymah Burn, and an hour later she was on the west of Bachd Buidhe and at 10 a.m. had moved back to the south-west side of the Kymah Burn. At 11 a.m. she had flown north and was perched near the Blackwater river south of the old Lodge and at midday she had flown back to The Eachrach in the Kymah Burn. At 1 p.m. she was north-west of Roundhill looking into the Blackwater river and then at 2 p.m. she was over Forestry Commission woodlands at Meikle Firbriggs, just NW of the Cabrach (her furthest move in that direction). An hour later, she was flying at 19kms/hr NNW over Cook's Cairn and at 4 p.m. she was low over the summit of Ben Rinnes, in Moray, and then at 5 p.m. was just north of Little Conval Hill, just 2 kilometres west of Dufftown. She was flying SSW at 62 kms/hr at 540 metres altitude. This is an unusually low ground area for golden eagles, or may be not for occasional wandering juveniles like Alma! At 6 p.m. she was flying over the hills just one mile west of Glenfiddich Lodge and kept travelling to roost overnight in Glenlivet.



### Alma's locations on 18<sup>th</sup> – 19<sup>th</sup> March

**23<sup>rd</sup> March 2008.** Alma was perched on hills midway between Allt Sowan Hill and Hill of Three Stones; then quickly moved over the county march and at 8 a.m. was near the Cabrach; and spent the morning near the edge of the cultivated land near Reekimlane.



**Alma's locations 23<sup>rd</sup> to 25<sup>th</sup> March at The Cabrach**

**24<sup>th</sup>- 25<sup>th</sup> March 2008.** Both days around edge of the Cabrach fields and moorland - it is a very good place for rabbits - so she was probably hunting them in the snow.

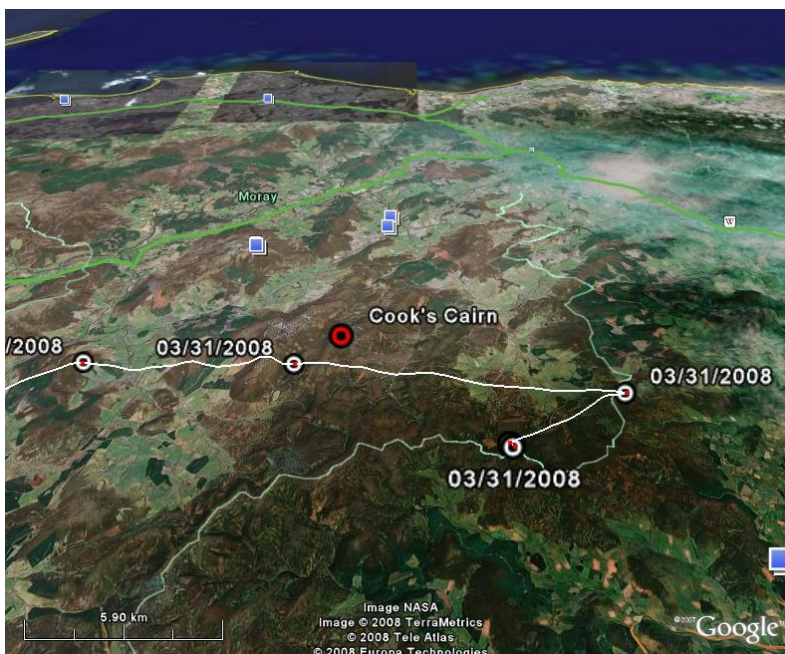
**30<sup>th</sup> March 2008.** At midday, Alma was flying north at 9 kms/hr north of Carn Mor, and from 1 p.m. to 4 p.m. was perched at several sites along the south side of the Kymah Burn, lastly opposite The Eachrach. She then flew north and at 5 p.m. was flying south-south-west at 3 kms/hr at 804 metres above Carn na Bruar in Glenfiddich. By 7 p.m.



she was east of Three Stones Hill flying north-north-west at 23 kms/hr.

### Alma's locations 30<sup>th</sup> March

**31<sup>st</sup> March 2008.** In the morning, Alma was in the Broomknowe of Garbet area; at 1 p.m. she was flying east at 44 kms/hr over The Buck near the Cabrach; an hour later was perched on Tor of Suidhe in Glenfiddich, south of Cook's Cairn. This was the start of a big three day journey for at 3 p.m. she was across the Glenlivet road and was flying north at 53 kms/hr at 1104 metres above Cairn Liath (549 metres), west of Tomnavoulin. Then she moved for the first known time to the Cromdale Hills, where she was over the March Burn at 4 p.m., and an hour later she was flying east over Cairn Tuairneir at 48 kms/hr. She was in Dorback estate until 7 p.m. and roosted in Inchrory.



### Alma's locations 31st March

**2<sup>nd</sup> April 2008.** Flew from Dorback and at 5 p.m. was flying N at 66 kms/hr along west slopes of Cairn na Glascoill in Glenlivet; then perched on west side of Carn na Bruar at 6 p.m.



