

28th April 2019.

**Consultation on Final Needs Case for the Shetland transmission link project and delivery model.**

Dear Mr Norman,

I am writing to you in response to the above consultation.

[REDACTED]

In the following I give my reasons for my assertion that the proposed HDVC link will lead to an unacceptable scale of windfarm development with consequent environmental degradation imposed on a small populated land area. I also suggest that the costs of the link and proposed windfarms will not be value for money for the UK electricity consumer.

I am not opposed to renewable energy projects in Shetland, provided that they strike the right balance between the needs of the community and the impact of wind farming on the natural environment and resident populations. I suggest there is no need for the HDVC link and that embedded 'renewable' generators within an upgraded Shetland grid with a new gas fired power station is the best value for consumers and for the Shetland environment.

**Background to the present situation.**

Back in 2007 Shetland Islands Council (SIC) thought it a good idea to transfer their 90% share of Viking Energy and their 50/50 partnership agreement with SSE to Shetland Charitable Trust (SCT). Councillors, SCT trustees and Viking Energy then went on to try to convince the Shetland public that this was a good idea. Unfortunately they did this through duplicity and misinformation; they said that there was "no alternative" and "this is Shetland's second chance" because Sullom Voe Oil Terminal would soon close (despite all indications to the contrary); they quoted multi-million figures for windfarm income to the SCT based on nothing more than wishful thinking (as no-one had costed an interconnector cable or set a market price for electricity to be generated).

Viking Energy went on to 'inform' and 'reassure' Shetland public. They bragged about a 'world class' Health Impact Assessment that they intended to carry out, only to cancel it when evidence of negative health impacts from windfarms elsewhere was beginning to emerge. Assurances were given by Viking Energy in open forum questions that there would be no increase in turbine height above 145 metres (476ft) and 457MW capacity. Also in open forum, assurances were given that Viking Energy windfarm was on its own economically viable and would be the only industrial sized windfarm built on Shetland. They promised that there was no question of any industrial windfarm proliferation on the back of Viking Energy, and to suggest otherwise was just "scaremongering".

A Public Local Inquiry should have been held. This would have allowed the best renewable options within an energy mix for Shetland to be determined. A Public Local Inquiry would have considered the number and size of turbines, their scale in relation to the Shetland landscape, and risks to the natural environment. The distance of turbines from dwellings and their effects on public health would have been a major factor for the Inquiry to consider.

Any chance of a Public Local Inquiry was blocked by Councillors despite the SIC's own planning department rejecting the Viking Windfarm plans. In effect the decision to block the Public Local Inquiry was taken in a un-minuted, behind closed door meeting, prior to the official vote by councillors. Blocking of the Public Local Inquiry ensured that the decision to grant planning permission for the giant windfarm was taken by just one person, the Scottish government energy minister, despite overwhelming written objections from the Shetland public.

### **The present situation.**

Today, those public assurances given by Viking Energy are seen to be worthless. The Viking Energy windfarm is not big enough to support the interconnector cable, so on its own is uneconomic. It has therefore sought to encourage other wind farming companies such as Peel Energy and Energy Isles ( a company with shareholders in Viking Energy) to build giant industrial windfarms. So far planning permission has been granted for Peel Energy's industrial windfarm in South Yell and another near Scalloway. Planning is underway for other windfarms such as the giant Energy Isles windfarm in North Yell. The total planned windfarm footprint on the ground so far is 14.3% of the land area of Shetland Mainland and 15.3% of Yell.

All of the windfarms footprint on Shetland will be on blanket peat. Over half of Shetland is covered in blanket peat to an average depth of 1.5 metres but can be over 10 metres deep in places; even on some hillsides it is 3 meters deep. Almost two decades ago the British Geological Survey identified Shetland's hills as having the greatest risk of peat slides in the British Isles and with good reason. Shetland's peat moors now face the prospect of disruption by far the largest construction project ever to hit our islands. Peat slides will be triggered by disruption of the natural drainage by this industrial development of nearly 200 square kilometres of Shetland's hills by windfarmers.

