ESO

HND Impact Assessment – South Cluster outcome summary

February 2024

Brief overview

In July 2022, ESO 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 the DND phase, TOs and developers consider the designs in more detail and potential design changes are to be expected. This required ESO to develop a process to assess the impact of these changes, against the baseline of the HND, using the four HND design criteria. These changes may include a change in technology, a change in cable route or length or a change of network configuration that would have a material impact on the design criteria. We developed this process during summer 2023 with input from stakeholders, and have referred to this as the HND Impact Assessment process[2].

Deviations from the 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 the ESO is best placed to conduct this holistic assessment.

Submission

On 31st August 2023, we received the first Impact Assessment from National Grid Electricity Transmission (NGET) with a design change on behalf of HND parties which were due to be electrically connected off the east coast of England. These parties are known as the “South Cluster” (given their location in relation to other HND projects) and include NGET, SSEN-T, RWE (Dogger Bank South (DBS) East and DBS West) and SSE Renewables and Equinor (Dogger Bank D). The group submitted four categories of designs, ranging in levels of interconnection. The request follows recent movements in the global supply chain of HVDC technology making the HND network in this area challenging to deliver for 2030.

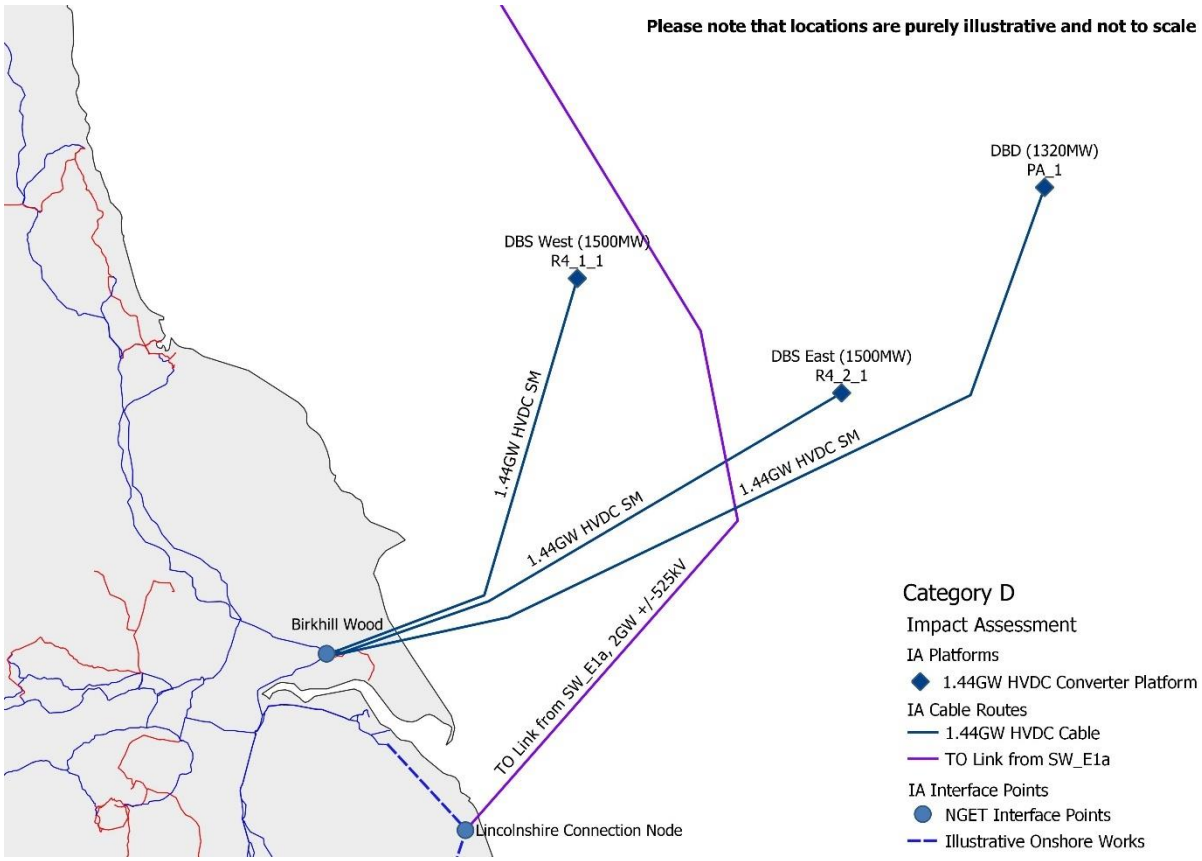
Outcome

The Impact Assessment has identified a design which presents benefits across several Network Design Objectives compared to the original HND design (the ‘baseline’). The best performing design, referenced as Category D (see map below), has reduced interconnection for the South Cluster compared to the baseline HND, with the three offshore wind farms of the South Cluster connecting directly to shore via lower capacity cables (1.44GW) and a single transmission cable (2GW) coming from the Northern Cluster to Lincolnshire.

There are a number of changes that have occurred since the HND was published in 2022 which have led to this outcome. Increases in the cost of Offshore equipment above the rates of general price increases, challenges in the supply chain for transmission assets, and the identification of

[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

opportunities to realise additional electrical and physical capacity are key factors. A significant driver of this assessment and outcome is the updated delivery timescales for different technology types provided to the ESO by the Southern Cluster parties, meaning the original HND design would be delayed by a number of years. The Category D design delivers economic benefits by enabling earlier connection of generators, operability benefits in providing a simpler design, environmental benefits in reducing assets in a marine area that is sensitive to cabling, and a small change in community impact driven by an additional convertor station being required onshore.



(Map showing the Category D design for the HND South Cluster – locations are illustrative and not to scale)

Governance

On 15th December 2023, this outcome was presented to the Offshore Transmission Networks Review (OTNR) Transmission Networks Board (TNB) in order to ratify that the necessary considerations had been applied. 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 the required process had been followed, which means the outcome of the Impact Assessment is now finalised.

Next Steps

When available, we will publish Ofgem's response to our letter communicating the outcome of the South Cluster Impact Assessment, which we anticipate will communicate the asset classification of the new design.