Hearing Statement of Paul Bradshaw

for the Applicant

Ornithology

Public Inquiry into the proposed Dorenell Wind Farm

Section 36 of the Electricity Act 1989

The Town & Country Planning (Appeals) (Scotland) Regulations 2008

27 August 2010

Introduction

Qualifications and Experience

1. My name is Paul Andrew Bradshaw. I am an environmental consultant, ecologist and ornithologist. My qualifications are:

   Bachelor of Science honours degree in Zoology from the University of Glasgow;
   Master of Science degree by research in ecology from the University of Regina, Canada;
   Master of Science degree in Environmental Science from Trinity College Dublin, Ireland.

2. I am currently a partner within an environmental consultancy practice (MBEC), which is based in Edinburgh and operates throughout Scotland. I have a long-term interest and expertise in ornithology, bat ecology and Ecological Impact Assessment (EcIA). I have over 15 years experience as an ecologist, gained through post-graduate research and as a full-time professional ecological consultant. I originally trained as a zoologist, through undergraduate and post-gradate degrees attained in Scotland and Canada, where I focused on field-based research in bat and bird ecology. I set out fuller details of my experience in Appendix 1 to this Hearing Statement.

Involvement in this Project

3. MBEC was commissioned by Infinergy (on behalf of Dorenell Ltd, 'the Applicant') in 2006 to undertake ecological and ornithological baseline studies of the proposed Dorenell wind farm study area. I have been closely involved in the management and co-ordination of all of the ornithological aspects of the project including all field surveys, desk-top studies, consultation, impact assessment and mitigation measures. Since the completion of the ornithological aspects of the Environmental Statement (ES) in 2008 and post-ES consultation with SNH, my role has been to provide independent advice on the ornithological issues arising from other parties' objections to the proposal in the lead up to the Public Inquiry process. Other ecological issues associated with this Inquiry, such as habitats and non-avian fauna, will be addressed separately through written submissions by Dr Andrew Mackenzie.

4. In preparation for the Inquiry, I have examined in detail and reviewed all the relevant baseline data and associated documents that provide the basis for the assessment of the potential significant impacts of the proposed wind farm on all relevant ornithological receptors.

5. The documents cited in this Hearing Statement are listed in Appendix II and will be included either in the list of Core Documents or the Applicant's list of documents for the Hearing sessions.

6. The key documents that provide the basis for the assessment of the potentially significant impacts of the proposed wind farm are Chapter 10 (and associated

figures and appendices) of Volume 2 of the ES[1] and Chapter 3 of the Supplementary Environmental Information (SEI)[2].

Approach to this Project

7. The following section outlines the overall approach to the ornithological aspects of this project considering in turn the relevant legislative and policy contexts, best practice guidance for onshore wind farm impact assessment and the specific approach adopted for the assessment of the Dorenell proposal. To avoid unnecessary repetition, appropriate references to the relevant sections of the ES and associated documentation are provided rather than reiterating existing text.

Relevant Legislation and Policy Context

Summary of Relevant International and Domestic Legislation

8. A description of local and national policy and domestic and European legislation that is relevant to ornithology and the assessment of the Dorenell Wind Farm project is provided in Paragraphs 10.7 - 10.8 of the ES and, where relevant, thought-out Chapter 10 of the ES.

9. Legislation relating to a variety of environmental matters will be considered by other witnesses from the relevant disciplines. Mr David Bell will lead planning and policy issues during an Inquiry session, related to the environment as a whole. This ornithology evidence will cover only specific legislation, planning and policy issues related primarily/directly to that subject area.

10. There are several pieces of legislation, both domestic and international, that are relevant to the project in relation to ornithology and nature conservation. A brief summary of the key relevant legislation and policy framework is provided in Appendix III. Further discussion of the detail of the legislation and policy is included where appropriate within the section on specific issues raised by other parties (see below).

11. All ecology and nature conservation related work for the application has been undertaken with full cognisance of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000. All other relevant nature conservation legislation has been fully considered and any necessary requirements fulfilled in the preparation of the ES and chapter 3 of the SEI document.

12. There are a number of International Conventions, Directives and Agreements which have as their primary purpose the conservation and protection of natural heritage. These legal instruments have had a key role in directing UK legislation related to wildlife protection and the conservation of natural heritage in the UK.

13. The core domestic legislation focusing on nature conservation in Scotland is the Wildlife and Countryside Act (WCA) 1981, although previous Acts of Parliament do include some provision for nature conservation.

National and Local Biodiversity Policy

14. Overall policy will be examined in Mr David Bell's evidence. In relation to national nature conservation, Scottish Executive policy in NPPG 14 (now superseded by the Scottish Planning Policy but still a useful source of detailed guidance) makes it clear that the Government is committed to an integrated approach to development that recognises that the environmental, economic and social dimensions of life are intimately inter-related and equally important. This document gives guidance on how the Government's policies for the conservation, safeguarding and, where possible, the enhancement of Scotland's natural heritage should be reflected in land use planning. The Moray Structure Plan, Moray Local Plan and Wind Energy Supplementary Planning Guidance include policies relevant to wind farm development and ornithological issues. The relevant polices at the time are listed in Paragraph 10.8 of Chapter 10 to the ES.

15. To complement the UK BAP, a separate biodiversity strategy for Scotland has been published and this has been added to since 2004. Although there is now a statutory duty for public office holders/public bodies to conserve biodiversity, the UKBAP does not add any additional statutory protection for specific habitats and species.