So called 'carbon payback' models presented by the windfarm applicants are designed for flat moorland areas with thin peat cover and in reality are not applicable to the Shetland situation of steep hills and deep peat. At 60 degrees north Shetland's upland environment is much more fragile than similar environments on the UK mainland and this has never been taken into account.

Unlike the oil industry infrastructure, wind farm companies are *not* required to remove access roads and turbine bases at the end of wind farming. Access roads will be left un-maintained *in situ* to continue disrupt natural drainage and destroy tracts of moorland. At least a million tonnes of concrete and steel that make up turbine bases will be sunk into the peat and will also be left *in situ*. The alkaline concrete in the acid peat environment will form a leachate that will spread out from the turbine base to kill peat forming sphagnum moss for many hundreds of years. Ferrous salts from the steel reinforcing will also eventually leach out in the acid environment to kill the moss in an ever increasing area for many hundreds of years. Although wind farmers like to play the 'tackle climate change' card, the fact remains that industrial scale windfarms built on Shetland's deep peat will make no contribution to the reduction of carbon emissions.

Neither the original or later planning applications by Viking Energy take account of setback distance of windfarms from dwellings. A 2 kilometre setback distance is the recommendation in Scotland, but because it is not a legal requirement, this setback has been ignored by Viking Energy. 71 of Viking Energy's 103 turbines are positioned within 2km of houses, some as close as 1km. No account has been taken in past or present planning applications of the likely long term effects of audible noise and infrasound on the occupants of these dwellings. Increasing the size and power rating of turbines will

increase the detrimental impact of audible noise and infrasound on residential properties and further devalue these properties.

There is now a growing body of evidence worldwide of serious health problems, both physiological and psychological, that windfarms have on residents living in such close proximity. Windfarm companies have steadfastly tried to block research on this area. In Australia however, the negative effects of noise and infrasound from windfarms on human health have now been recognised in law i.e. *"noise annoyance"* caused by wind turbine generated low-frequency noise and infrasound *"is a plausible pathway to disease"*. With this in mind other councils e.g. Scottish Borders Council, now make a planning presumption against any turbine within 2km of a dwelling.

The visual footprint of the Viking Energy along with already granted Peel Energy wind farms now covers at least 60% of Shetland. With an increased turbine height to 155 metres for this windfarm and 200 meters for other planned wind farms, the total visual footprint of wind farms on all of Shetland will be 100%. It is not just the turbines that visually impact the landscape but, because Shetland hills are low and treeless, the network of access roads, open quarries, pylons, interconnector stations and other infrastructure greatly add to the visually corrupting footprint. Shetland has 6 National Scenic Areas, 8 Nature Reserves and 81 Sites of Special Scientific Interest all of which will be severely impacted by the 100% visual footprints of the planned and proposed windfarms.

A recent survey by Mountaineering Scotland shows that industrial windfarms have a clear negative impact on visitor numbers in scenic areas on mainland Scotland. For the comparatively small and narrow island land areas like Shetland, which will be 100% visually impacted by windfarms, the negative effects on visitor numbers will be catastrophic.

Promotion of Shetland's unique landscape by the SIC, the tourism industry, national media and television, and its designation as a UNESCO Global Geopark has dramatically increased visitor numbers since 2007. The value of tourism to Shetland now makes it one of its top industries for earnings and employment. Construction of all these industrial windfarms will occur over a long period of years and will necessitate the movement of construction materials and heavy machines and haulage of huge turbine components over public roads. The inevitable delays, disruption and temporary road closures will have an ongoing and cumulative negative effect on the tourism industry. In particular the growing cruise ship tourism industry, which depends on timely coach tours, will be badly disrupted. Bad visitor experiences leads to bad reviews and decline in visitor numbers.

