

Our Ref: PCS/100930
Your Ref:

Marian Denney
Business Enterprise and Energy Directorate
Renewable Energy Division
The Scottish Government
Meridian Court
5 Cadogan Street
Glasgow
G2 6AT

If telephoning ask for:
Susan Haslam

28 July 2009

Dear Ms Denney

**THE ELECTRICITY WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND)
REGULATIONS 2000
SECTION 36 APPLICATION FOR THE PROPOSED VIKING WIND FARM IN SHETLAND**

Thank you for your consultation letter of 22 May 2009 which SEPA's Shetland Office received on 25 May 2009. We comment as follows.

Summary

We consider that, even if best practice is followed and mitigation employed, the proposal for a windfarm development of this scale in this peatland location is likely to have a negative impact on the environment. The Scottish Government should take into consideration this residual environmental impact when determining whether to grant this application.

Notwithstanding the above, careful micro-siting and the inclusion of conditions which ensure that the best possible practices are implemented will help to reduce this impact.

There are aspects of the proposals to which we object unless **conditions** are applied to minimise the effect. There are also aspects of the development where we consider that further information is required to identify and then appropriately avoid or mitigate environmental implications. In these cases we have **objected**, but outlined how the objection could be addressed. We also make a number of **recommendations** for you or the developer to consider.

Detailed comments

1. Micro-siting

- 1.1 Section 4.1 of the Environmental Statement (ES) suggests a 50 m micro-siting buffer if approved by on-site environmental protection specialists, or 100 m with the approval of appropriate external bodies, including SEPA. We are satisfied with this proposal and request that it be ensured by **condition**. Careful micro-siting will be required in a number of locations if it is to be ensured that the impacts of the development are minimised. An example of this is at Turbines K64, K65, K66 and K72 due to the presence of deep peat in areas of headwaters for lochs. Even if impacts are minimised it needs to be acknowledged that impacts on the water environment, including wetlands, are likely.

- 1.2 Details of how micrositing will be implemented and controlled should be submitted as part of the Environmental Management Plan, requested by **condition** below. The condition should also state that, for the avoidance of doubt, no re-siting outwith micrositing boundaries is permitted.

2. Pollution prevention

- 2.1 Due to the wet nature of this site pollution prevention will be challenging.
- 2.2 We welcome the introduction to the Environmental Management Plan provided in Appendix 14.6 and commitment in Appendix 4.4 Best Practice Guidelines to provide method statements for many, if not all, of the activities which are likely to give rise to pollution. Very little detail, however, relating to the techniques which might be used to prevent pollution and, especially, to treat contaminated water to reduce the potential for pollution to occur is currently provided. Therefore this and other details must be provided in the proposed Plan and construction method statements, which for the avoidance of doubt we request by **condition**.
- 2.3 Other pollution prevention proposals outlined in Appendix 4.4 and elsewhere in the ES which should also, for the avoidance of doubt, be covered by **condition** are:
- 2.3.1 A minimum buffer between all infrastructure, to include access tracks (but exclude access tracks leading to watercourse crossings) be set at 50 m (Appendix 14.3 and elsewhere). Exceptions to this by agreement of the determining authority in consultation with SEPA, and others if applicable. Prior to determination the applicant should confirm that within the agreed limits of micrositing this is achievable. If it is not, the scheme should be amended at that stage and the impacts of those amendments be assessed;
- 2.3.2 Requirement for the approval by the determining authority, in consultation with SEPA (and others as necessary), and subsequent implementation of a scheme of site specific buffer distances which are determined by the sensitivity of the soil, terrain, vegetation and other site specific characteristics. Minimum buffer to at-risk watercourses – 50 m (section 10.7.3). We have experience from other sites that a distance of 50 m may be insufficient to permit the settlement of suspended matter from gley soils where the water is diverted for settlement across vegetation, especially where waterlogged ground conditions are experienced, and hence either other options for removal of suspended materials will be required or a greatly enhanced buffer distance;
- 2.3.3 The demarcation of the above identified hydrologically sensitive areas (Appendix 4.4);
- 2.3.4 Concrete batching at site compounds only and at least 50 m from any watercourse or standing water (section 14.6.1);
- 2.3.5 Employment of a range of suitability qualified specialists (ecology, hydrology, geotechnical etc). Please note that we consider it important that suitably qualified and experienced professionals with specific responsibility for environmental management and authority to take action when required (including stopping operations and / or implementing mitigation measures) are present on site at all times. It is imperative that this be agreed at planning stage to ensure that any subsequent tenders include this provision;
- 2.3.6 Environmental auditing and monitoring during construction. We would expect this to include the establishment of an environmental checklist to monitor and plan construction activities.

