1.0 **Objection is lodged that the proposal will have significant adverse impacts on the conservation interests of this Natura 2000/Ramsar site. Objection is lodged that alternative locations exist for the installation of 702 MW of electricity generating equipment.**

1.1 The deficiencies and defects of the environmental assessment notwithstanding, the developer acknowledges that the proposal will have significant adverse impacts on the Lewis Peatlands. These include significant impacts on all the species for which the SPA is designated[1]:

> *"…key residual impacts on the basis of current information … displacement and potential loss of the breeding pair of golden eagles at the location D … loss through direct habitat loss and displacement of a significant proportion of the territories of golden plover, dunlin and greenshank from the Lewis Peatlands SPA … displacement of five pairs of merlin … displacement and potential loss of sub-adult/immature golden eagles … loss of up four red-throated divers every five years … collisions of black-throated diver … loss of up to two golden eagles annually to collisions with the wind turbines … collisions of merlin with the wind turbines … collisions of several hundred golden plover and smaller numbers of greenshank…"*

1.2 Consequently this application may only be permitted as a derogation from the Habitats Directive under the provisions of Article 6(4).

1.3 The conditions for derogatory consent provided by Article 6(4) are conjunct: absence of alternative solutions *AND* imperative reasons *AND* compensatory measures.

1.4 In order to derogate it would therefore be necessary to demonstrate that *all* of the conditions provided by the Habitats Directive are true; or, conversely, to disqualify derogatory consent it is sufficient to demonstrate that at least one of the conditions is false.

1.5 If alternative locations exist, the condition for absence of alternative solutions is false.

[1] AMEC/British Energy, Lewis Peatlands Wind Farm Written Statement, Chapter 12, Paragraph 305

1.6 In order to demonstrate that alternative locations exist, I refer to the Scottish Executive's list of Section 36 renewable energy consents[2]. This list indicates that, not including this proposal, the Scottish Executive has:

- Granted development consent for 7 wind power projects of 659.6 MW total installed capacity;
- Received 18 applications for wind power projects of 1997.5 MW total installed capacity;
- Scoped 29 proposals for wind power projects of 3949.9 MW total installed capacity.

1.7 It is further noted that the First Minister has announced that consent has already been granted for projects sufficient to satisfy the Scottish renewable energy target of 18% by 2010[3].

1.8 Therefore it is evident that there is a surfeit of alternative wind power sites in Scotland for the short to medium term, and it is unnecessary to examine the consents, applications, and scoping opinions of the Scottish Local Authorities (or indeed the wind power consents, applications, and scoping opinions elsewhere in the United Kingdom, offshore wind power sites, or alternative technology solutions).

1.9 It is disappointing that the developer has restricted its search for alternative sites to the Western Isles when the integrity of a site of Community Importance is in jeopardy. The aim of this proposal is to generate electricity for transmission and consumption outside the Western Isles and, since wind is the primary resource to be exploited and not restricted to the Western Isles, there is no reason to exclude sites outside the immediate locality.

[2] Consents and Emergency Planning Unit, Section 36 Renewable Energy Consents List, 6 October 2004 www.scotland.gov.uk/about/ELLD/EN-CS/00017058/page768014426.aspx

[3] Scottish Executive Press Release, *Scotland on target over renewable energy*, 18 November 2004, www.scotland.gov.uk/News/Releases/2004/11/18141058

1.10 Precedent for considering non-local alternatives is well established in proposals involving damage to sites of Community Importance. For example[4]:

> *"The Secretary of State notes, however, that the consideration of alternatives for projects which would have a significant impact upon a site designated in accordance with the Habitats Regulations must necessarily range more widely. The Secretary of State agrees with the Inspector's conclusion that the Applicant's proposal would have a significant effect upon the integrity of designated sites. It follows that consideration of alternatives must concern alternative ways of avoiding impacts on the designated sites. The Secretary of State considers that such alternatives would not be confined to alternative local sites for the project. He draws attention to the European Commission's methodological guidance on the Assessment of Plans and Projects significantly affecting Natura 2000 sites, which interprets article 6 (4) of the Habitats Directive. The guidance states that a competent authority should not limit consideration of alternative solutions to those suggested by a project's proponents and that alternative solutions could be located even in different regions or countries."*

1.11 It is requested that the Scottish Ministers reject this application and advise the developer to investigate alternative solutions to generating electricity that do not damage the integrity of the Natura 2000/RAMSAR network. It is also requested that Ministers expedite rejection of this impractical proposal in order to limit further unnecessary time and money being expended by the developer, the authorities, and the public.