Planning permission for the Viking windfarm was not granted in Shetland, it was granted by an SNP energy minister in Edinburgh. Because much of the Viking Energy windfarm is to be built on land owned by the SIC, it has painted itself into a corner whereby it has to support the interconnector cable and so by default supports increases to the size of the Viking windfarm and cannot oppose other applications for industrial windfarms across Shetland. In effect the SIC is not an honest broker when dealing with windfarm and HDVC related issues.

#### **HDVC link not needed.**

The HDVC link is not required to find the right balance between environment and island scale renewables and the best energy mix for Shetland. No viable environmental case has been made for the building of industrial windfarms across Shetland to export power through the HDVC link. Even if the Shetland windfarms are successful in the Contract for Difference (CfD) auction there is no guarantee

that community benefits can be paid, indeed it is the electricity consumer, including those in Shetland, that will have to pay for the CfD subsidy.

In 2018 Scottish windfarms were paid £115 million in subsidy not to produce electricity because there is already more windfarm generating capacity than the national grid requires. The largest payment of this public money went to SSE to keep their giant Inverness-shire windfarm idle for 29% of its capacity. Despite this all these companies wish to increase the size and number of windfarms, not to generate more power but to farm more subsidy; e.g. some windfarms in Scotland are seeking to double the number of turbines with heights of up to 220 metres (722ft).

Classing onshore wind in Shetland as offshore wind does not necessarily bring Shetland building and operating costs in line with UK onshore wind. Such classification does not guarantee higher efficiency hence the recent application for larger turbines by Viking Energy. If the HDVC link is granted there is nothing to stop Shetland windfarms increasing the size of their proposed turbines in an effort to increase efficiency. In any event, when generating capacity exceeds that which the grid requires, or links can cope with, it will be the windfarms with the highest build and operating costs along with transmission power losses, i.e. the Shetland windfarms, that will be shut down first.

*Question 1: Do you agree that the current network on the Shetland Isles needs reinforcing in order to connect additional generation?*

The existing local Shetland grid operates within the constraints of adding further local renewables. However, a scheme to include 'embedded' renewables on a Shetland grid with a new gas fired power station would need upgrading of the local network. Any such upgrade will be cheaper than the works required to build Viking Energy and other windfarms and connect them to the interconnector station.

*Question 2: What are your views on the generation scenarios developed by SHE-T? We are particularly interested in views on the likelihood of wind generation on the Shetland developing to the levels predicted by SHE-T's scenarios.*

Even with the HDVC link, a backup generation installation would be needed on Shetland. The generation scenarios developed by SHE-T are environmentally out of kilter with the Shetland environment for reasons I have discussed above and are likely to be opposed by statutory consultees and local groups. It is an unfortunate fact that the Scottish Government are likely to overrule any objections and approve Shetland windfarm applications by putting political dogma ahead of environmental balance or best consumer value.

Shetland is hundreds of miles from the point of high electricity demand yet it is incorrectly assumed that the supply from Shetland will always be in sync with other northern Scottish and offshore windfarms feeding the national grid. It seems likely that the 600MW generating capacity from Shetland will exceed that available to it when it feeds into the Caithness-Moray link. Generation capacity in Shetland will then need to be shut down, thus the Shetland HDVC cable will not be operating at maximum capacity so will be poor value for consumers.

*Question 3: What are your views on SHE-T's approach to optioneering, are there other options that SHE-T should have considered?*

It is estimated that Shetland wind generation efficiency is around 50% compared with a UK average of about 40%. This is very much a 'best case' generalisation and the efficiency figure for Shetland will be more highly variable year on year than the one implied. Shetland can have numerous winter gales when turbines need to be shut down as well as long calm frosty periods. In summer Shetland

will commonly sit under the Scandinavian high pressure systems that don't affect the rest of the UK giving low wind speeds across Shetland.

Construction costs of windfarms on the Shetland hills, especially if environmental constraints are adhered to, are much higher than a comparable UK mainland windfarm. It is unlikely that any efficiency benefits from Shetland windfarms will exceed the high costs of building and maintaining Shetland windfarms compared to a UK windfarm.