16. Species and habitats identified for priority nature conservation action within UK and Local BAPs and related conservation initiatives (e.g. Scottish Biodiversity Strategy, SNH Species Action Framework) are required to be considered by planning authorities in the determination of planning applications. Species of moderate to high potential sensitivity to wind farm development that have been identified for priority nature conservation action within national and local authority BAPs, the Scottish Biodiversity Strategy List and SNH Species Action Framework, which are considered relevant to this proposal are as follows:

    Golden eagle (*Aquila chrysaetos*)
    Hen harrier (*Circus cyaneus*)
    Merlin (*Falco columbarius*)
    Peregrine (*Falco peregrinus*)
    Golden plover (*Pluvialis apricaria*)
    Dunlin (*Calidris alpina*)
    Curlew (*Numenius arquata*)
    Black grouse (*Tetrao tetrix*)

17. The approach to ornithological issues for this project has sought to take account of these species, in particular, through the iterative wind farm design process, and other ornithological mitigation measures proposed in order to avoid long-term significant adverse impacts.

<u>Scoping</u>

18. In order to obtain advice on the content of an ES (including the ecology and nature conservation aspects), the EIA Regulations specify that the developer may consult with the Scottish Ministers as to the scope of the information to be included within the ES (i.e. a request for a 'scoping opinion'). The Scottish Ministers must consult with the consultative bodies, such as any relevant

planning authority, SNH and SEPA, before responding to the developer with a scoping opinion. In this case, a scoping opinion was requested and received; and the ecological information provided in the ES has taken into account the terms of that opinion and other scoping and consultation responses.

19. Consultations with SNH and the RSPB indicated that there was the potential for the Dorenell wind farm development to impact upon a number of bird species of conservation concern and sensitivity to wind farm development, including, golden eagle, hen harrier, other raptors, moorland breeding waders, black grouse and short-eared owl (*Asio flammeus*). These species and their supporting habitats were the primary focus for the baseline survey work and impact assessment and were considered the key 'receptors' (see paragraph 10.178 of the ES).

20. The potential impacts of on-shore wind farm development on bird populations are well established. The following is a brief summary of the potentially significant impacts on the key avian receptors which were considered in detail within the impact assessment (see paragraph 10.5 and Tables 10.12 and 10.13 of the ES).

    Construction Phase:

    Temporary disturbance of foraging/nesting birds

    Operational Phase:

    Long term collision risk
    Long term disturbance / displacement of birds (intermittent disturbance from maintenance activities)
    Loss or fragmentation of habitat

    Decommissioning:

    Temporary disturbance of foraging/nesting birds

21. Each of the above potential impacts was considered in terms of its potential magnitude and significance for each identified avian receptor; and mitigation measures are proposed to reduce impact magnitude as appropriate.

<u>Assessment Methodology and Generic Guidance</u>

22. The EIA Regulations define in broad terms what information should be included within an ES. Within paragraph 2 of Schedule 4 to the Electricity Works EIA Regulations, reference is made to the need for an ES to include "*A description of the aspects of the environment likely to be significantly affected by the development*". Within paragraph 3 of the same Schedule, it states that a "*description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development*". It is also stated within Part II of Schedule 4 that an ES should include "*the data required to identify and assess the main effects which the development is likely to have on the environment*".

23. Within the Regulations there is no statutory requirement as to the form of the ES or prescriptive guidance as to what should be considered as sufficient ecological information to inform an impact assessment. This is entirely understandable, given the wide array of projects that require EIA, the vast range of species and habitats that may be affected and the types of impact that may occur. In so far as the environmental information in Part 1 of Schedule 4 is concerned, Section 4(1)(b) of the Regulations specify that the ES must contain the information "*reasonably required to assess the environmental effects of the development and which having regard in particular to current knowledge and methods of assessment, the applicant can reasonably be required to compile taking into account the terms of any scoping opinion given*". Therefore, the Regulations only provide a general framework for what should be considered in detail within an individual ES.

24. Guidance on EIA practice generally, and also specifically related to ecology, has been produced by a number of organisations including Scottish Natural Heritage[3], and the Institute of Ecology and Environmental Management[4]. Full consideration was given to this guidance in undertaking the assessment for this proposal.

25. Ecological consultants working on any EIA project have an important role in ensuring (in consultation with the developer, the planning authority and consultees) that the assessment they are tasked with completing is at the least compliant with the relevant formal guidance and Regulations. Ecology (including ornithology), particularly as it pertains to the planning and assessment of wind farm development, is a relatively new and rapidly developing area and therefore a consultant's professional judgement plays an important role during the development and assessment of a proposal, to ensure that a suitably robust approach is adopted.

26. The approach taken by the Applicant and the consultant ecologists to the design and assessment of the proposed Dorenell wind farm followed a standard, systematic process:

    1. Determine through scoping, preliminary desk study and site survey the ecological receptors that need to be considered in detail, based on an understanding of the impacts associated with the type of proposed development and the populations and habitats affected;

    2. Collate adequate baseline data from desk study and appropriate site-specific field surveys to inform the assessment of the likely impacts;

    3. Determine the nature conservation value or sensitivity of the receptors present within the study area;

    4. Identify in detail the potential impacts of the construction works, operation and decommissioning works (where relevant) of the proposed development;

    5. Determine the scale/magnitude of the effects including consideration of their duration and any potential cumulative impacts, including those arising from other development proposals;

6. Determine the significance of the effects based on the interaction between the effect magnitude/duration and the nature conservation value/sensitivity of the receptors affected;

7. Identify and assess mitigation measures required to address significant adverse effects (mitigation, in the form of alterations to scheme design, was considered at an earlier stage); and

8. Determine the residual effect significance once the benefits of the prescribed mitigation measures have been assessed.

27. The EcIA process for Dorenell wind farm involved the application of specific criteria to evaluate and rank impacts and features. Because of the complexity of ecological systems and the potential uncertainty of some impacts and efficacy of some mitigation measures, experienced professional judgement played a key role in the valuation of receptors and in the determination of effects.