[4] Department of Transport, Dibden Bay Decision Letter, P/89/24/59 20 April 2004
www.dft.gov.uk/stellent/groups/dft_shipping/documents/page/dft_shipping_028330.hcsp

2.0 **Objection is lodged that the proposal will have significant adverse impacts on a Natura 2000/Ramsar site hosting Priority Habitat of Community Concern. Objection is lodged that there is no appropriate assessment of the hydrological impacts of the proposal.**

2.1 This proposal is likely to have significant adverse impact on sites hosting priority habitat of Community Concern. The designations in question are:

- The Lewis Peatlands SPA, which hosts the Lewis Peatlands SAC designated for active blanket peat;
- The Lewis Peatlands SAC, designated, inter alia, for active blanket peat;
- The Lewis Peatlands RAMSAR Wetland of International Significant, which is designated under Criterion 1 of the RAMSAR Convention for the conservation of active blanket peat.

2.2 The proposal is for some 234 turbines and associated infrastructure on blanket peat.

2.3 In particular, the road and drain network is of an extended branching design which penetrates an area of some 11,800 ha of blanket peat (area assessed using a nominal 500m buffer around roads and turbines), or approximately 20% of this SPA/RAMSAR Wetland of International Importance.

2.4 The extended nature of the drainage system and its ad hoc interconnection of different mesotypes of the Lewis Peatlands biotope will have a highly significant impact on the hydrology of the wetland as a hydrological unit.

2.5 Apart from the extensive damage to the hydrology of the SPA/RAMSAR site outwith the SAC, thirty-one turbines and their drainage infrastructure penetrate to within 100m of the SAC boundary; forty-three turbines are within 300m; and sixty-four turbines and their drains are within 500m.

2.6 These drains are connected at various points along approximately 60 km of the SAC perimeter. These proposed drainage branches are sometimes above, sometimes below the SAC, and cut across a large number of different mesotype ecosystems in a more or less random fashion. They have the potential to intercept or discharge flow into the SAC, with the potential to discharge sediment and other pollution into it, and it is disappointing that the developer has not assessed this risk.

2.7 It is not sufficient to say that the drainage system will be designed to SUDS standards at some unspecified point in the future. SUDS is not a competent methodology for assessing and mitigating impact on peatland hydrology; it is essentially a method of gauging drain size. The developer appears to view appropriate assessment as an abstract exercise divorced from design, rather than as a means to inform design.

2.8 The developer shows little understanding of peatland hydrology and its general approach is to treat peatland as a homogenous hydrological system approximated as another variety of mineral soil. Its assertion that there will be no hydrological damage beyond 2m of any cut face is simply false, as any examination of the literature – or indeed any blanket peat damaged by drainage - will show. The impact of a drainage network will depend on its location in relation to the hydrological properties of each mesotype, for example whether is cutting across a large number of peat pipes, or whether it is diverting or enhancing flow to any hydrologically connected mesotypes.

2.9 The developer has made no effort to analyse the hydrological impact of its proposed drainage system on the peatland mesotypes of the SPA and SAC. It is not sufficient to list the already well-documented catchments draining the Lewis Peatlands and then remark that particular catchment types likely correspond to different mesotype classifications. The individual mesotypes must be identified and their hydrological properties and interconnections assessed before the impact of the proposed drainage system can be judged.

2.10 It is also not sufficient to make two measurements of draw down at untypical sites and then extrapolate these results to every peat type and mesotype in the Lewis Peatlands. That is not appropriate assessment. The wide variety of peat types recovered in the peat survey and the extensive nature of the proposal indicates that a very large number of tests will be necessary to understand the hydrological properties of the Lewis Peatlands. Further, it is not acceptable for the developer to cherry pick those results from the literature that are most flattering to its purpose and assert that these are applicable to the Lewis Peatlands: the large variation reported in draw down is a feature of the great variety in peatland hydrology, and further evidence that site-specific assessment is required to understand peatland hydrology.