Then flew north through Glenfiddich to perch at 7 p.m. on Corryhabbie Hill, above the Elf House in Glenfiddich. Had returned to Carn na Bruar at 6 p.m. and then moved little south on the hillside to roost

there; next day flew south to Glenlivet

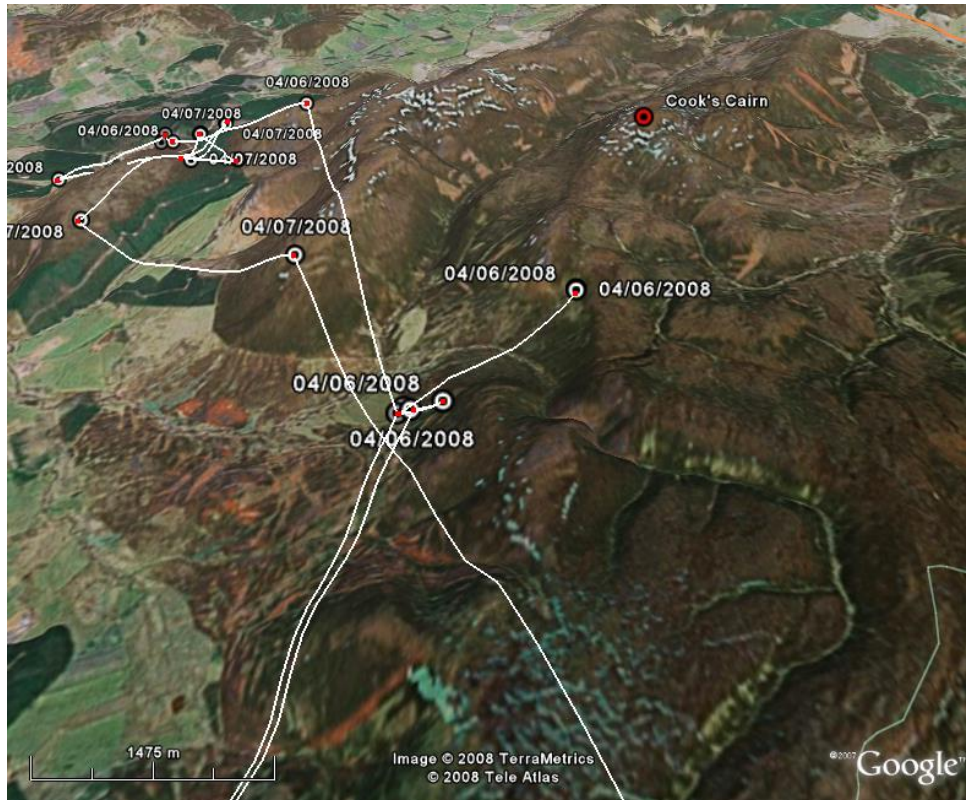
### **Alma's locations 2<sup>nd</sup> – 3<sup>rd</sup> April**

**4<sup>th</sup> - 5<sup>th</sup> April 2008.** Alma flew north out of the Ladder Hills and at midday was flying at 43kms/hr over the Kymah Burn; at 1 p.m. was perched north of Kneedeep Hill, 2 p.m. north of Cairnbrallan, no signal at 3 p.m. and at 4 p.m. she was flying NNE at Cook's Cairn at 18 kms/hr at 517 metres, and at 5 p.m. was perched on east face of Carn an t -Suidhe. Then flew south into Glenlivet hills, but later back north to roost near Carn Dregnie at 9 p.m.. Still there next morning until 8 a.m., then south to Glenlivet, and back north at 2 p.m. when she was flying west at 44 kms/hr at Carn na Glascoil. Roosted at dusk on Carn na Bruar. It was a cold snowy day with strong north winds.



**Alma's locations 4<sup>th</sup> – 5<sup>th</sup> April**

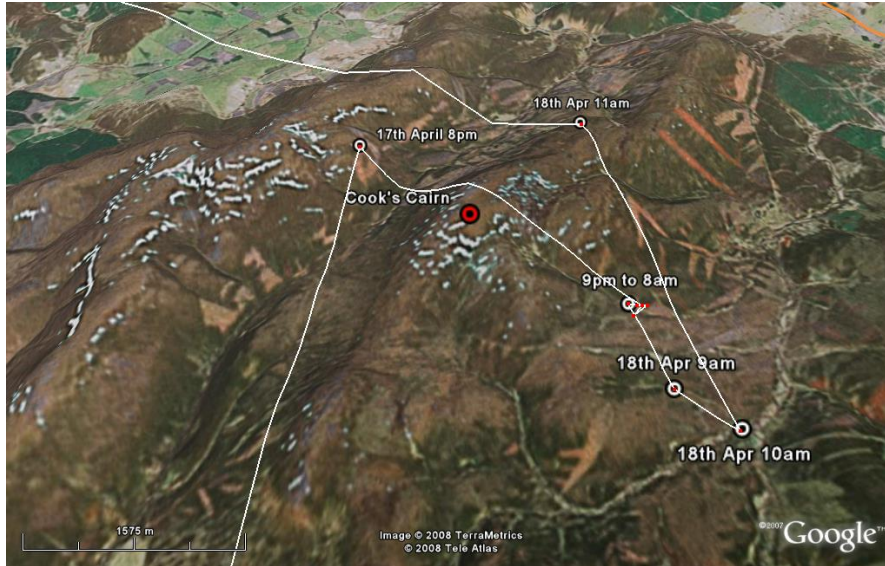
**6<sup>th</sup> – 7<sup>th</sup> April 2008.** At roost Carn na Bruar until 9 a.m., then flew south over Kymah Burn and spent most of the morning on west slopes of Bachd Buidhe. At 3 p.m. flew north-west to Cairn a Bhodaich, west of Glenfiddich, and spent rest of day and most of the 7th in the Cairn Dregnie area, until she flew east to Carn an t-Suidhe at 6 p.m. and then south to Ladder Hills.



**Alma's locations 6<sup>th</sup> – 7<sup>th</sup> April**

**9<sup>th</sup> – 10<sup>th</sup> April 2008.** Alma spent these days on the south-east march of the Cabrach estate from Scors of Blackwater to Broomknowe of Garbet, north to White Hill.

**17<sup>th</sup> April 2008.** By 4 p.m. she had flown north over Cockbridge and an hour later was back in the Ladder Hills. At 8 p.m. she was perched on the hill above the Elf House in Glenfiddich, then back east over Cook's Cairn ridge to roost overnight on slopes of Allt Daimh north of Cairn Daimh. Her day's travels were at least 60 kilometres.