28. The first stage of the assessment for this project involved the determination of a nature conservation value for each ornithological receptor found to be present, or likely to be present within the defined study area. Features or receptors were assigned a value based on evaluation criteria adapted and updated from both existing guidelines and the professional judgement and experience of the ecologists involved. Further details of the criteria, the level of values and examples that were used as a guide in the evaluation process can be seen in Table 10.3 of the ES.

29. Once the nature conservation value of all the key receptors within the study area was determined, the impact assessment was then completed. Initially, this was carried out using the potential impacts and corresponding potential effects of the project. It was then taken forward to the final impacts and effects of the project, including any agreed mitigation (often referred to as a residual impact assessment). The impact assessment involved the use of all available information (including survey data, published information and expert opinion) to complete as accurate and reliable conclusion as possible. For each impact (potential and residual) of the proposed project, an assessment of impact magnitude (for example, see Table 10.4 of the ES) was made and this was combined with the nature conservation evaluation to determine the significance of the resulting effect (see Table 10.6 of the ES) on each receptor. For the purpose of this project, an impact was judged to result in a significant effect (as defined within the EIA Regulations) if the residual effect significance was determined to be at a *moderate* or *major* level.

30. One of they most important potential impacts on birds from wind farm development is the risk they pose to birds in fight. A set of standardised methods have been developed, widely adopted in wind farm EcIA in the UK, which allow an estimation to be made of the collision risk for target bird species (i.e. species considered to be at significant risk from wind farm development). Although it has recognised limitations, this approach is currently the most accurate means of estimating collision risk for proposed wind farms. The output from this method (also referred to as ‘collision risk modelling’ or the ‘Band Model’) is used to help

inform the assessment of the potential magnitude of this impact; although it is not the sole consideration in assessing collision risk. Timed observations of bird flight activity, from strategically located vantage points, provide quantitative data on the use of the survey area by target bird species. Summary flight activity maps for target species are provided in Figures 10.4 and 10.5 of the ES. This data is then used to derive an estimate of the potential 'exposure' of target species to the collision hazard (i.e. the rotor blades) based on the number and design of the proposed wind turbines, estimated time the species would spend in flight within the wind farm area per year and some simple bird biometrics. From this, an estimate of the number of annual collisions is calculated and modified by an assumed collision avoidance rate. A detailed description and discussion of the methods is provided in Band *et al*. 2007 (in Lucas *et al*. 2007[5]).

31. In summary, the collision risk modelling process involves two stages:

    1. The first stage is the estimation of the number of transits through the proposed rotor swept volume per year based on observed flight activity data and parameters of the wind farm and wind turbine design.

    2. The second stage involves the estimation of the predicted proportion of transits through the rotor swept volume that would result in a collision between the bird and a wind turbine blade. All predicted collisions are assumed to be fatal. This provides an estimate of the number of fatalities per year for the wind farm but assumes that no bird takes avoiding action to prevent a collision. There are also several other assumptions that are made.

32. In order to provide a biologically realistic estimate of collision risk, it is necessary to assume that birds take action to avoid collision. Estimates of avoidance that have been used in the Dorenell wind farm assessment have also been used in other similar studies. However, empirical data on which to base values for avoidance are generally lacking and these calculations must therefore be considered as a 'guarded' best estimate. It is also important to note that avoidance rates relate to individual birds approaching individual turbines. There is also the potential for the 'displacement' of birds from the wind farm area (i.e. a cluster of turbines) and that would act to reduce collision risk by reducing the level of flight activity within the wind farm from baseline levels.

33. The collision mortality impact was assessed (informed in part by the results of collision risk modelling outputs) for target species considered to display a high enough level of activity within the proposed wind farm site to warrant detailed consideration: see Table 10.17 of the ES and Tables 3.11 and 3.12 of the SEI.

34. In conclusion, a range of available standard guidance was considered in the approach to this project. The impact assessment has been undertaken following methods that are consistent with current best practice.

<u>Summary of Ornithological Studies</u>

35. In order to inform the wind farm design process and the EcIA, a desk study and a suite of ornithological field surveys have been undertaken. Following the formal

EIA Scoping process and separate discussions on detailed survey / EIA methodology with relevant consultees such as SNH, field surveys were completed in order to inform the assessment of the identified potential impacts of the proposed wind farm (full details are provided in Chapter 10 of the ES, see Appendix 10.A). Surveys were undertaken to assess the use of all habitats within the study area by breeding and non-breeding birds with a particular focus species that is potentially sensitive to wind farm development. All surveys were carried out by experienced ornithologists. Current guidance was followed, and methods that have been used in other wind farm EIAs[6]. The following surveys were completed:

36. Surveys to estimate the composition, density and distribution of the breeding bird community were undertaken between April and June 2006 and in 2008. Three main methods were used to survey the different habitat types and groups of birds present within the study area, summarised as follows:

    a. Moorland Breeding Bird Survey

    b. Breeding Raptor Surveys

    c. Woodland Breeding Bird Survey

    d. Black Grouse Survey

        i. Surveys to assess flight activity across the survey area (including a margin at least 1 km wide around the outside of the proposed wind farm boundary) were undertaken from strategic vantage points during the months of April to August 2006 and September 2007 to August 2008. The aim of the flight activity surveys was to use time observations to quantitatively sample the use of the proposed wind farm area by all flying birds (breeding and non-breeding) but, in particular, the proportion of time that target species/groups (e.g. wildfowl, raptors and waders) spent flying at different elevations relative to the position of the proposed wind turbine blades. The data were used to estimate the potential collision risk and to inform the wind turbine layout design.

        ii. Transect surveys for moorland songbirds and small mammals were undertaken in June 2006 in order to estimate the density of important moorland raptor prey species (i.e. in relation to hen harrier, merlin and short-eared owl). In addition to the above, during other surveys, any observations of mountain hare and deer *spp.* were used to give a qualitative assessment of prey availability for species such as golden eagle.

