November 2025

Holistic Network Design – Implementation Plan

SEA Environmental Report – Executive summary

Executive Summary

Overview of NESO

The UK's 2023 Energy Act set the legislative framework for an independent system planner and operator to help accelerate Great Britain's energy transition. This led to the establishment of the National Energy System Operator (NESO).

An independent, public corporation at the centre of the energy system, NESO takes a whole system view to secure our vison for reliable, clean and affordable energy. NESO's work will be the catalyst for change across the global community, forging the path to a sustainable future for everyone.

Tackling climate change is truly the challenge of our generation, addressing energy security, sustainability and affordability for everyone is at the forefront of the global agenda and drive to meet net zero. NESO will look across the whole energy system to meet these challenges and transition to a low-carbon future, embracing new technologies and cleaner generation sources, always with the cost to the consumer in mind.

NESO's three primary duties are:

- Net zero - enable the government to deliver on its legally binding greenhouse emissions targets
- Efficiency and economy - promoting efficient, coordinated, and economic electricity and gas networks
- Security and supply - ensuring security of supply for current and future consumers of electricity and gas.

Overview of Offshore Coordination

The Offshore Coordination (OC) Team was set up by NESO (previously National Grid Electricity System Operator) with the support from Ofgem and the Department for Energy Security and Net Zero (DESNZ). Offshore Coordination contributes to the Offshore Transmission Network Review (OTNR) which was set up in July 2020. Its purpose is to enable the vital role of offshore wind in meeting the UK Government's targets for net zero. The Terms of Reference (ToR) for Offshore Coordination set out the ambition for NESO to design coordinated offshore wind recommendations for a variety of different offshore wind leasing rounds. These included ScotWind, Innovation Targeted Oil and Gas (INTOG) and Celtic Sea. The completion of these design recommendations totals over 53GW across 34 different projects of offshore wind across Holistic Network Design (HND), HND Follow Up Exercise (HNDFUE), Celtic Sea and INTOG.

The Strategic Environmental Assessment for Offshore Coordination

NESO has engaged with specialist consultants to carry out a Strategic Environmental Assessment (SEA) on the HND Implementation Plan which covers the preferred GB network designs captured within HND, HNDFUE, INTOG and Celtic Sea (as of the end of August 2024). The scope for this SEA covers the transmission cables from the offshore generator to a point of interface with the onshore electricity transmission system. Other transmission reinforcement work onshore is anticipated to be captured through upcoming processes, or at a project level. Whilst it is not mandated within the ToR that OC carry out a SEA, due to the size and scope of the design exercises, carrying out this process will ensure our recommendations have given the appropriate level of consideration to environmental effects.

In summary, SEA is:

- a systematic process for evaluating the environmental effects of a proposed plan;
- a process which seeks to ensure that environmental issues are fully integrated and addressed with a view to promoting sustainable development.

The SEA for OC follows the process set out by English and Welsh SEA Regulations and the Scottish Environmental Assessment Act. The stages of the SEA are represented in the diagram below.

To ensure independence and objectivity NESO commissioned RPS to undertake an SEA. SEA Screening and consultation with the statutory consultees for SEA in GB was undertaken in January to March 2025. SEA Scoping and consultation on the SEA Scoping Report with the statutory consultees for SEA in GB and wider stakeholders was undertaken in April to June 2025.

SEA Environmental Report

The purpose of the Environmental Report (ER) is to provide a formal and transparent assessment of the likely significant effects on the environment arising from implementation of the HND Implementation Plan, including consideration of reasonable alternatives. Habitats Regulations Assessment (HRA)[1] and Marine Conservation Zone Assessment (MCZ) have taken place in parallel with the SEA, and feed into the assessment of options within the Environmental Report.

[1] In this document, the term 'Habitat Regulation Assessment (HRA)' will be used consistently to refer to the process also known as 'Appraisal' in Scotland.

