

# OTNR Pathway to 2030 Central Design Group and Network Design Terms of Reference

## I. Preamble to the Terms of Reference

- The Terms of Reference (ToR), including the Network Design Objectives, set out in the following document, in no way limit the prerogative of Ofgem or the Secretary of State to take decisions in their roles as independent decision makers.
- In particular, neither the ToR nor network designs developed on the basis of the ToR prejudice any decision, either:
  - By Ofgem, within the price control framework or on other matters,
  - By the UK Government, in particular BEIS and the Secretary of State, with regard to decisions on Development Consent Orders or on other matters, or
  - By the Scottish and Welsh Governments.
- In developing the Holistic Network Design (HND) and Detailed Network Designs (DNDs) (as described in this document), all parties shall have regard to the existing legal obligations placed upon them, including in particular their licence obligations.
- Ofgem is undertaking a wider Electricity Transmission Networks Planning Review (ETNPR)<sup>1</sup> in parallel to the work of the Central Design Group (CDG). Ofgem will coordinate the ETNPR and Offshore Transmission Network Review (OTNR) workstreams to ensure that emerging findings align and are compatible as far as possible, to avoid duplication or other process inefficiencies. This will include, for example, ensuring, as far as possible and appropriate, consistency in analysis and decision-making tools underpinning network plans and designs, as well as roles and responsibilities in developing those plans and designs – with the aim to ensure that the HND and DNDs are compatible with the wider network plans and designs resulting from the ETNPR (e.g., through the Network Options Assessment (NOA), the Large Onshore Transmission Investments re-opener or other mechanisms).
- The ToR and network designs developed based on the ToR are not intended to amend any existing frameworks and obligations (see outputs section on code or licence changes or derogations).
- If the OTNR Project Board approves the ToR, after they have been discussed by the OTNR Expert Advisory Group and the OTNR Working Group, the OTNR Project Board<sup>2</sup> will state its approval, and this will be noted in its session minutes, to highlight that the OTNR supports the ToR and the CDG carrying out its works based on the ToR.

---

<sup>1</sup> The aim of the ETNPR is to ensure that planning and design of the GB electricity transmission network can efficiently support the delivery of net zero at lowest cost to consumers. The ETNPR will review approaches to analysis and decision making, including for anticipatory investment and integration of market solutions, whole system solutions and flexibility to resolve network problems. The ETNPR will also review roles and responsibilities of key parties in early development of solutions, as well as review incentives and legal duties to enable any change. The scope of the ETNPR is broader than the OTNR and any changes to network planning arrangements as a result of the ETNPR may be taken forward after the Central Design Group has produced its initial outputs.

<sup>2</sup> For an overview on the OTNR governance fora please refer to slide 9 of this presentation: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/946574/presentation-17-10-20.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/946574/presentation-17-10-20.pdf)

- The ToR are only final when the OTNR Project Board has approved of them. However, the CDG can begin work, including stakeholder engagement, in advance of approval.
- Once the HND is completed, the Electricity System Operator (ESO), with the support of the CDG members as appropriate, will seek approval of the HND from the OTNR Project Board. This will happen after the design has been discussed by the Expert Advisory Group and the Working Group, and they are satisfied that the recommended design is in line with the requirements of the ToR. The Project Board will state that the HND is in line with the requirements of the ToR, and this will be noted in its session minutes, to highlight that the OTNR supports the HND.

## II. Terms of Reference for the Central Design Group and Pathway to 2030 Network Design

### A. Governance

#### 1. Purpose

The HND will be delivered by the ESO in consultation with the CDG. The purpose of the HND is to support Government offshore wind targets of 40GW by 2030 for GB, including 11GW by 2030 for Scotland (Scottish Government target), as well as net-zero by 2050 for GB and by 2045 for Scotland (Scottish Government target).

The purpose of the CDG is to act as a vehicle for the ESO to consult and collaborate with Transmission Owners (TOs) on the HND, and to consult with stakeholder groups as the HND is developed.

#### 2. Objective

The ESO, in consultation with the CDG, will deliver an HND that ensures an economic, efficient, operable, sustainable and coordinated National Electricity Transmission System (NETS) (including onshore and offshore assets required to connect offshore wind) to present options, and a recommended HND for offshore connections works. This includes connections and associated strategic onshore infrastructure necessary to connect offshore generation in order to facilitate the pace and certainty required to deliver the 2030 offshore wind targets and the 2045 and 2050 net-zero targets.

Through considering the requirements for the NETS holistically, the HND should be economic and efficient, be deliverable and operable, minimise the impact on the environment, and minimise the impact on the local communities.

For the avoidance of doubt each of these objectives have equal weight.

There are two parts of network design for both onshore and offshore as further described in Part B and Part C:

- HND, and
- DND

#### 3. Inputs

A non-exhaustive list of inputs for the HND are listed below.

