

**Date: 28 May 2019**

FAO:

James Norman (Head of New Transmission Investment)  
New Transmission Investment, Systems and Networks  
Ofgem

Email: [NTIMailbox@ofgem.gov.uk](mailto:NTIMailbox@ofgem.gov.uk)

Dear Mr Norman,

## **Shetland transmission project: Consultation on Final Needs Case and Delivery Model.**

I am responding to the above consultation on behalf of Viking Energy Wind Farm LLP (VEWF), which is developing the consented 457MW Viking windfarm project in Shetland.

### **Final Needs Case Assessment**

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

VEWF agrees that the current network on the Shetland Islands needs reinforcing in order to connect additional generation and fulfil the renewable potential of Shetland.

Shetland is home to what is statistically the UK's best wind energy resource. Mean wind speed at the VEWF site exceeds IEC Class I limits, with a 90m hub-height mean wind speed of 10.2m/s across all 103 turbine locations. The small existing Burradale Wind Farm has a mean wind speed of 10.47m/s. These are comparable to means recorded at leading offshore sites, Beatrice (10.06m/s) and Dogger Bank (9.92m/s).

Shetland is currently unconnected to the GB national electricity transmission network. The island distribution network is entirely isolated, with no ability to accommodate new unconstrained wind generation connections. This position represents a technical and economic barrier to entry. Without network reinforcement Shetland cannot meaningfully develop its renewable energy resource, which is considered to be the best wind resource in the UK, and will have little or no further renewable energy development or research and development activity. In the meantime, the incentives provided by the RO, CfD and FiT mechanisms have, until now, largely passed the islands by. CfD-scale island onshore

wind projects are the only existing trigger for sub-sea transmission connections that would alleviate these barriers to entry.

As the key contracted and consented ‘anchor’ project which commercially underpins the Shetland HVDC link, VEWf strongly supports the needs case which has been submitted by Scottish Hydro Electric Transmission (SHET). This link will connect Shetland to the GB mainland national electricity grid for the first time and provide an asset of long-term national strategic importance to the United Kingdom.

**Benefits to the Shetland Community** – there are very clear economic, industrial, social and environmental benefits which delivery of the HVDC link can bring to Shetland. This is reflected in Shetland Islands Council’s view that the Viking Wind Farm project and related interconnector are “of paramount economic importance to Shetland, the project will provide substantial intergenerational economic and social benefits”.<sup>1</sup> There is a pressing need to diversify the Shetland economy and to expand its economic base through development of the world class renewable energy resources on the islands.

**Security of Supply** – VEWf welcomes the contribution to the cost of the HVDC link proposed by Scottish Hydro Electric Power Distribution (SHEPD). The recently halted Shetland New Energy Solution (SNES) provides substantial, up to date evidence that a holistic approach to remote island wind, island transmission connections and long-term island security of supply represents the best overall value for GB bill payers. In VEWf’s view such an approach provides the most cost-effective and joined-up delivery of Government policy and the best means to unlock the substantial economic, industrial, social and environmental benefits that electricity transmission investment, and the development of Shetland’s abundant renewable energy resources, can bring to the UK and to the islands. Ofgem’s position on SHEPD’s recommendation to Ofgem that “Shetland’s enduring demand needs can be met through sharing use of, and contributing towards the cost of, the proposed Shetland transmission link”<sup>2</sup> is now urgently anticipated by the industry ahead of the 2019 CfD round opening. It is imperative that the principle, and monetary level, of a fair contribution to reflect the Shetland HVDC link’s function in underpinning future security of supply to Shetland is firmly established in a timely manner. To complete the picture ahead of the 2019 CfD round opening at the end of May clarity is also anticipated on Ofgem’s position on CMP303 which seeks to “make part of the TNUOS charge more cost-reflective through the removal of additional costs from local circuit expansion factors that are incurred beyond the connected, or to-be-connected, generation developers’ needs”.<sup>3</sup>

Remote Island Wind (RIW) in Shetland relies on the timely delivery of SHET’s planned 600MW HVDC subsea transmission link. VEWf and other developers in Shetland are expecting to bid into this year’s Contracts for Difference (CfD) process, scheduled to start in May. VEWf has a connection agreement that will enable it to bid for delivery years 2023/24 - 2024/25 but this requires SHET to commence work in the next twelve months.