37. The baseline ornithological data presented in the ES and SEI is sufficient to inform a robust assessment of the potentially significant impacts on all relevant sensitive receptors by the Dorenell proposed wind farm. There are considered to be no significant limitations to the assessment. Where there are uncertainties, for example in relation to potential future changes to the existing ornithological baseline or uncertainty about the magnitude of impacts of the proposed

development, a reasonable 'worst case' has been assumed. In relation to the potential for the nature conservation value of receptors to change between the EIA baseline assessment at the commencement of construction works (or operation of the scheme in relation to impacts associated with this phase of a proposal) this has been addressed through a conservative approach to the evaluation of the nature conservation value of sensitive ornithological receptors and to the proposed mitigation strategy (e.g. the proposed Habitat Management Plan).

Design Constraints

38. Ornithological data (desk study records and data from field surveys) for key species of conservation concern and considered to have a relatively high sensitivity to wind farm development were used in the iterative process that led to the wind farm layout. Locations of recent Schedule 1 / Annex 1 raptor species, nest sites or recently occupied territories were used to define raptor constraint areas. Circular buffer areas around point locations were used, with the buffer radii set at distances that were considered appropriate for each species, based on contemporary information on wind farm disturbance distances in the scientific literature and relevant guidance. A similar approach was also adopted for nesting waders (in particular golden plover and dunlin), based on the results of the 2006 survey. An appropriate radius was used to buffer clusters of recorded wader territories in order to identify relevant areas: i.e. areas which were considered likely in the longer-term to support relatively high densities of breeding birds in a site context. These formed the constraints mapping which, along with the flight activity data, was used to inform the development of the wind farm layout, which also took into account a wide range of other environmental, technical and engineering constraints provided by the other consultants and engineers involved in this work.

39. Beverley Walker will address the over-all wind farm design iteration process in more detail within her evidence to the Inquiry.

Additional Mitigation and Monitoring Measures

40. As well as considering bird interests within the iterative design process, mitigation measures are also proposed to further reduce potential impacts during the construction and operation of the proposed wind farm. The proposed measures are detailed within the impact assessment sections of Chapter 10 of the ES and Chapter 3 of the SEI. The following is a brief summary of what is proposed:

    A mitigation strategy for the construction phase of the project with the aim of minimising disturbance to breeding birds and ensuring that species with enhanced statutory protection (i.e. listed on Schedule 1 of the WCA) are not disturbed while breeding; and

    A Habitat Management Plan (HMP), with the primary objective of increasing habitat quality for species potentially affected by the wind farm proposal in areas outside of the proposed wind farm. The HMP is currently in outline but has the following draft objectives:

a. To enhance blanket bog habitats in appropriate areas within the wind farm site. For example, blocking muirgrips/ artificial drains in areas where natural blanket bog flora has been affected by lowering of water levels;

b. To reduce / carefully control deer grazing intensity on areas identified for blanket bog vegetation enhancement and modify muirburn plans so that these areas are not burnt;

c. To regularly check for and remove deer carcases and 'gralloch' from within 500m of the proposed wind turbines, to reduce collision risk to raptors and particularly golden eagle;

d. In a suitable area(s) outside of the wind farm, to increase the quality of habitat for mountain hare in order to increase prey availability for golden eagle, away from the collision risk from the wind turbines; and

e. Explore potential for habitat enhancement for other species of conservation concern not directly affect by the wind farm development: for example, black grouse.

41. The HMP is proposed to be developed in detail prior to construction of the wind farm, in consultation with relevant interested parities (e.g. SNH and the RSPB). It is also intended that a Wildlife Ranger post would be created, with the primary responsibility for ensuring the implementation of the HMP and monitoring studies.

42. The regular monitoring of key breeding bird species, flight activity and searches for bird carcases, following robust and standard methodologies, is also proposed as part of a site avian monitoring plan.

43. The proposed mitigation and monitoring measures have been transposed into a set of proposed planning conditions. The issue of conditions and a legal agreement will be addressed by the Applicant in the Hearing session on *Conditions and Legal Agreements*.

Summary of Assessment Conclusions

44. The following is a brief summary of the key findings and conclusions of the assessment of the wind farm proposal on ornithological interests, which is provided in full in Chapter 10 of the ES and in Chapter 3 of the SEI.

45. The proposed wind farm site is under traditional moorland management for red deer and red grouse and is located in a remote and undulating upland area of unenclosed moorland with wet heath and blanket bog vegetation communities dominating. Other habitats present within the survey area include lichen / bryophyte heath, dry heath / acid grassland mosaic, boulder scree, marshy grassland, improved grassland, acid grassland, acid flush, mixed scattered trees and coniferous plantation. A more detailed description of habitats within the site is provided in Chapter 11 of the ES.

46. The bird species present within the wind farm study area can be broadly grouped into breeding moorland songbirds, breeding and non-breeding moorland raptors and breeding waders. Within these groups there are a number of species present that merit special attention, owing to their European or national conservation status (as a species) and / or potential sensitivity to wind farm development. Species listed in Annex 1 of the EC Birds Directive and / or Schedule 1 to the Wildlife and Countryside Act are included. Annex 1 and / or Schedule 1 species that are considered to be sensitive to wind farm development, and which use habitats within the proposed wind farm site, include hen harrier, golden eagle, merlin, peregrine falcon and golden plover. Furthermore, there are also species that use habitats within the wider area, that are considered to be of national conservation concern. These include: oystercatcher, lapwing, black grouse and ring ouzel. A more detailed description of the site avifauna is provided from paragraph 10.68 to 10.159 in Chapter 10 of the ES; and in Chapter 3 of the SEI.

47. The wind farm site is not located within or adjacent to any currently active territory of any breeding golden eagles. Non-breeding, juvenile, immature and sub-adult golden eagles are occasionally present within the wind farm area and use it as a hunting ground.