2.11 The developer's peat depth sampling methods are scientifically flawed. There is no reason why peat should not be deeper than 5.3m in the Lewis Peatlands, and the practice of stopping when resistance is felt is an unreliable method in peat known to contain bog wood, etc. Appropriate assessment requires the use of best scientific practice, and expedience is not appropriate when there is potential damage to a site of Community Importance. It is requested that the developer be advised to re-measure peat-depth using suitable equipment.

2.12 Further, the developer proposes to connect the 11,800 ha of hyrologically damaged peatland into the catchments draining the Lewis Peatlands SPA SAC RAMSAR. There is no assessment of the modification of flow in these river systems and its potential to impact on the flora and fauna (nor indeed any assessment of the potential for increased flooding in settlements on the lower reaches of these rivers, contrary to PAN 69). Moreover, without any realistic assessment of the flow rate issuing from the drainage system, the developer's speculation regarding sedimentation risk and other pollution in these rivers has little credibility. These rivers connect the Lewis Peatlands SPA SAC RAMSAR to the sea and serve an important function for migratory species such as the Atlantic salmon, and the likely impact on these rivers requires appropriate assessment.

2.13 The developer's survey of habitat types is more thorough, but its conclusions regarding impact on habitats have little credibility when the hydrological impacts remain unassessed. It is normal scientific practice for conclusions to be predicated on evidence, and I would be happy to comment further on the potential for impacts on habitats when sufficient information is available to make a judgment.

2.14 The developer's proposal, described as mitigation, to dump large quantities of waste peat slurry on the Lewis Peatlands SPA RAMSAR is of considerable concern. Peat slurry is unlikely to stabilise and re-establish productive habitats: indeed it is likely to exacerbate the impact of the development by providing a continuous source of sedimentation to watercourses, and increase erosion by damaging existing habitats. It is requested that the developer be advised to examine alternative solutions for the waste streams arising from the development.

2.15 Therefore, in the absence of any appropriate assessment of the impact of the proposed drainage system on hydrology of the SPA, SAC, and RAMSAR, and particularly in view of the likely significant effects on the SAC due to the extensive nature and close proximity of the drainage system to it, precautionary objection is lodged that the proposal will have a significant adverse impact on the hydrology of the Lewis Peatlands SPA, SAC, and RAMSAR, with significant adverse consequences for their conservation interests. If or when an appropriate assessment is available, this objection will be substantiated or withdrawn.

2.16 As a further important point, I notice that there are no peat depth maps in the public version of the developer's written statement in Stornoway Library, and the public has not had an opportunity to comment on them. I also object that the raw field notes, probe logs, historical peat depth records and photographs are kept private from the public[5]. These are necessary for this assessment, as the developer clearly acknowledges, or it would not have submitted them in a private annex. I can see no reason for this, and request that the public be consulted on all the relevant environmental information, including the private peat annex.

[5] the private peat annex is referred to in Appendix 10B.1.2

3.0 **Objection is lodged that the proposal will have a significant adverse impact on birds, including the conservation interests of the Lewis Peatlands SPA/RAMSAR. Objection is lodged that there is no appropriate assessment of the impact on birds.**

3.1 The poor quality of the developer's assessment notwithstanding, it is clear that this proposal will have a severe adverse impact on birds. The developer acknowledges as much, although it is also important to notice that the developer systematically under-estimates and under-states these impacts.

3.2 The bird assessment is of poor quality and is very obviously premature. It is disappointing that the developer has put its race for planning permission with Beinn Mhor Power before appropriate assessment of impacts on this site of Community Importance.

3.3 In C-127/02, the European Court of Justice ruled that appropriate assessment means[6]:

> *"Under Article 6(3) of Directive 92/43, an appropriate assessment of the implications for the site concerned of the plan or project implies that, prior to its approval, all the aspects of the plan or project which can, by themselves or in combination with other plans or projects, affect the site's conservation objectives must be identified in the light of the best scientific knowledge in the field. The competent national authorities, taking account of the appropriate assessment of the implications of mechanical cockle fishing for the site concerned in the light of the site's conservation objectives, are to authorise such an activity only if they have made certain that it will not adversely affect the integrity of that site. That is the case where no reasonable scientific doubt remains as to the absence of such effects."*

3.4 The developer's method and assessment is so far removed from the 'best scientific knowledge in the field' that there is little advantage in commenting in detail at this stage. I will therefore confine my comments to areas where the assessment is grossly deficient or defective, but will be happy to comment in detail when all the baseline ornithological information is submitted.