### Alma's locations on 17<sup>th</sup> - 18<sup>th</sup> April

**18<sup>th</sup> April 2008.** In the early morning, Alma was in the same area, at 9 a.m. she was flying ESE at 41 kms/hr at 428 metres over east slopes of Thiefsbush Hill; at 10 a.m. she was perched in a valley to the east of Thiefsbush Hill, then moved north and perched at northern end of Cook's Cairn, opposite Carn Allt a' Chlaiginn; then flew NW over Ben Rinnes and out over Ballindalloch estate and into west Moray and continued towards Inverness.

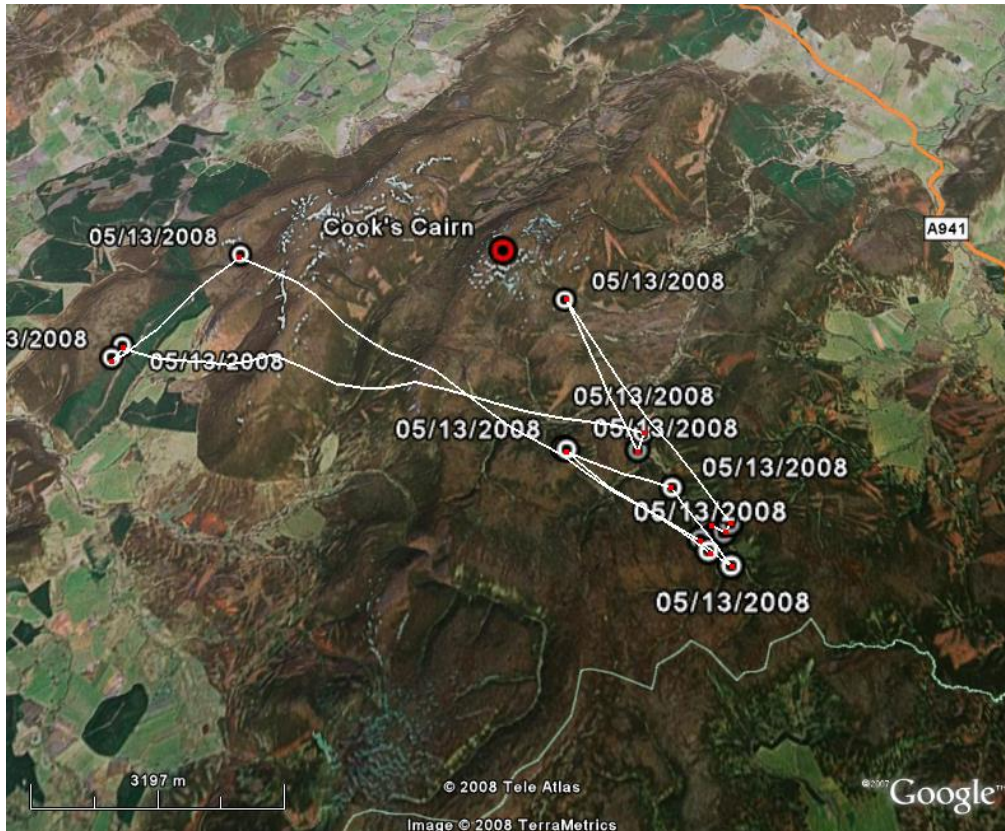
**9<sup>th</sup> May 2008.** Alma remained in the hills to the east of the Lecht until midday when she flew east through the Ladder Hills; at 1 p.m. she was slowly flying north towards the upper Blackwater and at 2 p.m. was perched in rocks at entrance to Scors Burn. At 3 p.m., 7 p.m. and 8 p.m. she was perched at the Scors of Blackwater, and the rest of the time just south of the ruins of Cairnbrallan.



**Alma's locations on 9<sup>th</sup> May**

**10<sup>th</sup> May 2008.** Alma spent all day just south of the ruins of Cairnbrallan, in poor weather.

**11<sup>th</sup> – 12<sup>th</sup> May 2008.** Alma remained in much the same area - on 11th May she did not move from her overnight roost until 9 a.m. (it was grey day with rain, and later thunderstorms and heavy rain showers), she moved a little way along the upper glen of the river Blackwater, but the total distance between her hourly GPS positions was only 1.23 kilometres. On 12th May, a nice sunny day, after spending the morning close to her roost she travelled a few miles south towards Hill of Three Stones before turning back. In all her tracked positions covered only 9 kilometres in two days. This is in marked contrast to her long journeys in recent months. At this time of the year, non-breeding eagles have a leisurely time compared to breeding adults feeding young, there are increasingly long hours of daylight and good weather. Soon they start their annual moult.