- Generation Map,
- NG ESO 2021 Future Energy Scenario (FES) elements that meet net-zero targets for 40GW of Offshore Wind by 2030 and meet future net-zero targets,
- NOA January 2021 infrastructure assumptions against 2020 FES Leading the Way analysis,
- The draft revised National Policy Statements for Energy Infrastructure
- The Network Design Objectives (see below section D) for the HND,
- TCE East Coast Spatial Grid Study, English marine plans, and Marine Scotland Sectoral Plan,
- Inputs from other stakeholders (including environmental stakeholders) to contribute to the overall CDG objective,

- Cost Benefit Analysis (CBA) methodology to reflect objectives and (as far as is appropriate) consistent with existing arrangements, e.g. NOA,
- Industry technical and commercial codes and standards, and
- Existing network design rules based on the Security and Quality of Supply Standards (SQSS) to guide the HND.

#### 4. Output

- Recommended HND, including any notable HND variations,
- Proposed network design rules based on the Security and Quality of Supply Standards (SQSS) to guide the HND, and
- Recommended changes to industry technical and commercial codes, standards and licence, or derogations the CDG considers are required in respect of the HND and proposals. This could include the trialling of any innovative approaches pending changes or derogations.

#### 5. Logistics

- The CDG meets at appropriate frequency to deliver outputs by agreed deadlines.
- The CDG can decide to form sub-groups as appropriate; sub-group governance should be consistent with the CDG's governance.
- At time of writing, there are the following sub-groups:
  - HND working level sub-group,
  - Environmental sub-group,
  - Commercial sub-group, and
  - Stakeholder & communication sub-group.
- Options for virtual attendance will be available for all sessions.

#### 6. Membership and attendees

##### Members:

- Representatives of the ESO, National Grid Electricity Transmission, Scottish and Southern Electricity Networks Transmission, SP Energy Networks, and
- Parties responsible for delivery of offshore infrastructure, once known.

##### Observers:

- BEIS and Ofgem representatives, and
- Representatives of the Devolved Administrations.

Guests: The CDG can invite guests (including in-scope developers such as those that have secured seabed leases through the Crown Estate Round 4 and ScotWind leasing rounds) on a case-by-case basis to provide input on specific topics.

The ESO will chair and provide a secretariat function for the meetings.

#### 7. Delegates

Delegates must have appropriate authority to speak on behalf of their organisation.

## B. OTNR HND

### 1. Scope of work

#### a. HND timing

- The HND will be published in June 2022, in consultation with the CDG.

#### b. HND content

- The HND must identify the requirements for network capacity on the NETS across GB and in offshore waters.
- The HND should as far as reasonably possible include indications on the potential location of infrastructure such as onshore landing points and locations of new substations, as well as technology type (e.g. AC vs. DC) and other key parts of the specification. It should provide developers with potential connection points and connection dates. The following additional points should be considered as part of this development:
  - The HND should include a robust CBA of the different options available. Noting the NOA and other CBA methodologies, the CDG will need to determine an appropriate CBA methodology against which to assess identified options, taking into account the four Network Design Objectives.
    - In practice, the HND will cover the appropriate onshore and offshore network. This includes the interface between what is currently considered the ‘offshore’ network (assets operated by an Offshore Transmission Owner today), and ‘onshore’ network (assets operated by a TO today).
    - For those elements of the HND on the ‘offshore’ side of this interface, the HND should provide as much detail as reasonably possible, while considering that the DND will then set out the next level of detail (see below), in terms of both the electrical and spatial configuration of assets. A robust CBA should be applied cognisant of, and consistent with, the RIIO-T2 price control frameworks.
    - For those assets on the onshore side of the interface, any element of the HND (and subsequent DND) that includes infrastructure that would typically form part of a future NOA should take its NOA treatment into consideration and the ESO should take reasonable steps that, while remaining consistent with the Network Design Objectives, HND proposals and the outcome of the NOA align and where this is not the case the differences are justified.
    - The associated assets would be subject to the relevant existing regulatory processes within the RIIO-2 price control. In order to facilitate the consideration of those assets in a timely and efficient manner, the HND should therefore provide information (e.g. electrical and spatial configurations, CBA) to the form and standard that would normally be expected under e.g. the relevant regulatory process.

- The HND needs to consider the Network Design Objectives cost, deliverability and operability, environmental impacts, and community impacts on an equal footing.
  - In developing the HND, the ESO (in its independent role, including in relation to and within the CDG) should seek to minimise the whole system cost to the consumer of the NETS while also meeting network planning and operational standards. The ESO should also take into account the Network Design Objectives, but taking due consideration that the HND needs to be an economic and efficient solution. Whole system costs must account for achieving the Government’s net-zero targets, while appropriately managing social, environmental and economic impacts to ensure clean, affordable and reliable energy to the consumer. Where a different balance of Network Design Objectives (in particular of total cost vs. other objectives) would result in a very different HND, the ESO should make this clear as part of the recommendation process and if appropriate show alternative options.
- The HND should provide a sufficient level of detail to allow the parties undertaking the DND to make decisions about the specific Network Assets that would fulfil the requirements of the HND. The HND should include a number of “fixed” design components, but it should not limit the ability of the parties undertaking the DND to exercise their engineering judgement or limit their ability to discharge their detailed planning and consenting obligations.

