

Shetland Transmission Project; Consultation on Final Needs Case and Delivery Model.

Schedule 1: Scottish Hydro Electric Transmission's response to Final Needs Case Assessment.

Executive Summary

Scottish Hydro Electric Transmission (SHE-Transmission) welcomes the opportunity to respond to Ofgem's consultation on the Shetland transmission project: Consultation on Final Needs Case and Delivery Model, published on 19th March 2019.

Ofgem has correctly recognised the need for a 600MW transmission reinforcement, linking Shetland to mainland Scotland for the first time. The renewable generation potential on Shetland confirms that any investment in new network infrastructure will be utilised, bringing a multitude of benefits to both the local economy and wider GB consumers. **We welcome this significant milestone and the certainty it provides for developers on Shetland.**

Background to SHE-Transmission's proposal

Shetland has some of the richest renewable resources in Europe¹ and the need for network reinforcement on Shetland to facilitate the export of significant renewable generation is well established. This has been further driven by UK Government support for investments in renewable energy² and technological innovation from generators³. Developer commitment on Shetland remains strong.

In our Needs Case submitted in September 2018, the proposed 600MW link was conditional on the Viking Energy Wind Farm (VEWF) securing a Contract for Difference (CfD) award in the 2019 allocation round. VEWF has an expected capacity of 412-457MW, depending on planning consent being secured with the higher end of the range representing the current contracted capacity.

We believe that the evidence presented our Needs Case and Cost Benefit Analysis (CBA) demonstrates that the 600MW link provides the best opportunity developers to connect, not only now but for the

¹ <https://www.ninessmartgrid.co.uk/our-project/shetland-energy-challenge/>

² <https://www.gov.uk/guidance/funding-for-innovation-in-renewable-energy>

³ <https://www.shetland.org/60n/blogs/posts/another-world-first-for-shetlands-tidal-energy>

future generation potential of Shetland. The remaining capacity encourages and enables future generation to connect over the 45-year life of the asset, offering wider benefits to the GB consumer and Shetland.

Conclusion

SHE-Transmission agrees with Ofgem that a 600MW link is both needed and the correct network solution. We remain convinced that the transmission link will create the opportunity for substantial benefits for the local community and the GB consumer over life of the asset and will enable the connection of future generation.

APPENDIX

Schedule 1: Consultation Questions 1-6

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

We agree that the current network on the Shetland Isles needs reinforcing in order to connect additional generation. Our assessment of the generation potential and development on and around Shetland, combined with extensive cost benefit analysis by both the ESO and our independent consultant Gutteridge Haskins & Davey (GHD) demonstrates this need. Our analysis confirms that this investment will unlock significant benefits for the residents of Shetland and wider GB consumers.

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.

The Shetland Isles has a significant potential for renewable generation. Given its location, the Shetland Isles is known to have some of the best wind resource in all of Europe.⁴

In our final Needs Case we included several generation scenarios developed in conjunction with our consultants GHD. The Needs Case and supporting documentation explained how these scenarios were derived and the evidence relied upon. We believe these represented credible and realistic high, medium and low generation possibilities. These were compared and analysed alongside the Future Energy Scenarios (FES) developed annually by the GB Electricity System Operator (ESO). The scenarios modelled also covered a range of potential outcomes of the 2019 BEIS CfD auction, where one or more generation projects on Shetland may not be successful.

The generation scenarios assumed a modest amount of background growth in small scale wind generation, consistent with the Shetland Islands Council's Supplementary Guidance for Onshore Wind Energy⁵, as well as some growth in small scale solar PV and tidal energy.

Furthermore, the ESO provided four generation scenarios which point to similar conclusions; a 600MW link would provide the best value in the long term for the consumer.

⁴ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/199038/Scottish_Islands_Renewable_Project_Baringa_TNEI_FINAL_Report_Publication_version_14May2013__2_.pdf

⁵ <https://www.shetland.gov.uk/planning/documents/SEAEROnshoreWindEnergyJuly2017-Final.pdf>

We believe that the generation scenarios show a comprehensive and credible set of potential outcomes. The evidence demonstrates that wind generation on Shetland has the potential to develop to the levels predicted, especially with the number of other projects currently in development. There is also strong commitment from the community, council and developers to realise and support this level of generation. If conditionality is met and Ofgem approves the 600MW solution, this would provide further capacity, encouraging future generation to connect over the life of the asset, thereby unlocking even more benefits in the long term.

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

SHE-Transmission's Needs Case included a thorough and robust optioneering process. In total twelve options were considered, along with 3 route corridors.

