Public

HND and HNDFUE Impact Assessments

Ossian and North Cluster 2 Outcome Summary

April 2025

Brief Overview

In July 2022 we published our recommended *Holistic Network Design (HND)*[1]. *Beyond 2030*[2], published in March 2024, 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 potential design changes are to be expected. This 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. 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[3].

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 we are best placed 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/286776/download

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Ossian Impact Assessment

Submission

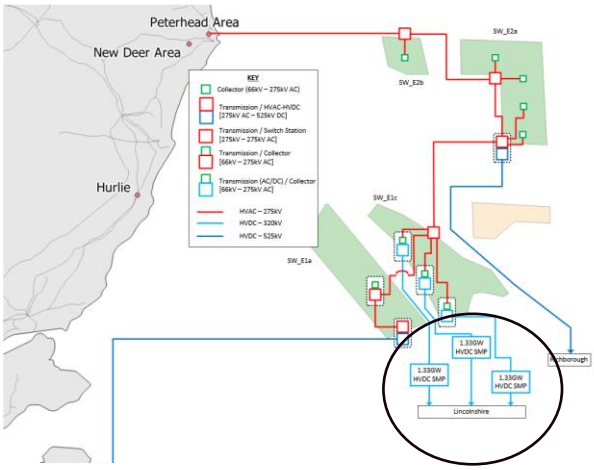
On 22 April 2024, we received a proposed design change from the Ossian offshore wind farm, one of four wind farms which are electrically connected offshore as part of the Holistic Network Design Follow Up Exercise (HNDFUE) recommended design. Ossian is being developed by a partnership with SSE Renewables (SSER), Marubeni Corporation (Marubeni) and Copenhagen Infrastructure Partners (CIP).

The proposed change is primarily a change in technology of the export links (subsea cables) from the Ossian offshore wind farm to Lincolnshire. To support this an additional subsea export circuit is required together with an offshore platform and onshore substation with associated electrical equipment.

Outcome

The technology change proposed for the export links is the more established technology for offshore wind transmission with less risk associated with supply chain lead time, outages, insurance premiums and practically phasing how and when the wind farm is constructed and commissioned. The technology choice and wind farm phasing are significant as the existing design could create additional risk to the consumer while future users of the shared transmission network progress their connections.

The proposed design change option performed better against the four design objectives, to the updated version of the HNDFUE baseline design (the counterfactual). The original baseline is no longer deemed a direct comparator considering the identified risk with the existing technology. This means there is no reason not to proceed with the option proposed, and the Ossian project can continue to develop the project's detailed network design based on three 1.33 GW symmetrical monopole links from the Ossian offshore wind farm to substations in Lincolnshire, as shown on the map.



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

To minimise environmental and community impacts the Ossian project is committed to delivering Ossian's civil infrastructure associated with the onshore export cables concurrently, provided that doing so is feasible and practical.

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HND North Cluster 2 Impact Assessment

Submission

In May 2024, we received a proposed design change from the HND North Cluster, the parties which were due to be electrically connected off the east coast of Scotland and include the Transmission Owners (TOs) Scottish and Southern Electricity Networks Transmission (SSEN-T) and National Grid Electricity Transmission (NGET) and the offshore wind farms being developed by partnerships: Morven Offshore Wind Farm (BP and EnBW) and Bellrock Offshore Wind Farm (BlueFloat Energy and Nadara).

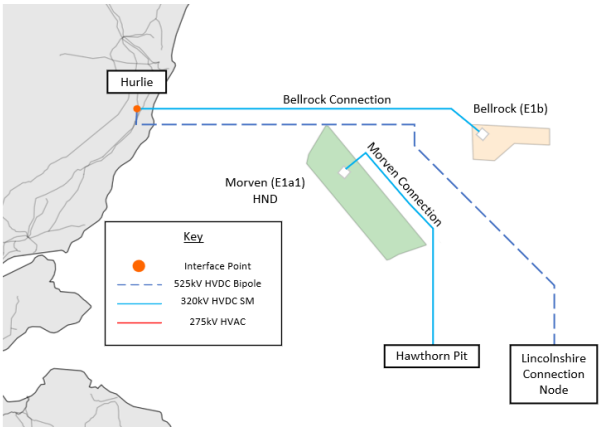
The proposed change was centred around multiple variations of network topology (coordinated and radial options) for the coordinated offshore hub, prepared by the cluster and submitted to us for assessment. Extensive supply chain engagement on feasibility of topology options was conducted in parallel and shared to support the impact assessment process.

Outcome

The conclusion of our analysis resulted in Bellrock connecting directly into Hurlie and Morven connecting directly into Hawthorn Pit, emerging as the preferred option. Coordinated designs, particularly when simplified into a more modular solution do offer balance across the four design objectives. However, due to the limited market uptake of bespoke solutions and technology maturity level, continuing with the recommended design could cause delay to the delivery of critical onshore reinforcements and a potential risk of delay to clean power connections.

The 2GW HVDC bipole subsea reinforcement asset, from Scotland to England, in this design is recognised as having wider system strategic importance, not only due to power flow and constraint benefits, but also considering the significant volume of customers (not electrically connected to the design) who are dependent on timely delivery as per their enabling works. Our findings conclude complex meshed designs have limited opportunities for accelerated delivery.

NESO have been made aware of a further design change proposal from SSEN-T considering an alternative location for the 2GW HVDC bipole subsea cable connection point in Scotland. We are working closely with SSEN-T to



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

ensure any alternative design is an economic solution for the consumer, supports Great Britian net zero targets and mitigates impacts across the four design objectives wherever possible.

To minimise onshore environmental and community impacts SSEN-T and the Bellrock project teams are working closely to ensure the most effective planning process is deployed. The exact impacts are uncertain at this level of project development and are dependent on project level decisions such as ability to coordinate with other projects and technology decisions made through detailed design.

Governance

The outcome of the assessments was presented to the Holistic Network Design (HND) Board, previously the Offshore Transmission Networks Review (OTNR) Transmission Networks Board (TNB) on 19 December 2024 (Ossian) and 7 February 2025 (North Cluster 2), to ratify that the necessary considerations had been applied. This is consistent with HND and Holistic Network Design Follow Up Exercise (HNDFUE) which were approved by the HND Board. We presented the outcome of the assessments and an explanation of the process that we followed, 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 Assessments is now finalised.

Next Steps

The nominated delivery parties will now take forward detailed design and delivery for the required network infrastructure. They will be subject to regulatory approval and responsibilities under planning law as major infrastructure projects.

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