**Alma's locations on 13<sup>th</sup> May**

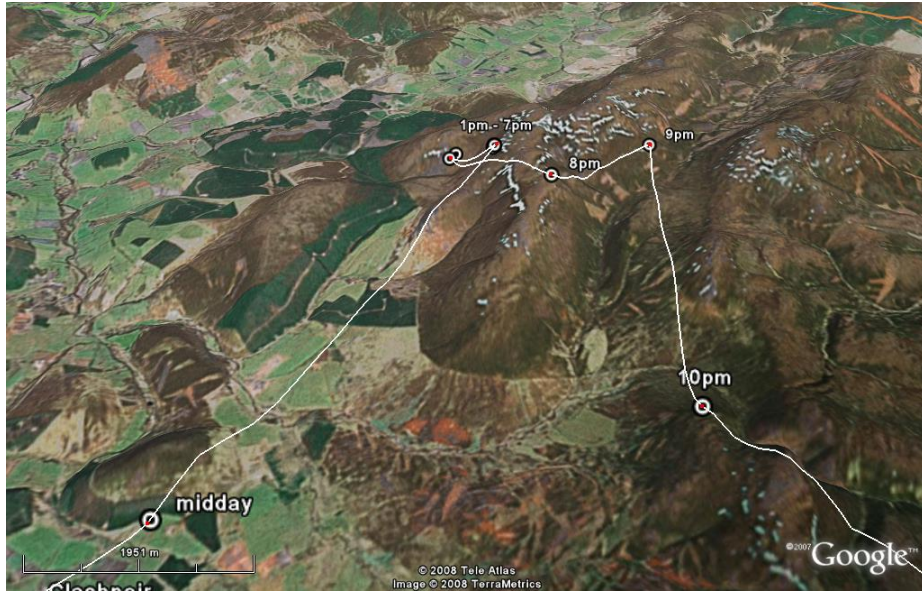
**13<sup>th</sup> - 14<sup>th</sup> May 2008.** She decided to move again. She spent the morning of 13th close to her overnight roost in the Scors of Blackwater, then at 10 a.m. she was perched on the north slope of Cairn Daimh and at 11 a.m. and midday was just south of the Cairnbrallan ruins then she flew west to Cairn Muldonich, near Tomnavoulin. Alma then moved north to Carn a'Bhodaich and so back to the Scors of Blackwater. At 7 p.m. and 8 p.m. she was on north side of Kneedeep and then returned to the Scors of Blackwater, where she roosted overnight. Next morning after 8 a.m. she flew south out of the area.

**27<sup>th</sup> - 28<sup>th</sup> June 2008.** On the 27th she flew north to the Ladder Hills, at 1 p.m. flying east at 6 kms/hr over The Eachrach in the Kymah Burn; 2 p.m. she was perched on Muckle Lapprach and an hour later on the Carn an t-Suidhe ridge. She flew across the Fiddich and at 4 p.m. was perched on Kneedeep Hill and an hour later was on the southern ridge of Carn na Bruar. At 6 p.m. she was on Corryhabbie Hill and then moved SW to the hills from Carn a'Bhodaich to Cairn Dregnie, where she roosted and remained until midday on 28<sup>th</sup>, before flying to the Lecht.



**Alma's locations on 27<sup>th</sup> June**

**5<sup>th</sup> July 2008.** A lovely sunny day and Alma went for a fly around - from dawn to 8 a.m. she was roosting just north of Tom Bulrich, and then she flew north. At 9 a.m. she was at Breac Leathaid, a low hill just 2.6 miles NE of Tomintoul. She stayed on this low ground, 500 metres altitude, and at midday had moved a little further north and was perched in the edge of a Forestry Commission wood on the south side of The Bochel in the Braes of Glenlivet. She then moved north again and spent the afternoon around Carn a'Bhodach. At 8 p.m. she was flying north at 42 kms/hr at 720 metres on the south ridge of Muckle Lapprach and an hour later was perched in the hillside above the Elf House in Glenfiddich. She flew south at 10 p.m. to the Eachrach in the Kymah Burn to roost.



**Alma's locations on 5<sup>th</sup> July**

**6<sup>th</sup> – 9<sup>th</sup> July 2008.** She spent most of this time in the upper reaches of the Kymah Burn to the west of Geal Charn, before flying to the Lecht at 8 p.m..

**11<sup>th</sup> August 2008.** Alma came north from the Ladder Hills and at midday was perched on the west side of the Kymah Burn facing The Eachrach.



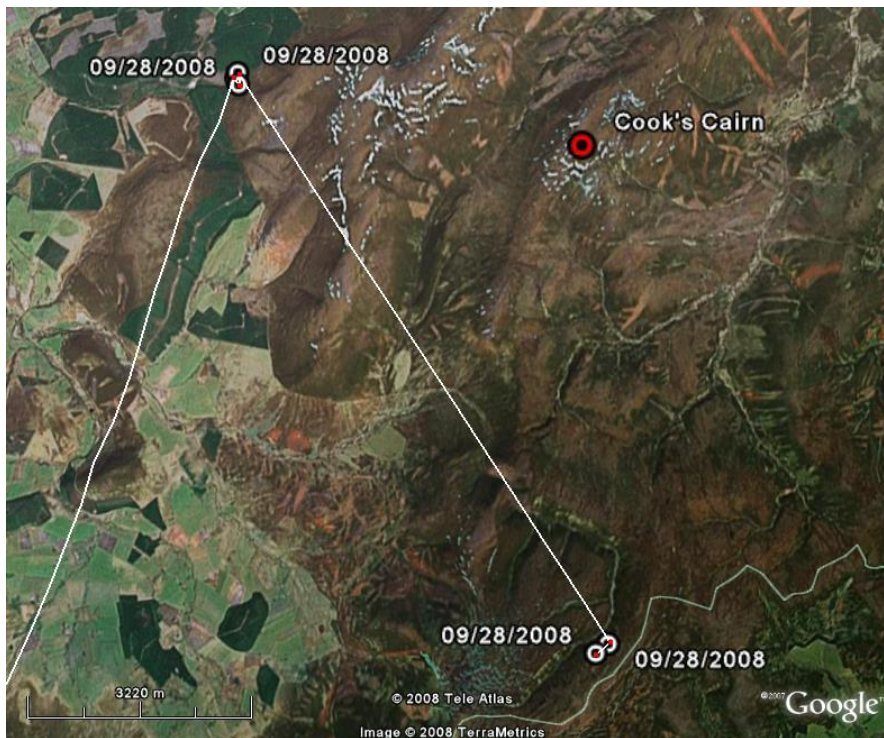
**Alma's locations on 11<sup>th</sup> August**

**25<sup>th</sup> August 2008.** Except for a circuit of the hills towards Glenfiddich, Alma remained on the south side of the Ladder Hills; she crossed into Moray at 10 a.m. and spent the next two hours around Bachd Buidhe, then there was a gap in GPS fixes until 4 p.m. when she was near Cairn Dregnie. Two hours later she was on Cairn Muldonich, before heading back towards the Lecht where she roosted. She stayed on the Ladder Hills until 1st September.