This must include weather forecasting and actions to be taken in advance of adverse forecasts; and

2.3.7 We note and welcome the fact that works will be targeted away from the winter months (section 10.7.2) when pollution is more likely to occur. Notwithstanding information submitted thus far regarding timing of works, a **condition** is necessary to establish a mechanism to dictate the timing of works to avoid conditions when pollution is going to be more likely or when ground conditions are sufficiently poor as to make construction works present a risk of pollution, to the agreement of the determining authority, in consultation with SEPA.

2.4 Foul drainage

2.4.1 Proposals for foul drainage provision is unclear, however Appendix 14.6 states that “final disposal from toilets or septic tanks will be into the local sewer”. This would suggest that there will be no discharge of foul water on the site.

2.4.2 We **recommend** that you consult Scottish Water to ensure that there is capacity available to accommodate the additional loadings proposed.

2.4.3 If on-site sewage disposal is proposed then the applicant should note that the generally low permeability of both overburden and bedrock at proposed compound locations may be unsuitable for installation of soakaways; alternative treatment of waste water such as construction of soakaway mounds or secondary treatment may therefore be required.

2.5 We note the proposal for an Environmental Advisory Group. Such groups can be useful as a means of considering the relative environmental merits and appropriate monitoring of different approaches to tasks and we would be happy to be involved if the application receives permission. We would not wish to be involved with such a group prior to gaining permission to ensure that it is clear that our opinions are impartial.

2.6 The determining authority should note that, even if the full range of pollution prevention measures are implemented via best practice and as effectively as possible, we would not agree that the residual impact of pollution from the construction phase of the development would be ‘minor’ on the basis suggested in Section 14.6.6 (b), i.e. that the likelihood of it occurring is unlikely as a result of the mitigation measures. We would agree that the likely impact of pollution is Moderate once mitigation has been put in place but consider that, given the scale of the development and the nature of the terrain, it is unrealistic to expect that the mitigation measures will result in sufficient treatment of all pollutants to the extent that pollution is unlikely. Instead we would contend that pollution remains a likely outcome from such a large scale construction project in a wet environment. The authority should take into consideration this residual impact when determining this application.

3. Modifications to the proposal to reduce its environmental impact

3.1 Notwithstanding the comment above relating to residual impacts and the fact that a development of this scale cannot fail to have effects, we acknowledge that steps have been taken to try and minimise these impacts, a number of these being previously discussed with SEPA. We do however consider that further steps could be taken to reduce the impact of the proposals. By adopting an approach of minimising disruption to peatland, the volume of excavated peat can be minimised and the commonly-experienced difficulties in dealing with surplus peat reduced. Similarly, although comment is made about the avoidance of watercourse crossings, 97 are still proposed.

- 3.2 We therefore **recommend** that the following amendments be investigated. We would welcome a justification for any that are not subsequently implemented. Please note the list below is not exhaustive but rather demonstrates the range of current concerns.
- 3.2.1 Delete the access to the site at Scord of Sound, Turbines K77 and K76. The access track crosses valley mire with deep peat including deep bog channels with floating mats of Sphagnum. While floating roads are proposed in this area, we consider that it will not be possible to construct them on floating Sphagnum mats. Deletion of this access and these two turbines alone would result in the reduction in approximately 5 km of track and one watercourse crossing.
- 3.2.2 Delete the access from Turbine D2 to Turbine D4, accessing from Turbine D3 to D8 instead. This would delete approximately 2 km of track.
- 3.2.3 Revise the northern access to the “D” turbines. Currently the access over the top of Hill of Swinster is approximately 3 km, but Turbine D16 and D17 only approximately 1km from either Moorfield or the A968 to the west.
- 3.2.4 Use more of the existing track on the Hill of Susetter to access the “C” turbines. This could reduce track length by approximately 2 km and remove 2 watercourse crossings.
- 3.2.5 Delete the access at Setter House and instead utilise the access from Upper Kergord. This would delete approximately 1.5 km of track.