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<sup>1</sup> <http://www.shetland.gov.uk/coins/viewSelectedDocument.asp?c=e%97%9Dc%8En%7B%8D>

<sup>2</sup> <http://news.ssen.co.uk/news/all-articles/2019/april/shetland-whole-system-opportunity/>

<sup>3</sup> <https://www.nationalgrideso.com/codes/connection-and-use-system-code-cusc/modifications/improving-local-circuit-charge-cost>

Plans for this strategic transmission project are now in an advanced state, ready to be triggered following a positive CfD outcome for VEWf in the 2019 CfD auction round.

**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 Shetland developing to the levels predicted by SHE-T's scenarios.**

It is VEWf's view that the generation scenarios developed by SHET are a fair representation of the likely position.

### Contracted Projects

VEWF understands the following to be the contracted position for the Shetland link:

VEWF 412MW – 457MW (Final TEC decision dependent on capacity of turbines selected)

Beaw Field 72MW (Section 36 consent for up to 59.5MW)

Energy Isles 120MW (Section 36 scoping for up to 200MW – formal S.36 application expected soon).

In addition to the projects listed above, Peel Energy's Mossy Hill project, with a capacity of ca 50MW, obtained a planning consent from Shetland Islands Council on 15 April 2019<sup>4</sup>. VEWf understands that this project has a connection offer which is subject to constraint.

The sum of the above projects amounts to ca 640MW – ca 730MW of capacity which is either contracted, consented or with a consenting application imminent.

Given the scale of Shetland's wind resource, and considering future possibilities to pioneer marine/wave/tidal technologies and floating offshore wind, it is evident that 600MW provides a justifiable long-term economic and efficient capacity level. VEWf notes that arguments are being made by some market participants that it may under-represent Shetland's potential. For example, in discussions that VEWf has had with other RIW developers in Shetland, it has been suggested that, to future proof the connection capacity, an 800MW capacity level on a Shetland–Caithness link would be the economic and efficient scenario to follow. However, VEWf notes from page 17 of the Needs Case consultation that such an approach would require SHET to "revisit its procurement and planning consent". This suggests that the "earliest in service date" (EISD) associated with an 800MW connection is Q4 2025. This EISD is incompatible with the requirements of the 2019 CfD auction round and associated delivery windows. As Ofgem's minded-to position is to only approve the needs case in the event that VEWf is successful in the 2019 CfD auction, any approach that introduced a fundamental delay, effectively ruling out the participation of VEWf (and other Shetland RIW) in the 2019 CfD auction, would appear to be entirely self-defeating.

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<sup>4</sup> <https://pa.shetland.gov.uk/online-applications/centralDistribution.do?caseType=Application&keyVal=PAXTV6OAJ3P00>

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

In terms of the overall capacity of the option taken forward, VEWf believes that SHET's approach to bringing forward a 600MW connection is the appropriate one. A 450MW option would be clearly undersized against Shetland's future capacity requirements. As stated in our answer to question 2, VEWf notes the unacceptable and prohibitive impact on EISDs associated with a requirement to retender and seek new consents for a capacity greater than 600MW.

VEWF agrees that SHET has considered an appropriate range of technical options. Given the timing requirements of the 2019 CfD auction and EISDs being a key consideration, VEWf believes these factors have been appropriately taken into account by SHET.

VEWF's understanding is that to achieve the lowest cost solution for the reinforcement, SHET designed the project from the outset to connect at Noss Head into the now existing HVDC cable running from Caithness (Spittal) to Moray (Blackhillock). This configuration uses advanced multi-terminal HVDC VSC technology and involves a three-way cable system, thereby avoiding the cost of an additional convertor station in Scotland. The design of this reinforcement maximises the utilisation of the already constructed Caithness-Moray link hence reducing the cost to GB electricity customers.

### **4. What are your views on the CBA put forward by the ESO?**

VEWF broadly supports the ESO's constraints-based CBA methodology and notes that it is consistent with the approach taken on previous SWW projects where a "Least Worst Regret" approach has been applied as the decision-making tool.