48. The conservation value of the populations of bird species within the proposed Dorenell wind farm area range from 'medium' (e.g. regularly occurring population of a nationally important bird species which is threatened or rare in the region) to 'negligible' value (e.g. a common population of little or no nature conservation significance). A detailed list of evaluations for each identified ornithological receptor is provided in Table 10.11 of Chapter 10 of the ES and, as updated, in Table 3.7 of Chapter 3 of the SEI.

49. The impact assessment has fully considered the various potentially significant impacts arising from the construction, operation and decommissioning of the proposed wind farm; and has evaluated the significance of these impacts on the identified ornithological receptors in the context of their conservation value and sensitivity to wind farm development, as well as the magnitude of the potential effects. The full impact assessment is provided in Chapter 10 of the ES and, as reviewed, in Chapter 3 of the SEI.

50. The wind farm proposal would have no adverse effects on any habitat or bird population that is the qualifying feature of any statutory site designated for ornithological interest (i.e. Special Protection Area or Site of Special Scientific Interest).

51. No significant direct habitat loss is predicted for any species as a result of the scale of the proposal and the extent of direct habitat loss in comparison to the abundance of the habitats affected in the wider area.

52. Construction disturbance impacts will be mitigated through pre-construction surveys and careful scheduling of construction works to avoid disturbance to birds during the breeding season. With this mitigation in place, disturbance during the construction phase would not be significant for any species.

53. Collision risk of each target species has been evaluated using sufficient and appropriate field data: i.e., number of flights and height relative to the collision risk zone from timed watches at six vantage points, and following the SNH prescribed mathematical model. SNH have checked the calculations and are satisfied with them.

54. Species of conservation concern at most risk of collision are golden plover, golden eagle and peregrine. Mitigation of collision risk has been considered, during the wind farm design process, by avoiding areas of relatively high flight activity by these species. A habitat management plan is also proposed to increase the attractiveness of habitats away from the turbines, thereby reducing collision risk (and addressing potential habitat displacement impacts, see below).

55. In order to mitigate potential operational displacement impacts on waders and moorland raptors, the layout of the wind farm has been modified to avoid areas that support the higher concentrations (in the context of the site) of breeding birds. In addition, a habitat management plan, in particular to increase the quality of golden eagle hunting habitat outside of the wind farm, is proposed to mitigate the effect of potential displacement on this species.

56. Other operational residual impacts including maintenance of tracks, public access and collision from other built structures are assessed as being *Negligible* to *Slight Adverse* in the long-term for all species and not significant once the proposed mitigation is taken into consideration.

57. The residual impacts of decommissioning of the wind farm on all species are considered to be broadly similar to those during construction, and are therefore not more than *Slight Adverse* for all species.

58. Based on current information available for other wind farms within the region and the Natural Heritage Zone in which the Dorenell site is located, there are no potentially significant cumulative ornithological impacts with other wind farm proposals predicted.

59. Consultee Position and Issues Raised by Objectors

60. None of the statutory consultees (including the Planning Authority) appears to have objected to the proposed wind farm on grounds of concern about the potential impact on bird populations. Scottish Natural Heritage (SNH), as the statutory nature conservation organisation and primary advisor to Scottish Government on ecological issues associated with wind farm applications, is not objecting to this proposal. In considering the ES, a number of points were raised by SNH in 2008, which were addressed by the Applicant and relevant consultants in various meetings, through correspondence and the provision of additional information. SNH's position on the ornithological impact of this proposal is provided in their letter to the ECU dated 18 June 2009.

61. Rather than covering each point as raised by each objector, or objector group, which would be unnecessarily repetitive, I will briefly discuss each of the main issues raised, as far as I am aware of them at the time of writing. Various

correspondence and documents from the Speyside Business Alliance and the Mountaineering Council of Scotland have been considered. The following attempts to summarise the main issues indicated to date from various objectors' documents and letters of objection in relation to impacts on ornithological receptors:

1. That the impact assessment (and evaluation) does not take into consideration the suppression of populations of birds of prey within and surrounding the wind farm site (i.e. raptor persecution associated with upland moorland shooting interests);

2. The assessment has under-valued the importance of the wind farm site for golden eagle (*Aquila chrysaetos*) and that this relates in part to problems with the field survey methods;

3. That the wind farm area is of particular importance for non-breeding golden eagles (e.g. birds that have dispersed from natal areas within Cairngorms National Park) and that the construction of the wind farm will result in a significant adverse impact on this species as a result of habitat displacement; and

4. That the wind farm will result in significant adverse impacts on golden eagle and merlin (*Falco columbarius*) populations.

Raptor Persecution

62. In 1998 the head gamekeeper of Glenfiddich & Cabrach Estate was convicted and fined £700 for killing a protected bird species. This followed a raid on the Estate which provided evidence of poisoning of birds of prey (specifically a dead peregrine falcon). During survey work completed to inform the impact assessment for the Dorenell wind farm project from 2006 to 2008, no direct evidence of raptor persecution was found or suspected; and no information regarding persecution indicants or suspected persecution incidents was provided by any consultee during the desk study. During this same period, hen harriers successfully bred within Glenfiddich Estate, confirming that a species frequently associated with raptor persecution on moorland shooting estates (owing to the conflict with red grouse (*Lagopus lagopus*) shooting interests) was almost certainly not persecuted.

63. There are historically occupied golden eagle breeding territories within the general area in which the proposed wind farm is located, which have remained unoccupied by breeding birds for many years, despite the availability of suitable habitat and the presence of relatively abundant prey populations. Other parts of northeast of Scotland support some of the most productive golden eagle territories on the UK mainland (i.e. average number of young fledged per territory). Persecution appears to be a key factor limiting the favourable conservation status of the population in the wider region, e.g. the East Highlands[7]. Removal of or disturbance to traditional nesting sites (e.g. the construction and use of hill tracks near to nests) is also likely to have caused

abandonment of breeding ranges. This is a long-running conservation issue which is relevant to a much wider area that Glenfiddich Estate.