4. Impacts on the water environment

- 4.1 On the basis of the information available and without prejudice to the determination of the corresponding application(s) for authorisation under the Water Environment (Controlled Activities) (Scotland) Regulations 2005 (as amended) (CAR), we expect the proposal to fall into Category 1 - ‘capable’ of being authorised. We can confirm that we have not received any CAR applications from the developer.
- 4.2 We are generally satisfied with the hydrological and hydrogeological data provided in section 14; it is well written and covers all the relevant issues.
- 4.3 The study refers to SEPA’s previous 2006 water quality classification only with no reference to the classification required as part of the Water Framework Directive River Basin Management Plan, see www.sepa.org.uk/water/monitoring_and_classification.aspx. It is acknowledged that this may not have been available when this work was being compiled.
- 4.4 For your information, the proposed scheme will impact on five baseline water bodies. The catchments are:
- Gossawater Burn/ Laxo Burn (WB 20671). Good status;
 - South Burn of Burrafirth (WB 20682). Good status;
 - Burn of Weisdale (WB 20679). Moderate status. There is a SEPA gauging station on this watercourse at Weisdale Mill. There is also the Kergord Smolt Hatchery on the Burn of Weisdale at NGR HU 396 531;
 - Burn of Laxobigging (WB 20670). Poor status; and
 - Burn of Grunnafirth/Burn of Voe (WB 20672). Good status.

4.5 Design of watercourse crossings

- 4.5.1 The assessment provided in Appendix 14.3 is clearly presented and provides a good level of information to assess whether the types of crossing proposed are likely to be acceptable. We particularly welcome the inclusion of photographs. We are satisfied with the methods of crossing proposed in relation to the watercourse parameters.
- 4.5.2 It appears that works are required to upgrade the public highway but very limited information on this is provided. If these works will include the upgrade or replacement of any watercourse crossings, or other watercourse engineering works, and they form part of this application, then the developer should clarify what is proposed.

4.6 Water ecology, including of wetland

- 4.6.1 Full consideration should be given to comments made by SNH who have a clear lead on biodiversity and nature conservation policy, science and advice.
- 4.6.2 We are pleased to note that a dedicated fisheries survey has been carried out (Appendix 10.6) which we generally found to be comprehensive, based on an appropriate survey methodology and with clearly and logically presented results and discussion. Fish were found in all catchments surveyed and many of the survey sites were considered good spawning grounds (for example Wester Filla Burn was considered excellent – section 3.31 of Appendix 10.6). The surveys have shown that some of the highest trout densities recorded were in small, headwater areas, highlighting the importance of protecting the whole catchment area, and not just the larger lower watercourses.
- 4.6.3 It is noted from the Appendix 10.6 that opportunities exist to provide compensation for the disturbance that this development will cause the water environment. We therefore request that the specific recommendations of the fish survey chapter (Appendix 10.6, section 4.3) be ensured by **condition**. Any proposals must be to the agreement of SEPA and other relevant persons, such as Shetland Anglers Association, SNH and the appropriate landowners.
- 4.6.4 We agree with the statements made in the recommendations at the end of this Appendix that the potential exists for widespread siltation of streams, which could cause damage to fish habitats and direct mortality of fish and ova (as well as on other water ecology). We also agree that the mitigation of silt and suspended solids will undoubtedly present a major challenge.
- 4.6.5 It is our experience that siltation of spawning beds has long-term consequences for aquatic life, including fish and otters. Disturbance including blasting, plant movement and siltation will occur over a number of years with potential direct, cumulative effects on fish populations. This is because sediment becomes trapped in the gravelly substrate, often supporting plant growth. It can make the substrate difficult for fish to move when building redds and re-suspension of trapped sediment can smother eggs and fry in the future. Silt also smothers invertebrates which are important food for salmonids. We are especially concerned about the impact the proposal may have on lochs, which may be more sensitive to sedimentation and in watercourses where it is known there are significant fish populations. Due to a lack of information on the potential impact of sedimentation, especially on lochs, we **object** to this aspect of the application. We have discussed this issue with the developer in relation to another windfarm and concluded that a benthic diatom survey should provide enough information for them to base an assessment of siltation on the freshwater lochs. Based on the quantity of infrastructure in their catchments

and therefore risk of pollution we suggest that the assessments look at Truggle Water, Maa Water, Lamba Water, Petta Water, Loch of Skellister, Gossa Water, Laxobiggin and south burn of Burrafirth. We recommend that diatom samples are collected in Spring (April/May) and Autumn (Sept-Nov) to allow an ecological baseline for these lochs. We would be happy to provide the applicant with more details on the sampling protocols to ensure the data is collected in a way which would allow it to be classified using Water Framework Directive classification tools.