The outcome of the ESO's CBA is consistent with National Grid ESO's Network Options Assessment report issued in January 2017<sup>5</sup> which stated that the Caithness–Shetland 600MW HVDC link was the "most economic, efficient and coordinated option" to allow the "attractive renewables resources" on Shetland to be developed. As detailed in the report, the factors taken into account when reviewing all the options included "Corridor" (the geographical route between the Shetland and the MITS on the UK Mainland), "Technical" (HVDC vs AC), and "Capacity" (MW rating including the potential for future growth in renewables on the island).

A wider benefit of RIW not captured by the ESO's CBA work stems from the fact that there is a low correlation of output between onshore wind from island projects and other GB wind farms. Shetland is 250km from mainland GB and c.900km from the 'centre' of GB wind production. A study commissioned by Scottish Power<sup>i</sup> found the inclusion of Shetland projects "dramatically increases the smoothing of peaks and troughs in aggregate wind energy production" and that "extending the geographical separation of

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<sup>5</sup> <http://www2.nationalgrid.com/UK/Industry-information/Future-of-Energy/Network-Options-Assessment/>

the portfolio” is the most important factor contributing to the extra smoothing. Remote island wind would extend the geographical separation of the UK’s wind energy portfolio making it less intermittent overall and enhancing overall security of supply. Remote island wind can also be delivered in nationally significant volumes, e.g. conservative production estimates for a 600MW connection to Shetland alone could provide upwards of 2.5 TWh annually.

All Shetland-Caithness options would improve the utilisation of the now completed Caithness-Moray link and help to optimise its value to wider GB electricity customers. The Caithness-Moray link was specifically designed with sufficient headroom to accommodate an export of 600MW from Shetland. This headroom is currently paid for by wider GB electricity customers, the burden of which would be shared with exporting Shetland generators when the Shetland HVDC link is completed.

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

Regarding technical design, please see the answers to questions 3 and 4, above.

Regarding costs, in delivering value for money, VEWf believes that Ofgem should rely on relevant benchmark cost data from Caithness-Moray, to enable it to assess the right level of capital costs for the Shetland link. By the time the link enters service, the RIIO-T2 price control will be in force, and this will incorporate the benefits of a market-tested WACC and operational cost benchmarks.

In our previous responses, we welcomed the possibility of introducing asset-specific performance metrics, and we would again be pleased to see appropriate operational performance metrics applied to the Shetland link.

## **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 VEWf secures a CfD in 2019?**

VEWF agrees with Ofgem’s minded-to position to conditionally approve the Needs Case. VEWf believes that the CBA submitted by the ESO supports this position providing a clear outcome under tried and tested least worst regrets SWW methodology. It is clear that a capacity greater than 600MW cannot be delivered in a timescale which is compatible with the requirements of the 2019 CfD auction and its delivery windows.

VEWF is geared up to compete in the 2019 auction and expects to be in a position to move rapidly into construction of a windfarm of capacity 412MW – 457MW when awarded a CfD. VEWf believes that its own shovel-ready project and the critical mass of projects following closely behind amply demonstrate that sufficient generation will be built in Shetland to justify a 600MW link.

VEWF agrees that the proposed 600MW option, when all factors are considered, offers the best outcome for GB electricity customers. The link will provide national infrastructure of strategic national importance to the UK, connecting Shetland to the GB electricity transmission grid for the first time. Delivery of the link is a key long-term policy goal of

Shetland Islands Council, representing the wider Shetland community, as it delivers developments “of paramount economic importance to Shetland” and “substantial intergenerational economic and social benefits”.<sup>6</sup> The link will also underpin long-term security of supply to Shetland at best overall value to GB electricity customers. Ofgem has an additional role to play in making timely decisions on SHEPD’s recommendation to meet Shetland demand via the proposed 600MW Shetland transmission link, and on CMP303 which seeks to make part of the TNUOS charge more cost-reflective through the removal of additional costs from local circuit expansion factors. Clarity from Ofgem on these matters is essential ahead of VEWf’s participation in the 2019 CfD auction, which is expected to open at the end of May.

VEWF agrees that a backstop date pegged to the close of the 2019 CfD auction is appropriate.