### Alma's locations on 25<sup>th</sup> August

**28<sup>th</sup> – 29<sup>th</sup> September 2008.** Overcast rainy weather so only intermittent signals as lack of sun on solar panel, but on 28th Alma moved back north into the Ladder Hills and Glenfiddich. At 4 p.m. - 5 p.m. was north of Carn Mor, overlooking Glenlivet, and then flew north over the Kymah Burn to Carn an t-Suidhe, later between 7 p.m. and 9 p.m. she had flown further on and roosted overnight near Carn a'Bhodaich. No signals next day until 1 p.m. when she was near Tomintoul.



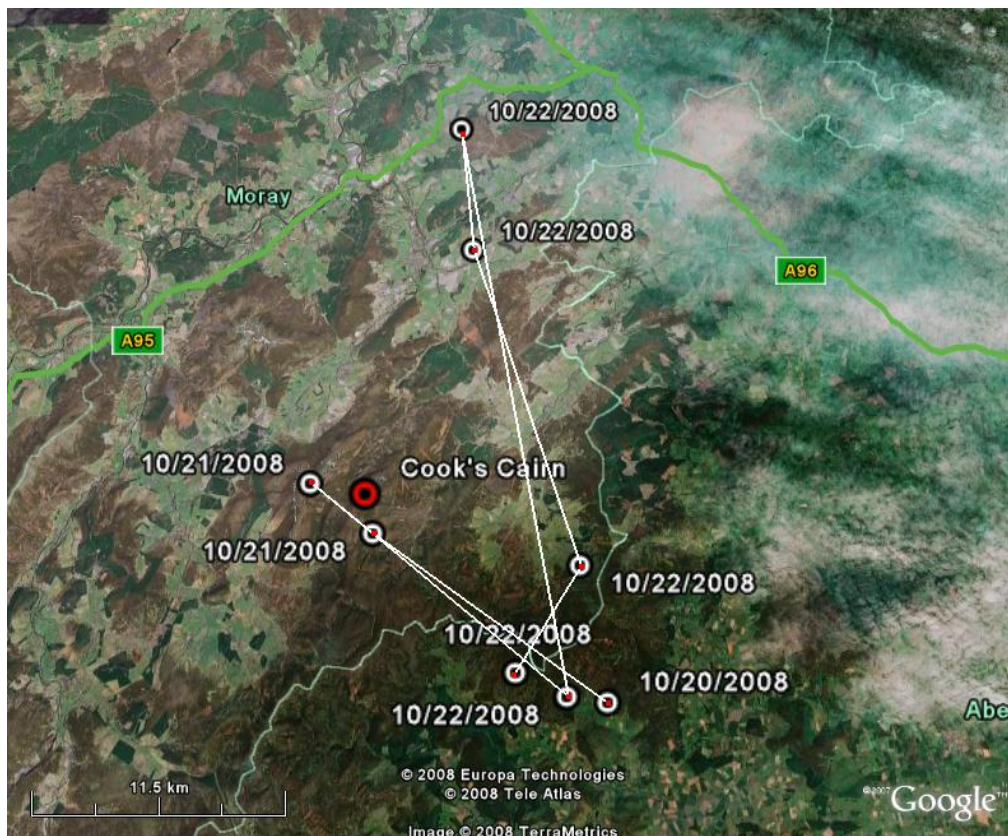
**Alma's locations on 28<sup>th</sup> September**

**8<sup>th</sup> - 10<sup>th</sup> October 2008.** At 1 p.m. flying SE over Glenbuchat in Aberdeenshire at 24 kms/hr at 575 metres altitude; hour later at 2 p.m. was perched on south face of Carn na Bruar, Glenfiddich and stayed there all day, roosted overnight to the east and higher up on Carn na Bruar. Next morning she remained in same area until 8 a.m., by an hour later she was on Bachd Buidhe, returned by 10 a.m. to Carn na Bruar and at midday at summit of Carn na Bruar. Then a break in transmissions until midday on 10<sup>th</sup> October, when she was on west side of Carn an t-Suidhe (Glenfiddich) flying NW at 31 kms/hr at 801 metres. At 1 p.m. she was perched in woods near Carn Dregnie, 2 p.m. flying E at 69 kms/hr at 747 metres at south end of Carn an t-Suidhe; 3 p.m. flying S over Carn na Bruar at 33 kms/hr at 661 metres, 4 p.m. to the south in Glenlivet hills.



### Alma's locations on 18<sup>th</sup> October

**21<sup>st</sup> – 22nd October 2008.** On 21<sup>st</sup>, she was still in the hills NW of Kildrummy Castle, and then she flew north and at midday was perched on the west side of Thiefsbush Hill in Glenfiddich Estate, she then flew NW past Cook's Cairn to perch at midday on Corryhabbie Hill, west of Glenfiddich. There were no more signals as it was overcast with snow showers, until 8 a.m. on 22nd when she was on Creag nan Eunan in Donside. Alma was still there at 9 a.m., no signals until 1 p.m., when she had made a distant flight north in bright sunny weather and was flying north at 22 kms/hr at 482 metres above the west side of MacHatties Hill over Forestry Commission land just 2 miles south of Mulben in Moray. A very unusual and relatively low ground location for a golden eagle. At 2 p.m. she was flying south at 17 kms/hr over Milltown of Auchindoun, 2 miles east of Dufftown.



**Alma's locations on 21<sup>st</sup> – 22<sup>nd</sup> October**

**Appendix 3. Comments on the ornithological section of the EA (Chapter 10: pages 1 – 88 plus figures and tables)**

10.14: the raptor survey area includes an additional two kilometres but this is insufficient for golden eagles, which can range up to six kilometres or more from active sites.