64. The persecution of raptors of conservation concern (e.g. golden eagle, red kite, peregrine and hen harrier, in particular), due to the perceived conflict with commercial shooting interests, remains one of the key issues affecting the conservation status of these species in many parts of the Scottish uplands. Killing and / or disrupting the breeding activity of these species, either deliberately or inadvertently, is illegal. Because of this, and the remoteness of the locations where it occurs, it is almost impossible to obtain reliable information on the extent of this activity for any particular landholding. It is reasonable to assume that the relatively small number of cases that are prosecuted reflects a small proportion of the number of actual incidents. There is no formal guidance on how raptor persecution (i.e. human suppression of 'natural' population levels) should be considered within the EIA process. However, we did not ignore this issue within the assessment, as has been claimed by some objectors.

65. The potential for all raptor populations to be artificially suppressed within the study area due to persecution / disturbance has been carefully considered during all stages of assessment, in as much as this can be accounted for in the EIA process. This has been the case with the interpretation of desk study information and survey findings, and a conservative approach to species evaluations, the impact assessment and proposed mitigation measures. Although, the EIA process must be based on consideration of contemporary baseline conditions, where appropriate, it is possible to take into consideration the potential for a particular site to support greater numbers or a wider diversity of species or habitats in the future. Further discussion of this issue is given under the section on golden eagle below.

<u>Golden Eagle</u>

66. The evaluation discussed and presented in the ES (see Chapter 10, Table 10.11) concluded that the wind farm site was of *Medium* importance for golden eagle (i.e. of regional importance). This evaluation, following the standard criteria for such assessments, was based on a detailed consideration of the use of the site by non-breeding birds and the potential for the wind farm area to be within the core breeding range of one pair of golden eagle should the surrounding historically occupied territory be reoccupied in the future. It has been argued by some objectors that this is not an appropriate level of importance for this area and that the evaluation has under-estimated the importance. However, it is not clear on what evidence the site could ever be considered to be of *High* (i.e. national) importance for this species. It was assumed in the evaluation that the formerly occupied breeding territory that is adjacent to the proposed wind farm site may be reoccupied in the future. Consequently, the Dorenell wind farm would be within, or partly within, a single breeding pair's range. The Scottish golden eagle population, according to the latest available estimates, is 442 pairs (based on a RSPB co-ordinated survey in 2003). One pair equates to 0.23% of the Scottish population (which is essentially the same as the British or 'national population'). Following the methodology summarised in Table 10.3 of the ES, the site can not be considered of *High* value for this species. It is also arguable that it is of *Medium* value for breeding golden eagle, as currently the proposed wind

farm site is not within an occupied breeding territory (one which has remained unoccupied for over 10 years). Therefore, is it considered the case that an evaluation of *Medium* is a conservative evaluation, in that it takes into consideration the potential importance of the wind farm site should a pair of golden eagles return to breed in the wider area. Consequently, on balance, a *Medium* level of importance is considered to be appropriate for this site.

67. Considering solely the importance of the site for non-breeding golden eagles the wind farm area can not be considered significant at a national scale based on relative scales (i.e. the site would be well below 1% of potentially available habitat, outside of occupied breeding ranges, in Scotland). It is also important to note that should this territory be reoccupied, irrespective of the wind farm proposal, it would also result in the natural displacement of non-breeding birds, as territorial breeders will actively discourage other golden eagles from hunting within their range.

68. It has also been commented that the assessment has under-estimated the importance of the site for golden eagles as the presence of surveyors within the site will have discouraged the birds from flying within it. As discussed above, the field survey methods adopted for the baseline study are consistent with current SNH guidance for on-shore wind farm assessment[6]. The issue of 'observer effect' (i.e. the presence of an observer influencing in some way the data being collected) is a generic issue for all ecological surveys and applies to all wind farm EIA studies. It is not unique to this case. Measures to help reduce the influence of this bias factor were taken in the field surveys. These measures form part of general good practice and field skills. For example, surveyors were instructed to take notes of any target bird species that appeared to react to their presence and alter their flight direction or height. Also, the exact vantage point location, for the flight activity surveys, was selected to avoid positions where the surveyors would be visually prominent (e.g. avoiding exposed hill tops) and also to avoid wearing brightly coloured clothing. Furthermore, there was some overlap in visibility of vantage point locations such that the area where a surveyor would be located was covered from adjacent vantage point locations when the surveyor was not present. Finally, all of the surveyors have a lifetime interest in birds (and particularly birds of prey) and aim to maximise the chances of observing species such as golden eagle during a survey.

Merlin

69. The survey area in 2008 was found to support up to five pairs of breeding merlin. However, the territory centres of four pairs are more than 1km from the nearest proposed wind turbine (see Table 3.7 of the SEI). Based on the assessment of minimal habitat loss within the likely core territories, the number affected and the anticipated displacement effects (which are not anticipated to be particularly high as there is an absence of evidence of displacement of merlin from studies of operational wind farms) the impact on this population was not determined to be significant.

Conclusion

70. Having reviewed and carefully considered all of the information in ES, and subsequent studies, I am satisfied that these provide a complete and accurate assessment of the impacts of the proposed wind farm on all the important ornithological receptors. Assuming all of the proposed mitigation measures are properly implemented, then no significant residual impacts on ornithological interests are predicted from the construction or operation of the Dorenell wind farm scheme. I have also considered the issues raised by objecting parties and provided comments and justification as to why these issues do not materially affect the conclusions reached within the various impact assessments.