#### c. Roles and responsibilities for the HND development

- The ESO will be responsible for making an independent evaluation of the HND, including carrying out the CBA.
- The ESO will be responsible for developing, delivering and owning the HND.
- In developing the HND, the ESO should work closely with the TOs and, if this is decided in time, the party responsible for delivery of the offshore DND, and take their views into account.
- If there is a divergence in opinion the ESO, the TOs and the other members of the CDG will seek to find agreement. If an agreement cannot be found, the ESO will take the final decision.
- The CDG should also take into account the views of developers and, as already stipulated by individual licences, environmental and community stakeholders, as far as is appropriate and reasonably practicable. This will include spatial planning, indicating where there are environmental constraints, land availability and interactions with other assets (including those not owned by TOs). In both cases the ESO should be able to demonstrate how those parties’ views have been addressed within the final HND.

## C. OTNR DND

### 1. Scope of work

- The DNDs for both offshore and associated onshore assets should set out the next level of detail for the Network Assets based on the requirements set out in the HND. The DND should also seek to address the key environmental and cumulative impacts, indicated in the HND and therefore include mitigations and other measures required under the existing legislative and regulatory obligations (e.g. Habitats Regulation Assessment or equivalent), as applicable.
  - The onshore DND should be at a level of detail that allows licensees to proceed with the delivery of Network Assets, such as the pre-consenting development phase and detailed technical studies.
  - Where the TO is progressing development of the infrastructure the DND should be of a level that allows the TO to make a submission to the appropriate RIIO-T2 mechanisms. If the TO thinks it will need to make a submission to trigger an uncertainty mechanism to build the respective piece of infrastructure, it should also provide an early indication of this to Ofgem.
  - The TOs will undertake the onshore DND in their respective Licence Areas.

It is hereby noted that some of the onshore infrastructure that will feature in the HND is already in the DND phase.

## D. Interpretation

For the purposes of this document:

- Licence Area has the meaning given to it in the Electricity Transmission Licence.
- National Electricity Transmission System (NETS) has the meaning given to it in the standard conditions of the Electricity Transmission Licence.
- Network Assets has the meaning given to it in the Electricity Transmission Licence.
- Network Design Objectives are the ones listed in section E of this document.

## E. Network Design Objectives

#	Name	Description	Notes
1	Economic and efficient costs	Network solution is economic and efficient	<ul style="list-style-type: none"> <li>• Taking into account, amongst others, whole system costs and the requirements of licence obligations</li> <li>• Least regrets investment decision that can be taken 'today', i.e., reinforcements that are required under all FES that are in optioneering to consultation stage in 2021 to meet a 2030 delivery</li> </ul>
2	Deliverability and operability	Network solution is deliverable by 2030 and the resulting system is safe, reliable and operable	<ul style="list-style-type: none"> <li>• The aim is that the coordinated onshore and offshore network infrastructure connects the Leasing Round 4 and ScotWind projects by 2030 consistent with achieving Government offshore wind targets of 40GW by 2030 for GB, including 11GW by 2030 for Scotland, while protecting system security, reliability and resilience.</li> <li>• Also, recommend reinforcements to manage constraints that are consistent with the Network Design Objectives.</li> <li>• Taking into account, amongst others, planning consent requirements, value for money to the consumer and commercial acceptability from developers</li> <li>• This objective likely interacts with environmental impact and community impact</li> </ul>
3	Environmental impact	Environmental impacts are avoided, minimised or mitigated by the network design, and best practice in environmental management is incorporated in the network design	<ul style="list-style-type: none"> <li>• Cumulative environmental impacts of the design should be considered in addition to impacts in isolation, i.e., a high-level desktop assessment of key environmental impacts should be undertaken</li> <li>• Includes offshore and onshore environmental impacts, for example protected areas onshore and offshore, and further constraints</li> <li>• It should be considered that the connection of offshore wind as low carbon generation technology avoids carbon emissions compared to electricity generation with fossil fuels, but the HND should not inadvertently cause unnecessary damage to valuable ecosystems and contribute to biodiversity loss.</li> </ul>
4	Local communities impact	Local communities impacts are avoided, minimised or mitigated by the network design	<ul style="list-style-type: none"> <li>• Encompasses onshore and offshore communities, and wider onshore communities hosting strategic grid infrastructure</li> <li>• Addressing the concerns of local communities which typically relate to: The number and size of onshore connection points and onshore infrastructure; cumulative impacts associated with multiple connections, substations and other infrastructure; onshore transmission reinforcements driven by offshore infrastructure connections. Co-ordinated/ consolidated/ integrated infrastructure is central to mitigating impacts.</li> </ul>