10.29: there has been argument about the value of flight activity surveys as presently carried out in relation to golden eagles. Golden eagles will not hunt over areas when observers are visible on high points. The observer standing on a high point in order to be able to view the surrounding area is immediately obvious to golden eagles and is almost certain to prevent them from hunting within view of the observer. Additionally, as the observer walks to the high position it is likely that golden eagles will watch his progress, and will either fly to another place where they will perch at a long distance and wait for the person to depart. Furthermore eagles can perch in one place without doing anything for far longer than a person, so the surveys, when only three hours long, are especially unlikely to give a true indication of use by eagles.

10.30: flight activity surveys were carried out from April to August 2006, but this excludes the winter period from September to March, when eagles need to feed during shorter days and also in bad weather and poor visibility, when in fact prey may be easier to catch and collision risk higher.

10.55: Require to see the spring and summer 2008 survey data

10.53: they say no significant shortfalls but this is incorrect for golden eagle

10.64: the Ladder Hills pSPA for Hen Harriers is mentioned, but I am led to believe that it failed to be designated because the species was not present in sufficient numbers during the survey period because of disturbance and persecution.

10.67: noted this site was included in the Aberdeenshire SINS, so it had been described

10.74 - 10.81. Hen harrier. Their conclusion fails to address the issues of raptor persecution and vacant suitable home ranges. It does not address the issues of past

persecution, nor the situation if a population were re-established, nor the size and breeding performance of a normal population for this place and habitat.

10.83: golden eagles. They bred until the 1960s, not 1940s - and there were probably three pairs in the region including Glenfiddich before persecution and disturbance.

The report discusses the home range to the south of the proposed wind farm site, but it does not give any historical reference nor any indication why no eagles breed there any longer.

10.84: the problems of the VPs and golden eagles have already been discussed, so these data are inadequate for this species

10.85: their survey data gives data on sightings of a subadult female and an adult male, and also some presence of an adult female; it refers to juvenile use and satellite tracking, and the possibility of breeding in the future.

10.86: Nest availability comments are subjective.

10.88: the EA states that the site provides hunting habitat for sub adult and adult golden eagles but they are not considered to be from an occupied home range, and they provide no evidence of breeding.

But there is no discussion why this is the case, why eagles fail to breed here; nor the situation regarding juvenile dispersal from the close by Cairngorms SPA. Nor discussion of past persecution and potential recolonisation

Merlin. The report indicates that there are three pairs of breeding merlins

10.95: the EA refers to two historical breeding sites for peregrines but says there has been no breeding since the late 1990s. There is no discussion why there are no breeders, nor any discussion on the effects of the wind farm on the species, when the effects of past persecution ceases and the two historical breeding sites are reoccupied.

10.108 and 10.115: reference is given to 15 territories of golden plover and one pair of dunlin.

Nature conservation evaluations.

10.160: there is no reference to the fact that the site could possibly be designated as a SSSI based on the species assemblage and the upland/moorland habitat, especially if the full potential raptor population was present.

10.169: golden eagle is put as 'medium' conservation value, but this designation fails to recognise that if the effects of past persecution and disturbance were removed, the Glenfiddich/Blackwater & Glenlivet Hills could hold up to three pairs of breeding golden eagles, living in habitats with a high prey-base and optimum weather conditions. These conditions found in eastern Highlands result in pairs with above-average production of viable young, assuming no persecution.

There is also a failure to recognise the importance of this area for juveniles, immatures and some adults from the close by Cairngorms SPA for golden eagles (within the Cairngorms National Park).

10.180: fails to recognise that the building of previous access roads in the 1970s and 1980s had a previous damaging effect on the security of breeding eagles (e.g. the old nesting site at the Elf house in the Glenfiddich)

Table 10.14: again golden eagle is written off as low impact and slightly adverse; this does not address the situation with regard to the potential of this place from golden eagles

10.219: there is no experimental data on which to base these values because there is no experimental scientific data on avoidance by golden eagles in field conditions.

Table 10.16: Golden eagle data on six flights underestimates potential impacts because of the problems with observer visibility.

10.224: comment re poor visibility. Collisions more likely in poor visibility and poor weather conditions, when eagles may make more successful kills, because prey are

easier to catch. There should have been field data on raptor kills identified during their surveys over the moorland.

10.227: highlights golden eagle at one death per 10 years but needs much more discussion about impact if breeding eagles were allowed to recolonise.

10.228 - 10.230: the EA notes that the area is included in SNH Natural Heritage Zones, where golden eagles are not in favourable conservation status.

10.231: recognises potential for the wind farm to have a potentially high enough collision risk to have a significant local affect on the eagles, and to affect reoccupation/expansion but fails to mention that birds from SPA may be affected.

10.238: also increase of human presence and the ability to increase human persecution through easier access.

10.240: this reference to Argyll is still subjective and need scientific proof that moorland mitigation is actually successful.

10.241: includes some discussion on potential effects following re-occupation.

10.248: another reference to vantage point counts for golden eagles, which I think are suspect.

Table 10.22: do not accept low impact on breeding eagles by increased numbers of people - this has been and is an issue elsewhere.

10.269: requires to discuss potential nest sites

10.278 -10.284 & Tables 10.26 -10.30: these tables should also assess the impacts on a restored eagle population post the effects of persecution.

10.293: the conclusion fails to highlight that golden eagle, peregrine and hen harrier have suffered population loss through persecution and disturbance, nor indicate the potential breeding populations for these habitats without persecution and disturbance..