[6] Judgment in C-127/02 *Waddenzee*, 7 September 2004, Fourth Ruling.

3.5 The selection of survey area is defective. There is no scientific basis for the developer's choice of 'core area', or of its exclusion of the Lewis Peatlands SAC from the bird survey. The SAC is an integral part of the SPA/RAMSAR and I have already remarked that there are large number of turbines in close proximity to it. The developer surveys the area outwith the SAC boundary to a distance greater than that of the SAC boundary to the majority, if not all, of the turbines. It is requested that the developer be advised to collect further bird survey data in the SAC necessary for the appropriate assessment of the impact on the conservation interests of the SPA/SAC/RAMSAR.

3.6 The developer misrepresents the data it has collected, asserting that it has considered impact on all birds within 300m of each turbine, when many turbines are within 300m of the SAC and the bird population in the SAC part of the SPA/RAMSAR has not been assessed.

3.7 The period of survey is inadequate. The developer describes it as a two-year survey, but in reality each half of the site is surveyed in successive years, ie it is a one-year survey. One year is the minimum duration recommended by SNH in its guidelines and, in view of the fact that this is a site of Community Importance, it is disappointing that the developer should contribute the minimum possible assessment effort. For example it is not known how much of the difference observed between the bird populations on the Stornoway Trust/Galson Estates and the Barvas Estate is due to year-on-year variation. It is therefore requested that the developer be advised to repeat the bird survey work for at least a further year, in order to avoid potential restricted sample bias in the assessment, and to identify any trends.

3.8 There is no control survey data reported in the assessment. The developer makes frequent statements that it subscribes to BACI assessment methodology with a view to long term monitoring, but this has little credibility when there is no control site and no control survey data in evidence. There is little point in running a control survey asynchronously with the site surveys, as year-on-year variations are likely to confound any comparisons. A major reason for the uncertainty in wind power impacts is the widespread practice of unscientific assessment. In view of the fact that this is a site of Community Importance, it is requested that the developer be advised to identify a control site and collect data on it contemporaneously with its survey of the development site.

3.9 The developer defines what it describes as ‘sensitive bird areas’ and asserts that it avoids them. It does not avoid them, and in any event its definition of sensitive bird area has no scientific basis. For example, it says that it uses a 3 km exclusion zone around golden eagle nests, but also states that the evidence it has collected shows that range use is asymmetric. For the conservation interests of the SPA/SAC/RAMSAR, constraints should be based on site-specific conditions determined by observation rather than on any theoretical assumption. It is requested that the developer be advised to indicate the scientific reasons for the various choices of ‘exclusion zone’ around particular ornithological interests. Further, it is requested that were a bird constraint can be rationally defined, the developer be advised to observe that constraint in its design – for instance, there are turbines within 600m of a golden eagle nest in the range already scheduled for damage by the Pentland Road Wind Farm.

3.10 In particular, the developer asserts that, because Golden Plover and Dunlin occupancy of the SPA/SAC/RAMSAR is dispersed, no ‘useful’ constraint can be identified to define sensitive areas for these species. Dispersion is a fundamental characteristic of Golden Plover and Dunlin colonies and it is upon ornithological criteria such as this that the Lewis Peatlands qualifies as a Natura 2000 site. The Golden Plover density in the Lewis Peatlands measured by the developer is 4.5 pairs km^{-2} on the Stornoway Trust/Galson Estates, and 7 pairs km^{-2} on the Barvas Estate, dispersed according to habitat capacity and the habit of these species. The greater part of the area considered by the developer is likely to be constrained by Golden Plover and Dunlin sensitive areas – it is, after all, an SPA/RAMSAR. Any definition of Golden Plover and Dunlin constraints should be based on scientific ornithological criteria such as density and dispersion coefficients and not on the developer’s convenience. It is requested that the developer be advised to take account of the findings concerning to Golden Plover and Dunlin when developing its design, and provide a rational basis for its assessment of impact and its mitigation proposals.

3.11 There is no appropriate assessment of the blade strike risk to Golden Plover, Dunlin, or Greenshank. Speculation concerning the blade strike risk to these species is not appropriate assessment. The developer asserts that it did not collect site-specific flight data for these species because there were too many flights for convenience. High levels of flight activity are likely to correlate with blade strike impact and it is requested that the developer be advised to collect flight information on Golden Plover, Dunlin, and Greenshank, so that the impact of the proposal on the conservation interest of the SPA/SAC/RAMSAR may be appropriately assessed.