- 4.6.6 There is evidence in the fish survey results for occasional poor salmonid recruitment in some streams, such as the Burn of Skelladale (section 3.1.2 of Appendix 10.6). This suggests that fish densities, particularly of salmonid fry, are likely to be highly variable from year to year, possibly because of obstacles to migration downstream or variable marine survival. It is important that this apparently natural variation in recruitment is taken into account when establishing a baseline as, without knowledge of temporal variation, it will be difficult to make sense of any post construction monitoring. We therefore requested that the recommendation in the report that “additional pre-construction survey will be required in order to assess “natural” annual variation in fish abundance” be ensured by **condition**.
- 4.6.7 We are also pleased to note that an assessment of freshwater invertebrates has been carried out and are generally satisfied with the data presented, although only a third of the proposed stream crossings have been monitored. Overall the data set would have been improved by adding in more sites from upper watercourses, where it is felt suitable habitat could have been found. Those data would have provided a better geographical coverage and include sites closer to turbines/batching plants and that in turn would have improved the baseline from which to monitor impacts. Please note that we hold our own invertebrate data for a number of watercourses in the area; to be as helpful as possible details of this is provided in the attached Advice for Applicants section.
- 4.6.8 Generally we are satisfied with the baseline assessment of wetland habitats. Wetlands will be significantly affected by the proposal with 239 ha of blanket bog being lost. On the issue of accuracy then please note that while the ES states that base-rich flushes have no legal conservation protection they are alkaline fens, which are listed as a priority habitat on Annex I of the EC Birds and Habitats Directive (EC Habitats Directive 7230 Alkaline Fens) and are also a UK BAP (Biodiversity Action Plan) priority habitat. Base-rich flushes are also considered groundwater-dependent terrestrial ecosystems (GWDTEs) as defined by the Water Framework Directive and are subsequently protected under the Water Environment and Water Services (Scotland) Act 2003 (WEWS).
- 4.6.9 Section 10.9 of the ES states that a detailed programme of ecological monitoring would be produced after the site layout has been finalised. We request that a **condition** is applied requiring the submission to and approval by the determining authority, in consultation with SEPA [and other bodies such as SNH], of a full site specific Ecological Monitoring Programme at least three months prior to construction. Further guidance on what this Ecological Monitoring Programme should cover should be sought from SNH, however, we would wish to see the impacts of restoration upon the water environment and peatland hydrology being monitored. This should include the impacts upon water quality and quantity of both groundwater and surface water bodies. Details of how long it is proposed to monitor for and whether this monitoring phase covers the construction, decommissioning and aftercare phase should be provided.

4.7 Habitat management plan

4.7.1 We welcome the principle of a Habitat Management Plan and request that the requirement for one be covered by **condition**.

4.7.2 We also welcome the fact that a draft plan is included with the ES and we consider that the current version has been written with enthusiasm, however we are concerned about the practicalities of the proposals outlined and the potential wider impacts they could have on the environment.

4.7.3 A number of the ideas put forward are unproven and whether they can be implemented successfully is questionable, especially in Shetland. The National Vegetation Classification (NVC) Survey states that blanket bog is "*irreplaceable except over periods of thousands of years*". The Plan, and the development as a whole, needs to acknowledge this.

4.7.4 Also it does not seem to have been taken into consideration that some of the proposals may actually result in further degradation of the area. For example:

- the impact of moving the peat that will be used for restoration purposes; or
- the effects on down-stream hydrology of blocking up peat gullies.

4.7.5 We do not consider that it is appropriate to carry out engineering works to existing lochans. Such proposals may negatively impact on the water environment in areas that would otherwise not be affected by the development. It would also provide more waste peat material. We request that a **condition** be applied that there are no engineering works to any standing water within the site boundary, unless agreed by the determining authority in consultation with SEPA and SNH.

4.7.6 In conclusion, we **recommend** that further thought is needed on habitat management so that the foundations of practical and realistic management can be agreed prior to determination. We are interested as these proposals will affect the water environment, including wetlands and because they may utilise waste materials.