10.297: I have not read the habitat management plan, but in my view I cannot see how this would benefit eagles in the present circumstances, and especially in the presence of a major wind farm in such an integral part of the eagles hunting range. Mitigation always sounds good at the planning stage, but whether any of it will work is debatable and is valueless unless monitoring has clauses that state that if mitigation fails and impact is high, then turbines must be closed down or removed.

Buckland, S.T, et al. 1990. The Birds of North East Scotland. Aberdeen .

Cook, M., 1992. The Birds of Moray and Nairn. Mercat Press.

Fielding, A.H., Whitfield, D.P., McLeod, D.R.A., 2006. Spatial association as an indicator of the potential for future interactions between wind energy developments and golden eagles *Aquila chrysaetos* in Scotland. Biological Conservation 131, 359-369.

Harvie-Brown, J.A., Buckley, T.E., 1895. A Vertebrate Fauna of the Moray Basin. Edinburgh.,

Whitfield, D.P., Fielding, A.H., McLeod, D.R.A., Haworth, P.F., Watson, J., 2006. A conservation framework for the golden eagle in Scotland: refining condition targets and assessment of constraint influences. Biological Conservation 130, 465-480.

## ANNEX 2

**Dorenell Wind Farm, Moray****Re-appraisal after reading the 2008 Infinergy bird survey report, and various documents including the report of 2008 bird surveys and Infinergy's response to SNH's issues.**

There is no new information to change the thrust of our response of October 2008.

There is still a fundamental problem with the ornithological sections of the EA because no reason is given for the lack of breeding golden eagles and peregrine falcons, or a full complement of hen harriers, despite recognising the presence of suitable habitat and food supplies. There is no discussion on why these rarer raptors are absent nor on the potential for restoring populations. Assuming the Glenfiddich Hills were carrying a full population of restored raptors, which they should be now and in the future, there is no assessment of the consequent impact of the development on restored populations.

As discussed in our previous response (*Ornithological Assessment of the Dorenell Wind Farm Proposal – Glenfiddich with regard to Golden Eagles, Dennis, 2008*) the study area is located in the SNH Natural Heritage Zone 11 (Cairngorms Massif) but is close to Zone 12 (North East Glens). The commissioned report by Scottish Natural Heritage "A conservation framework for golden eagles: implications for their conservation and management in Scotland" (Whitfield et al, 2008), states that the Cairngorms Massif, Natural Heritage Zone 11, had less than 40% of known home-ranges occupied by breeding eagles in the latest survey year 2003 and had failed the criteria to attain favourable conservation status, yet the breeding success of the occupied sites was high at 0.68 young per pair. The adjacent zone 12, North East Glens, had less than 20% known home-ranges occupied by breeding eagles in the latest survey year 2003 and had also failed the criteria to attain favourable conservation status. It further states that the highest priority for management (of

golden eagles) and political initiatives is tackling illegal persecution; and these two zones along with two other areas have been the worst for illegal persecution.

The absence of breeding pairs of golden eagle and peregrine falcon, and the very low number of breeding hen harriers would appear to be due to disturbance and illegal persecution within NHZ 11 and 12. In consequence, the most important mitigation measures within the Glenfiddich Hills should be the complete protection of rarer raptors from persecution and a management plan aimed at restoring the missing breeding pairs of rarer raptors. This is not addressed.

### **Designated Status and Regional/National importance.**

The present system for identifying and designating special protection areas (SPAs) for rarer raptors is primarily based on the breeding numbers in a search area within the last five years. It does not deal adequately with areas, which hold excellent habitat and food supplies, but where raptor populations are missing due to human intervention, often the results of illegal and sustained persecution in recent decades. This is a weakness in the system, especially in areas which have long-term ecological viability, if the immediate problems were removed.

It is stated in the EA, paragraph (1.88) “that the Dorenell wind farm study area does not include, nor is it adjacent to, any statutory sites designated for ornithological interest.” But knowing that it already holds at least five pairs of merlins, and there would considerably more in the larger Glenfiddich – Glenlivet area, then the added presence of at least two breeding pairs of golden eagles, 4 – 6 pairs of peregrine falcons and a viable population of hen harriers would enhance its designation status. The Glenfiddich Hills, which are adjacent to the CNP, should then be included within an expanded Cairngorms SPA for golden eagles.

This potential status is even reflected in paragraph 1.144, where the companies’ EA “states that the estimated number of breeding merlin within the survey area is also likely to be large enough to assign a regional level importance for this species. In addition, one breeding hen harrier territory was identified and hen harriers hunt over certain areas of the site on a fairly regular basis, although the numbers present are not likely to be sufficient to assign a regional level of importance. In addition, the use of the area by hunting golden eagles and hunting peregrine falcon also increases the

general importance of the site for moorland raptor species of national and regional conservation concern.” The missing component is breeding activity.

In paragraph 1.254, the EA “concluded that the nature conservation value of medium was considered appropriate and this remained unchanged to that of the original ES.” But this is based on a depleted raptor community.

### **Golden Eagle**

The new report for 2008 records (paragraph 1.147) that “this species does not breed within the area, the survey area does provide foraging habitat for non-breeding birds and historically this general area has supported breeding golden eagles. Due to the population size, national and regional conservation status of this species and given the extent of suitable habitat within the survey area, a rating of medium conservation value is considered to be appropriate. This is the same conclusion as the original ES (see paragraph 10.162).” It also states in paragraph 3.2.8 that “two historical records of golden eagle territories were reported from the desk study. Golden eagles have historically bred within the study area, but this area has not been occupied for many decades (since the 1940s). More recently, a pair was known to breed approximately 3km to the south of the study area. This home range does not appear to have been occupied since the late 1990s but immature birds have been observed in the area” (details of the desk study records are provided in a separate Confidential Ornithological Appendix).”