3.12 There is no appropriate assessment of the blade strike risk to Corncrake, Whooper Swan, Geese species, or any other migratory birds known to use the SPA/SAC/RAMSAR in large numbers. The developer asserts that this site is not important for migratory Whooper Swan on the basis that not more than one sixth of the Icelandic population use it, a statement that is clearly irrational. Further, the developer's contention that there is no practical method of discriminating migratory birds using radar is false. Radar is routinely used for the assessment of diurnal and nocturnal migrants at wind farm sites in the United States, including species discrimination. The technique is also widely used for bats. In any event, information of flight frequency and flight paths of all migratory birds is an important consideration when mitigating potential damage to an SPA/SAC/RAMSAR site by careful and informed design. This site is a very important staging post for migratory species and it is requested that the developer be advised to refer to the extensive literature[7] on bird survey using radar, and conduct an appropriate radar assessment on migratory birds and nocturnal flight activity by Golden Plover.

3.13 There is no appropriate assessment of the cumulative impact of this proposal with other plans and projects. The developer asserts that it has based its conclusions of cumulative impact with the Pentland Road development on the Pentland Road assessment, but that document is not an appropriate assessment. The Pentland Road assessment was based on a theoretical model of golden eagle range use rather than site-specific data, and its assumptions concerning blade strike avoidance are demonstrably flawed. The Pentland Road assessment does not meet the 'best available scientific methods' necessary when sites of Community Importance are at risk. Further, in the case of cumulative assessment with the Arnish Wind Farm, the private annex said to have

[7] See, for example, the Chautauqa Wind Farm Environmental Statement and references therein; or the ectensive proceedings of the National Wind Coordinating Committee; or the extensive publications database of the National Renewable Energy Laboratory.

contained an assessment of Annex I birds apparently has no information on birds in it. Moreover, this proposal, in combination with the Eisgen wind farm project, is likely to have a significant effect on the golden eagle population of Lewis, and yet there is no cumulative assessment of these projects by the developer. The golden eagle population of Lewis/Harris cannot be divorced from those of the Lewis Peatlands and the North Harris Mountains SPA, and therefore these projects to be assessed cumulatively – and not least because both these projects were concurrently in EIA scoping. In addition, the developer has not even performed cumulative assessment of its own transmission system project which serves its Lewis Peatlands proposal. In this respect the Habitats Directive is quite clear, all direct and indirect effects must be assessed in an appropriate assessment. The transmission system is a direct effect of this project.

3.14 It is disappointing that this developer has repeated its mistakes of the Edinbane Wind Farm, in which it was involved in a similar race for planning permission in order to avoid cumulative assessment, and also submitted a premature application rather than perform environmental assessment. Community Law does not provide for a race for planning permission at the expense of environmental assessment, particularly where sites of Community Importance are concerned. It is requested that the developer be advised to collect sufficient environmental information in order to assess the cumulative impact of its proposal together with the Pentland Road and Arnish projects, and to perform cumulative assessment on resident and migratory birds in combination with the Eisgen project, and in combination with its own transmission infrastructure project.

3.15 There is no detailed flight information contained in this assessment. SNH’s guidelines clearly state that information should only be withheld where there are rational grounds for doing so. Predicted blade strike risk is strongly dependent on the choice of area used to normalise utilisation rate: including large areas with no observed flight activity dilutes the utilisation rate and can substantially reduce the predicted risk. Where the flight activity is preferentially concentrated in areas with turbines, this widespread practice leads to a systematic and artificial reduction in predicted blade strike risk. It is noted that this developer is using unusually large areas (out to 5km from vantage point), but without reference to the detailed flight data it is not possible to say whether these areas have any scientific relevance to utilisation rate in the turbine risk zone.

3.16 During its Edinbane project consent proceedings, AMEC kept important golden eagle flight information relevant to impact on the Cuillins SPA private and secret from SNH and from the public. It is disappointing that the same developer is likewise withholding significant environmental information from the public in this application, particularly as this proposal also involves the likelihood of adverse impact on a site of Community Importance. In the Edinbane case, belated disclosure of the flight information has revealed a situation substantially different from AMEC's public statements. In the interests of appropriate assessment, transparency, and public confidence, it is requested that the developer be advised to refer to SNH's guidelines on the assessment of wind farm impacts on birds, section 9, and publish all non-sensitive flight data that it has gathered during its assessment.