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[1] Dorenell Wind Farm Environmental Statement, Infinergy, May 2008.
[2] Dorenell Wind Farm Supplementary Environmental Information, Infinergy, July 2010.
[3] Handbook on EIA: Guidance for Competent Authorities, Consultees and others involved in the EIA process in Scotland, SNH, 2005
[4] Institute for Ecology and Environmental Management: Guidelines for Ecological Impact Assessment in the UK, 2006.
[5] Lucas, M. de, Guyonne, F.E. & Ferrer, M (2007) Birds and Wind Farms - risk Assessment and Mitigation. Quercus, Madrid.
[6] SNH: Survey methods for use in assessing the impacts of onshore wind farms on bird communities, 2005
[7] Whitfield, D. P., Fielding, A. H., McLeod, D. R. A., Haworth, P. F. and Watson, J. 2006. A conservation framework for the golden eagle in Scotland: refining condition targets and assessment of constraint influences. Biological Conservation, 130(4): 465-480.

Appendix I - Further Details of Qualifications and Experience

Over the past 10 years, as a full-time professional ecologist, my work has focused on the application of the principles of ecology and wildlife biology to the assessment of the impacts of development and their mitigation. I have completed impact assessments and developed ecological mitigation for a wide range of projects in the UK including renewable energy schemes, power line projects, transport infrastructure, residential housing and industrial / retail development. I have completed ornithological / ecological impact assessments for 10 onshore wind farm proposals in Scotland and England in the past 6 years. To date, none of these proposals has been refused planning consent on the basis of unacceptable ecological or ornithological impact. I have also undertaken independent audits of draft EcIAs of proposed trunk road projects for Transport Scotland, as part of a term commission to the Scottish Government.

In addition to work related primarily to the planning of individual development projects for the public and private sector, I have also completed research projects on the interaction between birds and overhead power lines. I have continued to develop practical experience in the completion of a wide range of ecological field surveys, primarily to inform the assessment of proposed development impact on bird and bat populations and terrestrial habitats. In this regard I have also completed numerous ecological survey reports, impact assessments, mitigation strategies and construction method statements. I have also contributed to the development of Biodiversity Action Plans for the Scottish Trunk Road and Rail networks.

I have a good understanding of what is considered current best practice in relation to ecological survey methods and the assessment of the impacts of different types of development on animal populations and habitats.

Through my training in environmental science, and through my experience as a practising ecological consultant, I am also familiar with a wide range of domestic and European wildlife conservation and development planning legislation and policy.

The following provides a summary of the types of projects that I have recently been directly involved in and which are broadly relevant to the issues that I will be covering at the hearing session for the Dorenell wind farm inquiry:

Expert witness on ornithological issues for the Applicants for the Public Inquiry into the proposed Beauly to Denny 400kV Overhead Electricity Transmission line, which involved giving evidence at a strategic Inquiry session and four separate local inquiry sessions.

Expert witness on ornithological/ecological issues for the Applicants for the Public Inquiry of the proposed Blackcraig Hill wind farm in Dumfries and Galloway.

EcIAs for proposed onshore wind farms in East Ayrshire/ Dumfries and Galloway, Northumbria, Scottish Borders and North Ayrshire. These projects involved a wide range of detailed ornithological field surveys (including wintering, breeding and passage period flight activity surveys, breeding bird surveys and additional species

specific surveys) to inform the evaluation of the sensitivity of the affected populations, the assessment of impacts and development of mitigation measures.

Routeing Studies and EIAs for overhead power line proposals in Highland, Argyll, South Ayrshire and Dumfries and Galloway. These projects involved the completion of desk studies and field surveys to assess the distribution, habitat use and flight activity of wintering, breeding and migrating birds to inform the route selection and assessment of the impact of the proposals and other mitigation measures where required.

EcIAs for various small-scale hydroelectric schemes in Perth and Kinross Council and Highland Council regions. Breeding bird surveys following appropriate standard methodologies were undertaken to inform the required impact assessments and mitigation strategies developed to address any potentially significant impacts on birds.

EcIAs for trunk road development projects in Central Scotland and Aberdeenshire. Breeding bird surveys were completed to inform the assessment of potential impacts of various trunk road proposals.

Assessments for residential housing development proposals in Central Scotland. Breeding bird surveys, following standard methods, were undertaken for several proposed housing development sites in order to inform assessments of potential impacts and to identify and develop mitigation measures in relation to scheme design, construction approach and habitat enhancement.

Appendix II - List of Documents Referred to in the Hearing Statement

1. Dorenell Wind Farm Environmental Statement, Infinergy, May 2008.

2. Dorenell Wind Farm Supplementary Environmental Information, Infinergy, July 2010.

3. Handbook on EIA: Guidance for Competent Authorities, Consultees and others involved in the EIA process in Scotland, SNH, 2005

4. Institute for Ecology and Environmental Management: Guidelines for Ecological Impact Assessment in the UK, 2006.

5. Lucas, M. de, Guyonne, F.E. & Ferrer, M (2007) Birds and Wind Farms - risk Assessment and Mitigation. Quercus, Madrid.

6. Survey methods for use in assessing the impacts of onshore wind farms on bird communities, SNH 2005.

7. Whitfield, D. P., Fielding, A. H., McLeod, D. R. A., Haworth, P. F. and Watson, J. 2006. A conservation framework for the golden eagle in Scotland: refining condition targets and assessment of constraint influences. Biological Conservation, 130(4): 465-480.