Shetland is the most remote inhabited community from mainland GB and the existing transmission system. Therefore, the distance from Shetland to the mainland only allowed for HVDC technology to be considered for the subsea cable. The principle evaluation criteria were applied (i.e. covering capacity, programme and cost) and resulted in five engineering options being presented to GHD and the ESO for the CBA. These ranged between 450MW and 800MW options.

As such, there are no further feasible options that SHE-Transmission could have considered. We maintain that our approach to optioneering is robust, seeking best value with the most efficient solution.

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

SHE-Transmission firmly supports the ESO's analysis and findings. Fundamentally, the CBA compares the Present Value (PV) of reinforcement costs with the PV of forecasted constraint cost savings. Where constraint cost savings exceed the investment cost, the reinforcement could be considered economical. This is an appropriate and established industry approach when considering the costs and benefits of the potential investment.

In order to develop robust conclusions, the ESO considered a range of generation backgrounds, design options and sensitivities. The ESO arrived at the same conclusion as GHD's BA, applying the principles of Least Worst Regret (LWR) analysis which demonstrated that the 600MW link was the best solution of the options considered.

The ESO has also identified a **significant welfare benefit** in the form of savings for the GB consumer over the 45-year life of the link. These were between £842 million and £1,470 million, dependent on the generation scenarios.

Our independent consultants GHD has identified substantial overall economic benefit to Shetland ranging from £143m to £204m depending on the generation scenario and the 600MW reinforcement option .

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

Technical design

As part of SHE-Transmission's Needs Case submission, we used robust CBA methodologies to evaluate a number of reinforcement options. This analysis was conducted independently by the ESO and our consultant, GHD. It conclusively identified our proposed option of a 600MW link integrated within a multiterminal HVDC scheme to be the most economical solution across a broad range of Shetland generation scenarios.

Costs

Cost efficiency will be achieved and demonstrated by applying a multi-contract procurement strategy. With SHE-Transmission taking responsibility for the management and co-ordination of the many project interfaces, supply chain contract costs will be minimised. Furthermore, we will be exploring opportunities to develop efficiencies by looking at synergies between the supply chain for items such as site accommodation and logistics.

SHE-Transmission have some of the most extensive experience of implementing large capital projects, such as SWW projects Kintyre-Hunterston and Caithness-Moray. The range and scope of these previous projects puts us in a strong position to identify and implement "lessons learned" activities, i.e. equipping us to ensure risks can be managed effectively. We have also carried out recent offshore site investigation surveys to ensure tender returns for sub-sea cable requirements are priced on an accurate basis.

Best value will be achieved through competitive tenders for all key procurement awards for both framework and one-off contracts. Our tender events are carried out pursuant to the requirements of the EU Procurement Directives, as reflected in UK Statutory Instruments under the Utilities Contracts Regulations 2016 and Utilities Contracts (Scotland) Regulations 2016, ensuring transparency and equal treatment of all participants. The use of framework agreements provides the following key benefits:

- Competition – a framework agreement is not a guarantee of work and successful framework contractors are aware they will likely have to compete for specific projects – ensuring costs are competitive.
- Enhanced quality – quality standards and experience on projects of a scale and cost commensurate with our projects and is a key criterion for qualification into our tender processes.

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- Experienced programme management and delivery – ensuring projects are delivered to plan, on time and on budget.
- Commercial benefits - continuous work programmes avoiding duplication of resource and cost, cost efficiencies through project synergy and economies of scale.
- Accountability – should anything not go to plan there are clear contractual mechanisms and financial instruments, ensuring consumers' exposure to the potential cost of a contractor's act or omission is mitigated.

In addition to this supplier relationship management, processes are used for strategically important suppliers to measure and improve relationships, which encourages supplier innovation and drives value from the supply chain. We believe the costs achieved through these mechanisms are reflective, competitive and offer value to the GB consumer.

We note Ofgem's comments regarding benchmarking values. We maintain that Ofgem's benchmarking does not consider the specific challenges associated with the construction of the Shetland transmission link, nor does it contain the necessary sensitivity or accuracy to develop cost conclusions. In particular, we believe Ofgem's base data is flawed and it does not include a wide enough range of comparable projects, nor does it account for the unique characteristics, such as location, capacity, length, etc. We have raised these concerns with Ofgem and will further discuss at Project Assessment.

It should also be noted that our tender exercises are not complete and procurement negotiations and value engineering work is ongoing. We intend to present our final costs at Project Assessment stage which will be representative up to that point. These will include efficient costs driven by our approach to contract structure, negotiations, lessons learned, etc.

We believe that a competitive, multi-contract procurement strategy will determine the true benchmark value for the project.

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.

SHE-Transmission welcomes Ofgem's minded-to position to conditionally approve our Needs Case. We also agree with this approval being conditional upon VEWf securing a CfD in 2019.