3.17 There is no assessment of the prey resource for golden eagles. The proposal may impact significantly on golden eagle prey and therefore on golden eagles. It is requested that the developer be advised to conduct a survey of golden eagle prey and assess the potential impact of the proposal on it.

3.18 There is no assessment of the prey resource for merlin. The developer excuses itself from assessment of impact on passerines, but these provide the bulk of merlin diet, and passerines are known to be the most frequent blade strike casualties at wind farms. It is requested that the developer be advised to conduct a survey of merlin prey and assess the impact of the proposal on it.

3.19 The developer makes frequent reference to large uncertainties in its predictions of impact and proposes, as a solution, in situ experimental monitoring of the impact of the development on the conservation interests of the SPA/SAC/RAMSAR. The developer describes this as mitigation. Monitoring is not mitigation. These uncertainties arise in large part from an absence of adequate site-specific information and in situ experimentation is not necessary when appropriate assessment is conducted. Article 6(3) of the Habitats Directive provides that development may only be permitted when it is certain that there will be no adverse effects on the conservation interests of Natura 2000 sites, and it thereby explicitly excludes speculative experimentation on sites of Community Importance. Moreover, it is an established principle of Community Law that the object of environmental assessment is to mitigate and if possible avoid adverse impacts at source. It is not consistent with Community Law to embark on a project likely to damage a site of Community Importance with a view to securing derogatory consent

absent appropriate assessment. Advocate General Kokott said[8]:

> *"… the decisive considerations must be set out in the authorisation. They may be reviewed at least in so far as the authorising authorities' margin of discretion is exceeded. This would appear to be the case in particular where the findings of an appropriate assessment on possible adverse effects are contested without cogent factual arguments."*

It is requested that the developer be advised to refer to Article 6(3) of the Habitats Directive, and identify practical measures for reducing the uncertainty in the potential impacts of this proposal to the level of no reasonable scientific doubt.

3.20 The developer makes frequent reference to anecdote and private studies at wind farms elsewhere in the United Kingdom. Anecdote is not a substitute for scientific evidence. For example, because one bird is observed within 100m of a turbine does not inform the reader whether there were regularly one hundred birds there before construction. Moreover, members of the public approaching wind farm developers are regularly being refused access to their private studies, and are thereby prevented from any opportunity to scrutinise the scientific credibility of their conclusions. Again, in support of its conclusions the developer refers to a private study of Golden Plover at Ovendon Moor, but does not mention that the study in question is of just ten pairs of birds at a density one third that of the Barvas Estate, nor that the Golden Plover population at Ovendon Moor is over-dispersed in the wind farm area. Further, even where there is published material, the developer misrepresents it: the reader is referred to Meek et al. 1993 for ostensible assurance that merlin coexist with wind turbines, only to find one peregrine blade strike and no information whatsoever concerning merlin. The fundamental problem with this assessment is its lack of site-specific data, and without it the developer's speculative conclusions will not be carried by the arbitrary use of anecdote, private report, or makeweight reference to the literature. It is requested that the developer be advised to check its references for integrity and relevance, refrain from burdening the reader with irrelevant anecdote, and where it intends to rely on private studies include these as annexes to its written statement, so that this assessment may proceed on the basis of informed and open scientific debate.

[8] Opinion of Advocate General Kokott in C-127/02 *Waddenzee*, 29 January 2004, paragraph 109

3.21 The developer's assessment of golden eagle blade strike is also of concern. Although a definitive conclusion can only be drawn in the light of the flight data, the developer's prediction of blade strike risk to golden eagle is highly likely to underestimated. The developer asserts that avoidance of blade strike by this species is 'most likely' to lie between 99% and 99.9%, and this is accompanied by speculative statements such as golden eagles have 'acute eyesight' and are 'agile birds'. Rates of golden eagle avoidance of this order are commonly derived by misrepresentation of the literature and the exclusion of factors such as turbine shutdown in the avoidance computation. The only studies of golden eagle blade strike to achieve statistical significance are from the Altamont pass, where an avoidance factor around 95% is currently indicated as the best estimate. Assuming that the developer correctly reports the Lewis Peatlands golden eagle utilisation rate, this would give a blade strike rate of nine golden eagles per year, which would be a severe impact on the SPA. It is also noted that, contrary to the common assertion, the scientific evidence shows that Altamont is not untypical[9]:

> *"The assertion that the APWRA is anomalous in its bird mortality is largely untrue. It appears true for raptor mortality at face value, but factoring in relative raptor abundance clarifies that the impact is relative to the local abundance. The impacts in the APWRA are nearly equal to impacts elsewhere relative to local abundance. Whereas the available data suggest that the APWRA kills more raptors than do other wind energy generating facilities, the risk index demonstrates that the APWRA kills no more raptors relative to the number seen per hour than do most other wind energy facilities. Adjusting for local relative abundance, the existing data indicate that most wind energy generating facilities have an equal impact on the local raptors."*

It is requested that the developer be referred to the extensive literature on golden eagle blade strike and submit a collision assessment including realistic avoidance based on rational scientific analysis.

[9] Smallwood, K.S. and Thelander, C.G., *Developing methods to reduce bird mortality in the Altamont Pass Wind Resource Area*, Public Interest Energy Research Program Contract No. 500-01-019, Final Report to the California Energy Commission, 2004, 4.4.1 www.energy.ca.gov/pier/final_project_reports/500-04-052.html

3.22 The developer's assessment of impact on the pair of golden eagles at range D is speculative. The reader is informed that the breeding success of this pair is low, when it is known that the nest has not been checked on any regular basis. There is further speculation that this ostensible low breeding success is due to the proximity of the landfill site and competition from ravens. Again there is no evidence for this and indeed corvid remains have been recovered from the pellets of this pair, suggesting that ravens may form part of their diet. This range is already scheduled for damage by the Pentland road wind farm (six turbines within 3 km of the eyrie, and now the developer proposes to erect a substantial number of turbines within 600m of this nest. The developer's contention is: this range is damaged therefore it is reasonable to damage it further. Cumulative damage on this scale to an eagle range in this SPA is unacceptable. This site qualifies, inter alia, on 1% of the UK golden eagle and the loss of a breeding range is a very serious matter, and may lead to the SPA population falling below 1%. It is requested that the developer be advised to refer to Article 4(1) of the Birds Directive and, in view of its contention that range D is already degraded, submit practical proposals for the improvement of this range.

3.23 The developer's methods of surveying red-throated diver flights are conducted at inappropriate times. This species makes a substantial proportion of its flights too and from the nest site early in the morning or late in the evening, outwith the regular survey hours used in this assessment. Moreover, the developer misplaces confidence in its assertion that red-throated divers commute almost exclusively to the sea and rarely to other inland lochs. No evidence is offered to support this assertion. Red-throated divers regularly commute to feed on inland lochs, even those nesting very close to the sea. It is likely that the weather or the relative quality of locally available alternatives may be important factors on a nest-by-nest basis, and, since the developer must have this site-specific information, it is not understood why the proportion of flights to inland lochs versus the sea is not reported in the assessment. As a consequence there is concern that the impact, and in particular the blade strike risk, to red-throated diver has been underestimated. It is requested that the developer be advised to extend the range of its red-throated diver observations to include all periods of the day, and publish this flight data along with the proportion of flights to inland lochs.

3.24 A number of the developer's ostensible mitigation proposals are a cause for very serious concern. For example, the developer asserts that it has *"has sought to provide relatively wide corridors between the wind turbines by leaving at least 500 m between adjacent wind turbines"*, ostensibly in order to mitigate any potential barrier effect. However, this configuration is well known to significantly increase the risk of golden eagle blade strike: Smallwood et al. report[10] golden eagle blade strike mortality is increased by 21% ($P<0.05$) when turbines are more sparsely distributed, by 12% ($P<0.05$) at turbines not in wind walls; by 17% ($P<0.05$) at end of string; by 2% ($P<0.05$) at gaps; and by 12% ($P<0.05$) at local clusters of turbines in a wind farm. It is vitally important that any measures introduced as ostensible mitigation do not exacerbate the problem they are intended to solve or introduce further problems. It is requested that the developer be advised to review its ostensible mitigation proposals and submit further proposals and designs that are rationally based on appropriate assessment.

[10] Ibid, Tables 7.1 and 7.5