A more sensible energy solution would be to construct a new 'Shetland sized' gas fired power station since offshore gas is already processed on Shetland. This along with local renewables would be the best environmentally friendly energy mix for Shetland without the financial costs and risks associated with VEWf sized project.

*Question 4: What are your views on the CBA put forward by the ESO?*

Astonishingly it has been assumed that the HDVC link is the only option for Shetland. It seems that the Steady State (Figure 1), which should look at non HDVC options, has not been considered.

Cost benefit analysis analysis may well find that a stand alone Shetland generating scheme (as suggested in Question 1) without the £709m HDVC link and converter stations is a better balanced environmental and cost effective energy solution for Shetland.

*Question 5: What are your views on the technical design and costs of the proposed Shetland link?*

No mention is made of the quantity of copper that will be used in constructing the Shetland link. However as a ballpark figure for windfarms alone, each megawatt of wind power capacity uses an average of 3.6 tonnes of copper. From a world reserves/resource point of view it makes little sense to use a vast amount of copper to export a mere 600MW hundreds of miles when the same copper could be better used building windfarms nearer the national grid.

Similarly it makes little sense to build comparatively (with UK mainland) costly windfarms on Shetland then export the power generated through an expensive cable when the consumers would get better value per MW if the same money was spent nearer the national grid.

*Question 6: What are your views on our minded-to position to conditionally approve the Needs Case? Specifically do you agree with our proposal to approve a 600MW link if Viking Energy Wind Farm secures a CfD in 2019?*

I do not agree with your proposal to approve a 600MW link if VEWf secures a CfD. Without fully considering other options, such as stand alone Shetland solution as being the best environmental energy mix for Shetland, you have excluded seeking a best value for money option for UK energy consumers.

Seems no thought has been given to consumer cost if things go wrong. For example if there is a long term break in the links and the cost of a backup/repair. The Shetland windfarms cannot be built without the HDVC link. These windfarms are to be built on an environmentally fragile and sensitive landscape identified as one with a high landslide risk. If there is a serious pollution or large landslide incident then the 'Polluter Pays Principle' will apply. Ultimately such costs will be passed on to the consumer.

Similarly will be the cost to the consumer if windfarms found to pose serious health risks to humans and animals living in close proximity to industrial sized turbines.

*Questions 7 to 10 are outside my expertise.*

### **Conclusions.**

From the outset of the Viking Energy Windfarm Project there has been no attempt to investigate if this is best environmentally sustainable or desirable energy policy for Shetland. This was the conclusion of the SIC's own planning department at the time, only to be overruled by just 9 of 22 councillors (most having declared an interest). It is on these grounds that there has been massive opposition from the Shetland public and environmental agencies such as RSPB and John Muir Trust.

It has been assumed both by Shetland Islands Council, and now by Ofgem, that the HDVC link is Shetland's only future energy option. This is clearly not the case and I submit that a £709m cable linked to an £800m windfarm is not the best value for UK consumers.

Environmental and cost risks are high. As it is these costs are only estimates and, as almost invariably happens with such large projects, the true build costs escalate well beyond the estimates. For example if the project had been running to the original timetable and Carillion had the cable contract at the time of collapse it would have been poor value indeed.

It is clear that as well as being expensive, the HDVC cable is not infallible and a capable power station backup on the Shetland grid is required. Surely a better value for consumers is a new gas fired power station on Shetland with an upgraded local grid accepting local scale renewables.

In section 1.16 you state: *If the transmission project does not go ahead then another competitive process to determine a whole new energy solution for Shetland will likely be needed.*

With regard to this statement, I submit that you should **not** approve the needs case for the Shetland transmission project, whether or not VEFW is awarded a CfD. The present 'minded solution' seems to be the only one considered and is driven purely by hoped for benefits for the shareholders of the wind farm companies and not by best value for consumers, or Shetland's environment.

I realise that this would be a brave decision, however it would open the door to find the best environmentally suitable energy mix for Shetland and best value for consumers.

Yours etc,