The following legislation and national policy documents are broadly relevant to the assessment of this proposal on ornithological interests and have been considered in the planning and preparation of the ES, chapter 3 of the SEI document and in the preparation of this hearing statement:

1. The Electricity Act 1989;

2. Town and Country Planning (Scotland) Act 1997;

3. The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000;

4. The Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention) 1979;

5. The Convention on Migratory Species of Wild Animals (the Bonn Convention) 1979;

6. Council Directive 79/409/ECC on the conservation of wild birds (the Birds Directive);

7. The Wildlife and Countryside Act 1981 (as amended);

8. The Nature Conservation (Scotland) Act 2004;

9. The Conservation (Natural Habitats, &c.) Regulations 1994 (the Habitats Regulations) as amended;

10. The Conservation (Natural Habitats, &c.) (Amendment) Regulations 2007;

11. Relevant National and Local Biodiversity Priority Species Action Plan objectives (UKBAPs/LBAPs);

12. Scottish Biodiversity Strategy;

13. Scottish Natural Heritage Species Action Framework;

14. Relevant nature conservation polices from the Morayshire Local Plan;

15. Scottish Planning Policy (February 2010);

16. Planning Advice Note 45: Renewable Energy Technologies (Scottish Executive, revised 2002); and

17. Planning Advice Note 58: Environmental Impact Assessment (Scottish Executive).

Appendix III - Further Background Information on Relevant Policy and Legislation

International Conventions and Directives

The principal aims of the Bern Convention are to ensure conservation and protection of all wild plant and animal species and their natural habitats (listed in Appendices I and II of the Convention), to increase cooperation between contracting parties, and to afford special protection to the most vulnerable or threatened species (including migratory species). To implement the Bern Convention in Europe, the European Community adopted the EC Birds Directive in 1979, and the EC Habitats Directive in 1992. The Convention was implemented in UK law by the Wildlife and Countryside Act 1981. As the principal source of the EC Birds and Habitats Directives, the Convention also had an influence on the Conservation (Natural Habitats &c.) Regulations 1994.

Contracting Parties to the Bonn Convention work together to conserve migratory species and their habitats by providing strict protection for endangered migratory species (listed in Appendix 1 of the Convention), concluding multilateral agreements for the conservation and management of migratory species which require or would benefit from international cooperation (listed in Appendix 2), and by undertaking co-operative research activities. The European Community is party to the Bonn Convention. The UK ratified the Convention in 1985. The legal requirement for the strict protection of Appendix I species is provided by the Wildlife and Countryside Act 1981.

The Biodiversity Convention, as the first treaty to provide a legal framework for biodiversity conservation. Contracting Parties are required to create and enforce national strategies and action plans to conserve, protect and enhance biological diversity. The UK ratified the Convention in June 1994. In 1994 the Government also launched the UK Biodiversity Action Plan (UK BAP), a national strategy that identified broad activities for conservation work over the next 20 years, and established fundamental principles for future biodiversity conservation. Subsequently, Biodiversity Action Plans (BAPs) to conserve 391 species and 45 habitats were published. Local Biodiversity Action Plans (LBAPs) have also been identified as important in the implementation of the strategy. A complete review of the UK BAP species and habitats was published in August 2007. This brought the number of priority species up to 1150, and priority habitats to 65. To compliment the UK BAP, a separate biodiversity strategy for Scotland was produced and this has been developed since 2004. Although there is now a statutory duty for public office holders/public bodies to conserve biodiversity, the UKBAP does not add any additional statutory protection for specific habitats and species. However, priority species and habitats identified within BAPs are a material consideration in the planning management process.

Council Directive 79/409/EEC on the conservation of wild birds (i.e. the 'Birds Directive') was adopted in response to the 1979 Bern Convention on the conservation of European habitats and species, which in turn was a response to the alarming declines in many populations of wild birds within Europe in the 1960's and 70's. Under the Birds Directive it is the duty of signatory States, amongst other requirements, to ensure the maintenance of the favourable conservation status of all

wild bird species across their distributional range (i.e. Article 2) and to identify and classify Special Protection Areas (SPAs) for species listed in Annex I of the Directive (as well as for all regularly occurring migratory species) paying particular attention to the protection of wetlands of international importance (i.e. Article 4). A codified version of the Birds Directive was ratified in 2009, consolidating amendments to the original 1979 directive (Directive 2009/147/EC).

Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora (i.e. the 'Habitats Directive') was adopted by European Community Member States in 1992. The Habitats Directive stems from obligations committed to by the European Community as a signatory of the Bern Convention. Both the Bird and Habitats Directives have been subsequently amended including through the Environment Chapter of the Treaty of Accession in 2003. Under the Habitats Directive it is the responsibility of Member States to ensure that appropriate steps are taken to avoid deterioration of habitats, and habitats of species, and significant disturbance of species within Special Areas of Conservation (SACs). As part of the process for ensuring compliance with the Directive new plans and projects require to be assessed "in view of the site's conservation objectives" (i.e. Article 6.3). A plan or project can only be permitted if it does not adversely affect the integrity of the site.

In Scotland these European directives are implemented through the Wildlife and Countryside Act 1981 and the Habitats Regulations.

National Legislation

The WCA includes varying levels of protection for certain wildlife (birds, animals and plants), the countryside, and the designation of protected areas. This legislation has been repeatedly amended and updated since 1981, including a statutory five yearly review of protected animal and plant species. In addition, the WCA has been supplemented by the Nature Conservation (Scotland) Act 2004.

The Nature Conservation (Scotland) Act 2004 came into force in November 2004. The Act aims to strengthen the protection of threatened species in Scotland by introducing amendments to the Wildlife and Countryside Act 1981. The Act places duties on public bodies in relation to the conservation of biodiversity, increases protection for Sites of Special Scientific Interest (SSSI), amends legislation on Nature Conservation Orders, provides for Land Management Orders for SSSIs and associated land and strengthens wildlife enforcement legislation.

The Habitats Directive is transposed into the UK statute through the Conservation (Natural Habitats, &c.) Regulations 1994 (i.e. the 'Habitats Regulations'. Like the Directive, the Habitats Regulations are complex and wide ranging. The Habitats Regulations enable Scottish Natural Heritage (SNH) to enter into various agreements to protect European sites (i.e. the Natura network of SACs and SPAs) and control potentially damaging operations. They also require competent authorities, before granting consent to any plan or project that may have a significant effect on a European site, to ensure that there would be no adverse effect on the integrity of that site.