4.7.7 In addition, as there is little experience of this type of restoration work and therefore the likely success of this work is unknown, we **recommend** that the applicant seeks best practice advice from SNH and any other bodies who have carried out this type of work previously. Details of this research and why techniques proposed in the Habitat Management Plan represent best practice should be included in the Habitat Management Plan.

4.8 Abstraction

4.8.1 Due to the scale of development there will be a requirement for water on site, for example, concrete batching, dust suppression, wheel washing and worker facilities.

4.8.2 We are pleased to note that some consideration has been given to the requirement to abstract water and are satisfied that the principle of abstraction in the area has been established.

4.8.3 Abstractions of this nature will require authorisation under CAR. As part of this authorisation we will require detailed information on the abstraction rates and the yields available from any proposed sources. We will apply the Environmental Standards for flows as established by Scottish Government Directions (2007) and Guidance from the UK

Technical Advisory group on the implementation of the Water Framework Directive (2008 phase 1 and 2 reports). We provide specific regulatory advice to the applicant on this in the enclosed Advice for Applicants.

- 4.8.4 Please note that any dewatering intended to lower the groundwater table for foundation construction or for borrow pit working may also require a licence under the CAR regime. We highlight that dewatering may locally cause peat to dry out and impact base-rich flushes and this may have ecological consequences.

4.9 Private water supplies

- 4.9.1 The advice provided in this letter aims to protect the water environment as a whole and you should consult the Local Authority and Scottish Water for advice as to whether they have any additional or specific concerns regarding impacts on water supplies. However, to be as helpful as possible we highlight the following.

- 4.9.2 There are a number of private water supplies within or near the development area six of which were identified as requiring further consideration. Of these six, only Private Water Supply 2 at Pund of Grutin was identified as lying within a surface catchment potentially impacted by the development. However, the six private water supplies noted (and likely many of the remaining private water supplies not detailed) are groundwater sources. Groundwater catchments are dependant on subsurface hydraulic properties and geological boundaries in addition to surface topography and therefore may not be spatially equivalent to surface water catchments. The location of a supply outwith potentially impacted surface water catchments does not necessarily therefore imply that it is outwith potentially impacted groundwater.

- 4.9.3 Based on the information provided we consider that the impact on private water supplies is likely to be limited. However, we recommend that consideration be given to including a **condition** requiring further risk assessment and appropriate mitigating measures be carried out should an impact on a private water supply become significant at a later stage.

5. Access track design

- 5.1 Appendix 4.1 provides a track layout design strategy and is accompanied by other information in Section 14.

- 5.2 The information presented is generally acceptable but please note that the maximum peat depth in which cut track construction currently is planned is unclear. This is variously stated as 1.5 m in the written statement (Volume 2, Section 4.2.3) and 1.0 m in appendices (e.g. Volume 4a, Appendix 14.3, Section 3.1). Also given the very high water content of the soils it seems unlikely that these areas could support the type of construction proposed and that floating tracks will sink over relatively short time scales if heavily trafficked. It seems likely to us that this would necessitate the need for further rock to be used and that the tracks would become more like 'causeways' across valley mires.

- 5.3 Experience of constructing floating roads on this type of ground is, however, slowly increasing. In relation to a separate application, this developer has sent us a copy of the method statement for the construction of an access track at Clyde Windfarm. We considered that the principles within it were acceptable and do not object to this aspect of the application if a **condition** is applied requiring the submission of a site specific statement outlining track construction including drainage and sediment management.

6. Peat stability

- 6.1 Protection of development in relation to unstable land including landslides or landslip is not generally an area within our expertise or remit.
- 6.2 Peat slide is a known phenomenon in Shetland and therefore we recommend that the determining authority pay this specific aspect particular attention. Photographs of existing slides are enclosed with this letter as examples of what has already occurred. It is acknowledged in Section 14.6.6 that peat slides occur naturally (ie. without the assistance of any construction / engineering activities) with examples at various locations in Mainland Shetland given. The ES suggests that these are uncommon, however, we highlight that because of the remote nature of most peatlands slides may be under-reported.
- 6.3 We also note that the ES has recognised a relationship between slope and peat depth and has accorded peat stability a sensitivity of high. The attached photographs taken of the landslides in the South Mainland of Shetland in September 2003 serve as a warning of the devastation that could occur in the event of a peat slide; the relatively shallow slopes should be noted.
- 6.4 We also note that page 2 of Appendix 14.1 states that *“Owing to the large site area it was not possible to undertake ground investigation work at all areas identified as being of concern after the preliminary hazard ranking assessment”*. Similar statements are made throughout the Appendix. In view of this it is surprising that the ES concludes that that there is an insignificant risk of peat landslide.
- 6.5 We are interested in the consequences of a peat-slide or bog burst as it can result in severe environmental damage including the pollution of surface watercourses. We have identified the following larger lochs as potentially at risk from peat slide: Mill Loch east of Wethersta; Smerla Water; Marrowfield Water; Gossa Water; Petta Water; Sand Water; Loch of Lunklett; Lamba Water; Maa Water; Loch of Skellister; Black Water; Loch of Bellister and South Black Water. Associated watercourses could also be affected and sever slides could potentially impact on the marine environment.

