Public

HNDFUE Impact Assessments - Collaborative Impact Assessment Outcome Summary

September 2025

Brief Overview

In July 2022 we published our recommended *Holistic Network Design (HND)*[1]. *Beyond 2030*[2], was later published in March 2024, which incorporated our recommended design for projects from the ScotWind Holistic Network Design Follow up Exercise (HNDFUE). Each design sets out a single, integrated network that supports the large-scale delivery of electricity generated from offshore wind, taking power to where it is needed across Great Britain. Since the publication of the HND and HNDFUE, 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 our recommendations in more detail and can propose potential design changes. This has required us to develop a process to assess the impact of these changes, against the baseline of the HND/HNDFUE, using the four HND design criteria set out in our methodology[3]. 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 refer to this process as the HND/HNDFUE impact assessment process[4].

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. As the independent system operator, we are able to conduct this holistic assessment at this stage of development.

[1] neso.energy/publications/beyond-2030/holistic-network-design-offshore-wind
[2] neso.energy/publications/beyond-2030
[3] neso.energy/document/270851/download
[4] neso.energy/document/286776/download

Public

Submission

On 4 July 2025, we received a proposed design change that had been collaboratively submitted by the parties who were recommended to be electrically connected offshore, off the east coast of Scotland.

They include the TOs, Scottish and Southern Electricity Networks Transmission (SSEN-T) and National Grid Electricity Transmission (NGET), as well as the offshore wind farms being developed by partnerships: CampionWind (ScottishPower and Shell), Morven Offshore Windfarm (JERA Nex BP and Energie Bafen-Wurttemberg AG) and Ossian (SSE Renewables, Copenhagen Infrastructure Partners and Marubeni Corporation).

Following development activities and engagement with the supply chain, delivery parties indicated several factors that resulted in the collaborative submission of the design change request. They indicated key operability challenges associated with an offshore meshed network compared to radial connections, including anticipated supply chain issues linked to the requirement for more equipment, and a perceived increased risk associated with offshore meshed network.

Multiple variations of the offshore network topology (which included fully radial and partially coordinated options) were submitted to us for assessment. Supporting technical reports were shared by the group to support the impact assessment process including revised equipment schedules, cost estimates, project level construction impacts and updated onshore system studies from the TOs.

Outcome

The conclusion of our analysis resulted in each of the offshore wind farms now connecting directly to the onshore network without the interconnectivity offshore. CampionWind now connects to a new proposed substation in the Emmock area in Angus, Scotland and to Lincolnshire Connection Node (LCN) in Lincolnshire, England.

Morven remains connected to just north of the Branxton area in East Lothian, Scotland.

Two of Ossian's connections into Weston Marsh substation in Lincolnshire, England are retained, with its third link now connecting a new proposed substation in the Brechin area of Angus, Scotland. There

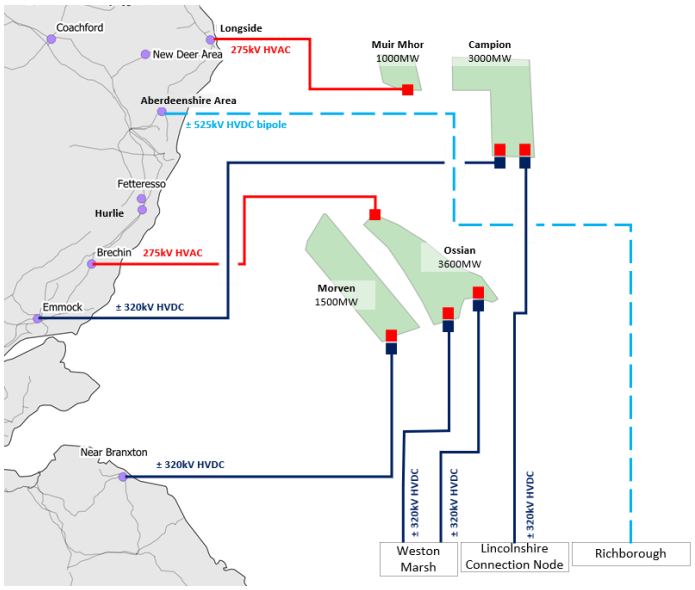

Figure 1: Map showing the design change – locations are illustrative and not to scale. Final design configuration is subject to further detailed network design.

are multiple National Strategic Infrastructure Projects for electricity transmission under development in Lincolnshire, this includes three links from the HNDFUE network. We would highlight that the latest design does not affect the scope within the Lincolnshire region recommended to date. However, the developer for the transmission link to LCN has changed from Ossian to CampionWind. The map shown in Figure 1 provides an overview of these details. Coordination between the developers as they navigate the planning process and consultation with key stakeholders will be key. We will continue to work closely with the projects as they prepare the necessary applications and consultations.

Also, a new 2 GW High-voltage direct current (HVDC) offshore link is created between a new substation in Aberdeenshire and the Richborough area in Kent, to maintain the north to south power transfer in the original recommended design and to alleviate constraints to the onshore network.

It is recognised that the new HVDC offshore link, when disconnected from generation offshore, becomes a wider network reinforcement independent of the offshore HNDFUE network. Additionally, further optimisation is required to develop the project which has a low maturity level. Therefore, it is expected that the link will be developed further by the TOs and assessed in the Transitional Centralised Strategic Network Plan 2 (tCSNP2) Refresh[5] to ensure the wider network economics are maintained but also ensure it improves environment and social outcomes wherever possible to align with the HND objective.

This topology demonstrates a lower offshore component cost than the original recommended HNDFUE design, due to its simpler offshore topology. It also provides a simpler and less complex offshore network, addressing the delivery parties' operability and commercial concerns with the original recommended HNDFUE design. It has network power flow similarities with the original recommended HNDFUE design which in turn contributes to similarities with performance across the HND design criteria. Additionally, this topology performs similarly on environmental and community HND design criteria, having comparable constraints to the original recommended HNDFUE design.

The offshore wind farms involved in this network design are large complex projects, facing challenges such as deployment of novel offshore floating wind technology alongside a competitive HVDC offshore supply chain. The updated network topology balances the risk fairly across all parties to progress their designs through detailed design and into delivery phases of development.

[5] neso.energy/publications/transitional-centralised-strategic-network-plan-tcsnp/tcsnp-refresh-methodology

Governance

The outcome of the assessment was presented to the HND Board, previously the Offshore Transmission Networks Review (OTNR) Transmission Networks Board (TNB) on 28 August 2025, to ratify that the necessary considerations had been applied. This is consistent with the governance followed for the HND and HNDFUE. We presented the outcome of the assessment, and an explanation of the process followed. The HND Board confirmed they believe the required process had been followed, which means the outcome of the Impact Assessment is now finalised.

Next Steps

The outcome of this impact assessment provides the final offshore network recommendation for the HNDFUE. The TOs will need to align the onshore network with the reordered queue as part of the Connections Reform[6] programme.

When available, we will publish the Office of Gas and Electricity Markets (Ofgem's) response to our letter communicating the outcome of this impact assessment, which will advise if a change in asset classification is required or that the original asset classification of the HNDFUE is still appropriate.

[6] neso.energy/industry-information/connections-reform