As part of the overall HND and HNDFUE design methodology, RPS undertook an assessment of environmental and social constraints to offshore cabling (cabling from the proposed offshore wind farm site to the proposed interface point on the onshore grid) to inform the development of recommended network design options. The RPS assessment methodology was intended to provide a consistent, rapid and robust approach to establishing the likely risks of impacting various environmental, community and technical constraints and sensitivities. This was to determine the potential feasibility of an area to accommodate a proposed interface point and identify potentially feasible route corridors and design options.

The network design methodology applied to HND, HNDFUE, INTOG and Celtic Sea and appraised a significant number of potential route corridors and grouped options, including consideration of technical, environmental, and community constraints and sensitivities at key points in this process. The outcome of each design exercise was the identification of a recommended design. The number of potential strategic route corridors and options appraised for each design exercise and the Preferred Option identified for each is summarised below.

HND Work Strand	Description	Route Corridors Appraised	Options Appraised	Outcome preferred option
HND	Development and assessment of coordinated and radial approaches to cabling connections from Round 4 OWFs and some ScotWind OWFs.	166	79	Coordinated design – 9 of 18 in scope OWFs connected using coordinated connections.
HNDFUE: Scotwind	Development and assessment of coordinated and radial approaches to cabling connections from remaining ScotWind OWFs.	146	140 initial design options and 6 shortlisted design options.	Design S_009s
HNDFUE: Celtic Sea	Development and assessment of coordinated and radial approaches to cabling connections from Celtic Sea OWFs.	19	41 initial design options and 8 shortlisted design options.	Design C_011z
HNDFUE: INTOG	Development and assessment of coordinated and radial approaches to cabling connections from Innovation and Targeted Oil and Gas OWFs.	30	29 designs shortlisted for the TOG designs; 5 designs shortlisted for the IN designs.	Combination of IN_002 and TOG_R012U-NC

The environmental and community constraints and sensitivity data as well as indicators used in these appraisals, reflected and represented the issues and topics considered in

SEA, recognising the potential for effects of cabling operations and the key areas or features that should be avoided. Given the significant scale and importance of this, a streamlined approach was adopted to ensure timely and efficient impact assessment at each stage of this iterative process. By adhering to the key criteria of SEA we successfully considered and avoided environmental and community constraints and sensitivities where possible. In this manner the appraisal process functioned as a form of 'SEA light' for hundreds of iterations of potential routes and options, with important environmental and community factors influencing the design development. The outputs of all these 'SEA light' appraisals are included as an Appendix in the Environmental Report, while Section 9 of the Environmental Report provides a comprehensive assessment of the Preferred Options established by HND, HNDFUE, INTOG and Celtic SEA which are combined as the HND Implementation Plan.

The appraisals undertaken for the Environmental Report demonstrate the potential for effects on the wider environment of the projects that comprise the HND Implementation Plan. They highlight any likely significant effects on the environment, including short, medium and long-term effects; permanent and temporary effects; positive and negative effects; as well as secondary, cumulative and synergistic effects, on environmental issues and topics, and any inter-relationship between them.

Mitigation measures have been recommended where potential adverse effects on environmental topic areas have been identified from implementation of the HND Implementation Plan. A monitoring programme is proposed based on the Indicators and Targets established in the Strategic Environmental Objectives.

The HND Implementation Plan acknowledges the potential for environmental effects of the Plan, the potential mitigation measures required to reduce, minimise and offset these effects, and commits to SEA monitoring that should be undertaken in conjunction with proposed reviews of the HND Implementation Plan in advance of future updates

SEA Environmental Report Public Consultation

A key component of this report is the public consultation process which is conducted to ensure transparency and stakeholder involvement. Consultation on this SEA Environmental Report will be undertaken for a period of 13 weeks from 3 November to 30 January.

Feedback can be provided via the following link Public Consultation: Holistic Network Design Implementation Plan – Fill in form.

Feedback collated during this public consultation will be integral in shaping the report's findings and recommendations.