7. Cabling

- 7.1 We understand from section 4.2.5 and Appendix 4.4 that cables will be laid adjacent to site tracks. Trenches may be dug or a cable plough utilised.
- 7.2 We advise that impact of cabling is likely to depend on the backfill material used and its consequent effects on drainage. The information provided on this is currently inconsistent, which sections 4.2.5, 10.7.6 and 14.6.1 provide slightly different methods and materials. Full details should be provided in the construction method statement.
- 7.3 We request that a **condition** is applied requiring all on-site cabling to be located in disturbed areas adjacent to tracks unless agreed with the determining authority.
- 7.4 Whilst the grid connection to the convertor station does not form part of this application it is a material consideration and we bring to your attention the fact that connection will have environmental effects. If you consider it reasonable to do so the developer should be asked to provide an assessment of the effect of connection.

8. Borrow pits

- 8.1 The ES states that the estimated volume of stone required for the development is 1.5 million cubic metres, (Section 4.3.2 and 14.6.1(b) of Main Statement). The latter section states that this includes a 10% contingency amount. No information is provided as to how this has been estimated therefore it is not possible for us to provide comment on whether we think this is reasonable.
- 8.2 Section 4.3.2 states that the expected void required would be 1 million cubic metres, suggesting that approximately 0.5 million cubic metres would be sources for on-site excavations. It is not clear that this is the case.
- 8.3 Fourteen possible sites have been identified for extraction; 11 within the site and three existing quarries (section 2 of Appendix 14.2). Table 1 in section 5 of Appendix 14.2 estimates that over 1.5 million cubic metres can be excavated from the sites initially investigated. This suggests that enough material can be won from the sites examined but again without any detail it is not possible to confirm this.
- 8.4 If the developer has assessed the worst case scenario for requirement for materials it may be the case that less materials and fewer pits are actually required. To minimise the impacts of borrow pits on the environment it should be ensured that pits are only opened when the need has been clearly demonstrated to the relevant authority. We request that a **condition** be imposed requiring a phased approach whereby works on each borrow pit cannot commence until the need for it has been demonstrated to the relevant authority. Demonstration should be on the basis of, amongst other issues, detailed site investigations, material balance calculations.
- 8.5 We request that the **condition** include a requirement to supply full details of the results of all site investigations, and a detailed design and working method for each borrow pit for approval. It is **recommended** that borrow pit site investigations determine the level of the groundwater table in relation to the proposed quarry floor levels. Any groundwater monitoring points installed should be properly surveyed in and referenced to Ordnance Datum (OD). Groundwater levels and depths should be reported in metres above OD (mAOD) and metres below ground level (mbgl).
- 8.6 For your information, we consider that there is the possibility of hydraulic linkage between borrow pits NB903 and NBP04 and the Sand Water SSSI. We have brought this to the attention of SNH to allow them to take this into consideration when providing a response in relation to protected sites.

9. Waste

- 9.1 The management of waste, especially waste peat and overburden, will be a significant issue for this development.
- 9.2 We welcome the fact that the developer has tried to quantify the amount of peat that will require to be handled (Appendix 14.4). Generally the method used to assess the volumes of peat affected seems reasonable, although the actual waste generated will depend greatly on the practices implemented on site and is one of the reasons that it must be ensured that best practice is employed throughout.
- 9.3 The peat volume balance identifies an estimated peat volume excavation of 877,650 cubic metres, however the assessment seems to have considered that the best case scenario is

most likely, where as we consider that the worst case scenario should be assessed. This is the standard practice adopted for other aspects of the ES. For example, it states that the batter on the banks could be less than 45 degrees; this would significantly increase the volume of peat produced. The conclusion of this appendix identifies a possible error of 20%, this alone could result in an additional 175,000 cubic metres of peat being excavated. We therefore request that the assessment be repeated considering the worst case scenario and until such times as this has been done we **object** to this aspect of the application.