### **Delivery Model**

#### **Question 7: Do you agree with our assessment of the Shetland project against the criteria for competition?**

VEWF agrees that Ofgem’s assessment against the criteria for competition, as set out in Ofgem’s guidance document<sup>7</sup>, is technically correct in two respects, i.e. the Shetland transmission link is a new and relatively high value project. VEWf is not convinced about its separability, given that it is the final piece in the jigsaw in a relatively complex 3-terminal HVDC system, and the first such system to be deployed in the UK. Also, having reviewed a similar consultation on the final needs case for the Orkney transmission project and the industry responses, Viking shares some of the concerns already expressed by the industry on any proposed competition approach for delivery of islands connection links.

#### **Question 8: Do you agree with our proposal not to competitively tender the Shetland project using the SPV model or under our CATO framework unless there are significant delays to the delivery timelines?**

VEWF does not have a firm view on the delivery model for the Shetland transmission link. VEWf’s principal concern is that the transmission construction programme is maintained at the appropriate pace and the key energisation date is met by the project.

For Shetland projects participating in the upcoming CfD auction and securing a CfD contract for delivery years 2023/24 - 2024/25, it is critical that the Shetland transmission link meets the required energisation date. Any delays in the grid connection resulting from a new approach to the link delivery being applied will result in the failure by successful Shetland RIW generators to meet CfD milestone requirements in full and by stated deadlines.

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<sup>6</sup> <http://www.shetland.gov.uk/coins/viewSelectedDocument.asp?c=e%97%9Dc%8En%7B%8D>

<sup>7</sup> <https://www.ofgem.gov.uk/publications-and-updates/guidance-criteria-competition>



**Question 9: Do you agree that the Competition Proxy Model would deliver a favourable outcome for consumers relative to the status quo RIIO SWW delivery arrangements?**

Viking shares some of the concerns already expressed by the industry<sup>8</sup> in relation to the Competition Proxy Model approach. As a prospective generator on Shetland, Viking is keen to ensure that the construction of the Shetland transmission link is delivered economically and without any delays. However, Viking is also concerned about the cash flow impact of the proposed 25-year operational period under the CPM, compared to the existing 50-year asset life approach under the SWW model. The shorter period suggests that generators connecting to the link early would pick up a relatively high proportion of TNUoS charges compared to generators connecting at a later stage of the operational life of the link. Furthermore, it is not clear how any wind generation replanting opportunities and future generation investments are being accounted for in a proposed shorter life span of the transmission asset.

VEWF requires further clarity from Ofgem and NGESO on the interrelations between the proposed delivery model for the Shetland link and TNUoS charge calculations. While VEWf notes a number of references to likely GB consumer savings in the consultation document, there is no clear assessment of the impact of the proposed delivery approach on Shetland wind generation developers. From a developer's perspective, Ofgem's statement in Para 3.29 that the limited impact on 'intergenerational equity transfer' is not sufficiently material to justify not pursuing the overall level of savings available is not sufficiently substantiated by the appropriate level of detail in the consultation document.

**Question 10: What are your views on the way in which we have applied project specific updates to the Competition Proxy Model methodology to account for the specific characteristics of the Shetland project?**


VEWF is supportive of the approach that results in the Shetland transmission link being built economically and efficiently, thus resulting in the lowest costs to consumers and users of this infrastructure. Viking expects that this outcome will be achieved through a careful consideration of all approaches and parameters by Ofgem and a relevant Transmission Owner. That said, the SWW RIIO-2 price controls will apply from 2021/22, and these will incorporate the benefits of a market-tested WACC and operational cost benchmarks. Also, in delivering value for money, we believe that Ofgem should rely on relevant benchmark cost data from Caithness-Moray to enable it to assess the right level of capital costs for the Shetland link.

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<sup>8</sup> <https://www.ofgem.gov.uk/publications-and-updates/orkney-transmission-project-consultation-final-needs-case-and-potential-delivery-models>

I hope that this input is helpful, and would be happy to discuss our response further.

Yours sincerely,



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Aaron Priest  
Head of Development and Strategy  
Viking Energy Shetland  
(On behalf of Viking Energy Windfarm LLP)

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Update to Short Report on the Effect of Geographical Dispersion on the Energy Production of Wind Farms, Sgurr  
Energy for Scottish Power – Available on request.