This is not strictly true (see our report October 2008) as the closest eyrie, to the proposed wind farm site, was used until the 1960s, and possibly the early 1970s; while the home-range to the south was successful in the 1970s and 1980s, and then a period of persecution and disturbance resulted in abandonment. There is an earlier reference to a potential third home range to the east.

There is some recognition within the 2008 report (paragraph 3.2.9) of breeding potential, where reference is made to the site to the south but no reference is made to the site to the west of the proposed wind farm. The species can in fact breed in very insignificant outcrops if undisturbed and not persecuted. In paragraph 3.2.10, “the area to the south of the wind farm site (e.g. around Carn na Bruar) had been identified as potentially providing suitable nesting opportunities for golden eagle; the

site was visited in March 2008 to check for evidence of occupation/breeding activity and none was noted.”

These references demonstrate that the surveyors recognised that there was the potential for eagles to breed again in the area, but what they failed to do was recognise that they should have given an assessment of impacts if the pair did breed on Carn na Bruar, or for that matter the old sites near the Suie and to the south.

### **Peregrine falcon**

Paragraph: 1.97 states “The survey area is used fairly regularly by peregrine for hunting and potentially forms part of the hunting range of a breeding pair. There was no evidence of breeding activity in the vicinity of the proposed wind farm. There are more mountainous areas to the south of the site, with isolated crags, that could provide suitable breeding habitat. “

Paragraph: 1.148 states “The survey area also provides extensive suitable foraging habitat for at least one pair of peregrine falcon. “

The important issue is why are there no breeding peregrines; how could they be restored and what impact would the development have on a restored population of breeding adult and juvenile peregrines. In the latter part of the last century, up to 4 to 5 pairs bred on Cabrach and Glenfiddich.

### **Hen harrier**

The 2008 report, paragraph 1.94 states “the site includes a number of areas that are considered to provide suitable habitat for breeding and hunting hen harriers and evidence of one pair of breeding hen harrier was recorded during the surveys, c. 500m outside of the wind farm site boundary; although no actual nest location was documented, the centre of the hen harrier territory was identified and juvenile birds were recorded in this area (see Confidential Ornithological Appendix). A total of nine flight lines were recorded during the flight activity surveys. Most hen harrier foraging activity was located to the west and in the central parts of the proposed wind farm survey area boundary. “

The important issue is why there is only one pair of breeding hen harriers; how could a viable population be restored and what impact would the development have on a restored population of breeding adult and juvenile hen harriers.

### **Merlin**

The 2008 report, paragraph 1.96 states “The survey area provides critical breeding habitat for up to at least five breeding pairs of merlin. Areas of suitable foraging habitat adjacent to these identified territories will be frequently used by this species during the breeding season (see Confidential Ornithological Appendix for further details).”

This demonstrates the potential raptor importance of the Glenfiddich and Glenlivet Hills. Merlins are small raptors which feed on small passerines so are rarely subject to illegal persecution.

### **Observer effects and other issues of Vantage Point Counts.**

The Infinergy 2008 report, paragraph 1.34 states. “There are considered to be no significant limitations to the surveys undertaken. The survey methods are considered to be robust and appropriate to the evaluation of the relevant ornithological receptors and to the assessment of potentially significant impacts.”

SNH’s Response to the vantage point count field surveys stated:

Paragraph 3.8. “There is one observation start time at 0740hrs and one at 0900hrs. Other than these, observations do not generally start earlier than 0945hrs. Observations do not finish later than 1840hrs. Given that dawn can be around 0330/0400hrs and dusk 2200/2230hrs during the summer months, there have been no vantage point watches undertaken during the early morning or the late evening (when birds may be most active) at key periods of the breeding season. This is particularly important for all breeding species, particularly for golden plover that commute between breeding locations and foraging locations at these times of day. Again, can justification be provided for selecting these times and omitting earlier and later watches? “

Infinergy's response: paragraph 3.8 explained:

"Regarding start and finish times for flight activity surveys, surveyor health and safety is a key consideration given the remoteness and elevation of the survey area. In order to complete watches closer to dawn and dusk would have required fieldworkers to walk to or from vantage point locations in the dark. All of the vantage point locations were accessed on foot. Significant portions of the survey area are intersected with moorgrrips and peat gullies which are a hazard to walkers during daylight hours."

This adequately explains health and safety issues, but does not address the ornithological credibility of the survey methods. It should have been up to the company to work out ways of obtaining the necessary data safely and efficiently.

SNH should have maintained their criticism of the survey methodology and it should be recognised that paragraph 1.34 is incorrect and misleading.

In our earlier report "Ornithological Assessment of the Dorenell Wind Farm Proposal – Glenfiddich with regard to Golden Eagles" we drew attention to the inadequacy of the field data in the following paragraph "The vantage point system used for investigating golden eagle use is flawed. Firstly, the visibility to eagles of the observers standing on vantage points, the technique employed at Dorenell, may account for the low numbers of golden eagle observations. The eagles are deterred from visiting the area while the human observers are in view (this would be normal behaviour for golden eagles) (See Appendix 3 – 10.248). Therefore, we do not believe the accumulated data agrees with eagle use of this part of the Blackwater, Glenfiddich & Glenlivet Hills complex. Additionally, the data is flawed because of the small number of days, inadequate cover through the whole year and daylight spread, and in inclement weather conditions. In my expert opinion, collisions are more likely to occur in poor daylight and poor weather, when in pursuit of prey."

An examination of the 68 dates on which Vantage Point Surveys were carried out between December 2007 through August 2008, showed that the satellite tagged eagle, Alma, was only known to enter the area on one single count day (10<sup>th</sup> December 2007), but on at least 34 days between these dates she was present somewhere in the area on non VPS dates. This could suggest that the visibility of

observers carrying out VPS in prominent locations could be influencing data by discouraging eagles to enter the area due to human presence.

Roy Dennis 18 September 2009