- 9.4 The options for re-use and disposal have been thought through but there are clearly difficulties associated with most of them and no certainty that any of them will be possible without further investigation and works. In addition no clear consideration seems to have been given to the storage of materials. We therefore **object** to these aspects of the development until firmer conclusions are made as to what will be done in this instance. We provide detailed comments on some specific aspects of this below.
- 9.4.1 The suggestion is made in section 7.3 that a nominal 1 m wide by 0.3 m high strip will be placed along the roadside throughout the site. It will be necessary to demonstrate that this will be for track landscaping as referred to elsewhere in the document and is needed for engineering or planning reasons. If this is not the case then we would consider these waste management activities, as the terminology of "*profiling*" or "*side casting operations*" used elsewhere in the ES suggests.
- 9.4.2 The track method statement for the Clyde windfarm (provided to us by the consultant for other purposes) identifies the need for a 0.5 m shoulder to the track and it is not immediately clear why a 1.0 m shoulder would be necessary here, this should also therefore be clarified. Having unnecessarily large shoulders on either side of 117.52km of track will significantly increase the overall footprint of the development, impacting on drainage and habitats.
- 9.4.3 Section 1 suggests that there is a de minimis depth of 1.2 m above which waste management exemption will apply. Please note this is not the case and all waste disposal activities will require exemption or licence.
- 9.4.4 Table 3 provides a summary of the estimated peat extraction and re-use volumes. It is clear that a number of the proposed re-uses are not yet certain to be acceptable e.g. banking at roadsides and reinstatement of borrow pits may prove not to be acceptable in all cases depending upon the planning and waste management licensing restrictions. This table should therefore be revised once further assessment of the options has been made.
- 9.4.5 In Section 5 mention is made of the need to store excavated peat on site and this is clearly an activity that has the potential to cause damage to habitats and cause pollution due to run-off. On such a substantial scale as that proposed here care will need to be taken to prevent this occurring. Assuming that this material can only be stored a metre in height due to stability issues a storage area of approximately 550,000 square metres would be necessary. It is not clear that this has been allowed for in the ES and clarification of this is requested. A plan showing the areas where significant volumes of material could be stored would be helpful accompanied by methods of storage. This should be based on site sensitivities such as slope and proximity to watercourses.
- 9.4.6 Figure 1 shows a proposed borrow pit backfill arrangement. The adaptation of the borrow pit in the manner shown by this diagram is such that we would consider that the site had

been designed and adapted for the final disposal of waste by landfill and as such could not benefit from an exemption from licensing and would therefore have to be licensed as a landfill site under the Pollution Prevention and Control Regulations.

- 9.4.7 We note that even assuming that the proposals for re-use are all acceptable the prediction is that there is a considerable surplus of waste on the site – just under 550,000 cubic metres. Two methods for treatment and disposal are put forward; dewatering and off-site landfill. In relation to dewatering then the ES concludes that there are significant barriers to its use, including increased risk of pollution and “logistical issues”; this need to be investigated further to see whether this is a viable option. In relation to landfilling off-site, the developer has not demonstrated that space is actually available on the islands to do this.
- 9.5 Reference is made in Section 4.3.2 to there being 10% ‘wastage’ of excavated rock from borrow pits in the form of overburden or unsuitable rock. This alone could amount to >150,000 m³ of waste material and currently no information on what will be done with this waste has been provided. An outline is requested prior to determination.
- 9.6 For your information, it is correct that we are developing a position statement in relation to development on peatland and waste management. However in the interim the regulatory position outlined above is accurate.
- 9.7 We welcome the provision of a framework site waste management plan and once the fundamental issues outlined above are addressed this will be a useful tool. We request that a site specific Waste Management Plan be a **condition** of permission. We suggest that it needs to be agreed prior to tendering.

