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ESO letter to Ofgem regarding HND North Cluster Impact Assessment and asset classification.

Dear Stuart,

In July 2022, we published the first Holistic Network Design[1] (HND) setting out a single, integrated design that supports the large-scale delivery of electricity generated from offshore wind, taking power to where it's needed across Great Britain. Since the publication of the HND, Transmission Owners (TOs) and in scope offshore wind developers with non-radial connections have started to produce the Detailed Network Design (DND). As part of that process, TOs and developers have identified potential design changes which required us to develop a process to assess the impact of these changes, against the baseline of the HND, using the four HND design criteria. We have referred to this process as the HND Impact Assessment process[2].

Deviations from its recommendations may have wider implications for the transmission network and other industry processes. It is important that we understand the full impact of any design changes, as there may be consequences that are not immediately obvious, and we are best placed to conduct this holistic assessment.

The purpose of this letter is to communicate the outcome of the second impact assessment and how the design change that was assessed compares to the original recommended HND. We also wish to request that Ofgem consider our assessment of the asset classification of the new recommended design for the “North Cluster” (as defined below) of the HND. From our assessment we do not see material changes to electrical flows for this configuration when compared to the original HND recommendation.

The second group to submit design changes through the Impact Assessment process were the HND developers and TOs due to be electrically connected off the east coast of Scotland and England. The group is formed of two projects within the eastern ScotWind zone generating 2.7 GW of offshore wind, with a coordinated connection to Hurlie (Fiddes) in the north, and two further connections to Hawthorn Pit and Lincolnshire in the south. These parties are known as the “North Cluster” (due to their location in relation to other HND projects) and include SSEN-T, NGET, BP-EnBW (Morven) and Renantis (Bellrock).

The request follows a recent AC cable assessment which has identified a reduced ability to transmit high volumes of power securely along long offshore AC cables without significant reactive power compensation.

[1] The Pathway to 2030 Holistic Network Design | ESO (nationalgrideso.com)
[2] Offshore Coordination Project | ESO (nationalgrideso.com) – see “Progressing delivery of the Holistic Network Design (HND)” section

We work with equipment manufacturers through our deliverability forum to update our design assumptions on a regular basis.

The group submitted three categories of designs, exclusively looking at the options for cabling technology and configurations from the offshore platform arrangements of Morven Windfarm to the landing point connection onshore at Hurlie (Fiddes). When considering Deliverability and Operability design criteria and the recent developments in operating AC cables, ESO concur with the conclusion reached by SSEN-T that the original HND recommendation for this specific section of infrastructure is no longer deliverable. Upon completing the Impact Assessment for the HND North Cluster, Category C performed more favourably against the HND design objectives than all other categories put forward.

When compared with the HND recommendation, the Category C design provided:

- Regional Environmental benefits, due to a reduction in cables and trenches required when switching to the HVDC technology proposed.
  - HND Baseline – 4 cables in 4 trenches
  - Category C – 2 cables in 2 trenches
- Marginal Economic increase in overall cost (£1.1b) due to challenges in the supply chain for transmission assets and increases in the cost of Offshore equipment. Notwithstanding this, costs for Category C design are more favourable than all other deliverable options due to reduction in number and length of cables required and removing the need for a Mid-Point compensation platform.
- Operability benefits in providing a simpler more achievable design, a problem has been identified with HVAC cables at this capacity and distance which would make them exceedingly challenging to operate without expensive and untested remediation.

Further detail of the new design, the factors influencing the outcome of the Impact Assessment, and the potential benefits of the design change can be found in the accompanying North Cluster Impact Assessment Outcome Summary on the ESO HND website.

On 7th February, ESO took an agenda item on the North Cluster Impact Assessment to a meeting of the Offshore Transmission Networks Review (OTNR) Transmission Networks Board, in order to ratify that the necessary considerations had been applied [3]. This is consistent with the approval sought for HND and HND Follow up Exercise (HNDFUE). We presented the outcome of the assessment and an explanation of the process that we followed, in order to provide sufficient evidence to the group to demonstrate that we had followed the required process and ask for their sign off. The group confirmed they believe we had followed the required process which means the outcome of the Impact Assessment is now finalised.

In October 2022, Ofgem set out the criteria for determining the appropriate classification[4] of each asset in the HND, in order for the correct licence to be granted. Having reviewed the Ofgem criteria for determining the classification, and considering there is no material change to the network configuration of the HND, we view the original asset classification as appropriate, and do not foresee a requirement to make an adjustment. This will provide clarity for TOs and developers progressing the DND for the Category C design.

We welcome your response. If you have any questions or comments related to points raised in this letter or require further information, please do get in touch.

Yours sincerely

Graham Stein

Head of Offshore Coordination Network Planning

[3] PowerPoint Presentation (nationalgrideso.com) – see Governance section
[4] Offshore Transmission Network Review: Decision on asset classification | Ofgem