10. Site reinstatement during the construction and operational phases

- 10.1 From Section 4.4.5 we understand that the applicant proposes to prepare a Reinstatement Strategy. For the avoidance of doubt we request that a **condition** is applied requiring the submission to and approval by the determining authority, in consultation with SEPA [and other bodies such as SNH, should this be desired], of a full site specific Reinstatement Strategy at least three months prior to construction.
- 10.2 This should include a site plan indicating all the areas subject to reinstatement. It should also include details of the applicant’s proposed reinstatement objectives in terms of final ground conditions. Any areas that may be subject to further disturbance during the operation of the windfarm should be detailed including the likely frequency of disturbance and rational for disturbance. These areas should be clearly illustrated on a site plan. It should also include details of when and how reinstatement work will be undertaken. It may be that the applicant wishes to consider phased reinstatement as construction progresses to encourage quicker vegetation regeneration. Further guidance on the methods used and timing should be sought from SNH.
- 10.3 It is apparent to us that there are strong links between the Reinstatement Strategy and the Waste Management Plan. It is likely that the Waste Management Plan will inform the preparation of a Reinstatement Strategy.

11. Decommissioning and final site restoration

- 11.1 Section 14.2.5 states that effects arising from the process of decommissioning have been scoped out since they are of a similar nature to construction issues, but of a smaller and

shorter duration. We consider that impacts of decommissioning and aftercare may be significant, particularly in terms of pollution prevention, impacts of ground disturbance and long term impacts on the functioning of peatland systems. Given the scale of this project and nature of the surrounding area it is important to quantify the scale and nature of decommissioning **prior** to determination so that the long term impacts of the proposal upon the environment can be assessed.

- 11.2 On this basis we **object** until further principles of the proposals for decommissioning and aftercare are submitted. These details should include a plan showing the area that will be subject to decommissioning and what elements will be removed or left in-situ.
- 11.3 Further to this we request that a **condition** is applied seeking a Decommissioning and Restoration Plan to be submitted and approved by the determining body, submission to be at an agreed time following construction works commencement. Following submission there should be a requirement for regular review, for example every five years.
- 11.4 As stated above Section 14.2.5 states that effects arising from the process of decommissioning have been scoped out since they are of a similar nature to construction issues. We understand that the applicant would class reinstatement in the same light. On this basis we request that the construction method statement requested in Section 2.2 of this letter also includes full details of methods to be used during reinstatement including disturbance and reinstatement during the windfarm operational phase and proposed pollution prevention measures.

12. Sustainable development and carbon balance

- 12.1 Section 16 covers the issue of carbon balance, including carbon losses from peat.
- 12.2 Draft Scottish Planning Policy recognises that “the disturbance of some soils, particularly peat, may lead to the release of stored carbon, contributing to carbon emissions” (Paragraph 146). At present, we are considering our role within climate change and planning, including carbon balance assessment and are not providing comments on this issue within our consultations responses. Long-term responsibility for assessment will depend upon the outcome of current consideration of agency roles. We strongly **recommend** that this aspect be considered closely by the determining authority as this is the main benefit from renewable energy projects. However, to be as helpful as possible the following are brought to your attention.
- 12.3 We note that the carbon pay-back periods based on the best, intermediate and worst case scenarios are 2.3, 3.7 and 14.9 years respectively. This is provided in Appendix 16.2, 16.3 and 16.4. However, Section 20.9 states that the pay-back periods are 2.8, 6.8 and 48.5 years respectively for the same scenarios.
- 12.4 We note that based on the developers own criteria the payback period of 14.9 years is considered “neutral”.
- 12.5 We note that the HVDC interconnector has not been taken into account even though this is a material consideration.

This advice is given without prejudice to any decision made on elements of the proposal regulated by us. The decision may take into account factors not considered at the planning stage.

We understand that there may be other sections of the ES still to be submitted; we would be happy to provide comments on these on request.

If you have any queries relating to this letter, please contact me on 01349 860359 or e-mail at susan.haslam@sepa.org.uk. Please note I will be on holiday from Friday until 17 August; however one of my planning colleagues would be able to assist you during this period if required. Please also note that all Section 36 application consultations for Shetland should be sent to the Planning Service at our Dingwall address.

Yours sincerely



Susan Haslam
Senior Planning Officer
Planning Service

Enc: Advice for the applicant, photographs of peatslide in Shetland

Cc: The Viking Energy Partnership, The Gutters' Hut, North Ness Business Park, Lerwick, Shetland, ZE1 0LZ

Ecopy: info@vikingenergy.co.uk; marian.deeney@scotland.gsi.gov.uk;
Nina.Turner@snh.gov.uk; John.Holden@shetland.gov.uk
Lee Winsor, Gayle Howard – SEPA