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# Code Administrator Meeting

## Summary

### Workgroup Meeting 16: GSR030 Offshore DC Connections

**Date:** 24 July 2025

#### Contact Details

Chair: Deborah Spencer, [Deborah.spencer@neso.energy](mailto:Deborah.spencer@neso.energy)

Proposer : Bieshoy Awad, [Bieshoy.Awad@neso.energy](mailto:Bieshoy.Awad@neso.energy)

#### Key areas of discussion

The Chair formally opened the meeting, confirmed that quorum was achieved, and provided a concise overview of the session's objectives. Members were reminded of their duties and responsibilities. The agenda included a review of the Legal Text and updates to the Action Log.

#### Legal Text Review

The Legal text was reviewed, with discussions led by the Proposer and assisted by the Technical Code representative from NESO.

This Workgroup focused on reviewing and discussing the modification and clarification of the standards related to the operation and planning of subsea cable routes and double circuit overhead lines within a super grid system. Discussions involved the standardising terminology, addressing formatting issues, and refining operational and planning constraints to ensure consistency and clarity in the system's security and operational standards.

#### Standardisation and Terminology Adjustments

Discussions focussed on standardising the wording related to fault outages on the "super grid and subsea cable routes," particularly the phrase "forming a part of." The Workgroup debated whether to maintain or revise this phrase to align with other similar expressions in the System Security Standards. The Workgroup agreed to keep the current wording unless objections were to arise, with some members agreeing to revisit the comment later if needed.

#### Voltage Step Change Limits and Fault Outage Descriptions

The Workgroup focused on Table 65, which lists the voltage step change limits used for planning and operations after fault outages. They discussed how to clearly describe "super grid" when talking about subsea cable routes and double circuit overhead lines. The group agreed to update the wording so it wouldn't suggest that "double circuit super grid overhead line" was a separate thing. Instead, they settled on describing fault outages as happening "on the Super grid of a

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double circuit overhead line or a shared subsea cable route,” and removed any repeated use of “super grid” to make the text clearer.

Finally, the Workgroup decided to double-check the wording with other colleagues to make sure the terminology was consistent throughout the proposed changes.

## Operational Time Scale Conditions and Risk Assessments

The Workgroup discussed what should happen right after a fault outage on double circuit overhead lines or shared subsea cable routes. They looked over several clauses (7.7.21, 7.8.1, 7.8.2, and 7.8.3) that deal with how likely it is to lose power in different situations. They discussed what was the best words to use, i.e. whether “normal” and “infrequent” were clear enough for describing the risk levels. Some parts of the text were found to be confusing or repetitive, so the group suggested edits to make things easier to understand.

They also discussed the differences between outages that affect just one cable and those that happen on shared subsea cable routes. The group agreed that the standards should clearly explain each scenario, avoid unnecessary repetition, and keep the rules as clear as possible.

## Housekeeping and Renumbering

Minor housekeeping items were noted, such as renumbering clauses and removing the word “single” in certain definitions to better reflect the intended meaning. These changes would aim to maintain document coherence and avoid confusion.

## Discussion on Shared Subsea Cable Route Definition and Classification Process

Complexities surrounding the definition and management of shared subsea cable routes were discussed. Consideration was given to the implications of cable ownership, the process for reclassification of cable routes, and how restrictions should be communicated and managed among stakeholders, including transmission owners (TOs), offshore transmission system operators (OFTOs), and generators.

Concerns were raised by Workgroup members regarding the governance of the reclassification process, particularly its placement within the System Operator–Transmission Owner Code (STC), and whether affected parties have sufficient influence over decisions impacting their assets. The Workgroup discussed the fairness and transparency of the process, emphasising the importance of clear rules and mechanisms for challenge and dispute resolution.

Some Workgroup members gave comment of the issue extending beyond the scope of the current standards and would involve regulatory and commercial considerations. The Workgroup agreed on the need to engage with regulatory bodies such as Ofgem and to seek input from STC stakeholders to clarify responsibilities and processes.

Scenarios involving multiple asset owners sharing subsea cable routes, the impact of external factors like shipping activity, and the incentives for asset owners to declare shared routes were

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discussed in detail, it was proposed that a structured table outlining various scenarios with incumbents and newcomers to clarify responsibilities and impacts would be beneficial.

Legal Text discussions concluded with plans to continue refining the definitions and clauses offline, incorporating feedback from consultations with relevant industry parties. The Proposer and NESO Representative agreed to prepare clearer documentation, including scenario tables, and to pursue regulatory engagement to address outstanding governance and process issues related to subsea cable route classification and operational restrictions.

### **The Workgroup reviewed the Terms and Definitions:**

The Workgroup proceeded to examine the definitions and technical specifications associated with HVDC (High Voltage Direct Current) transmission systems. The focus centred on refining terminology and requirements for key components such as DC converters, high-speed switches or isolators, and shared subsea cable routes. These discussions underscored a continued commitment to clarifying and enhancing the legal text and technical definitions, ensuring they remain consistent, comprehensive, and aligned with regulatory standards.

### **Clarification of DC Converter Definitions**

The Workgroup revisited the definition of a DC converter, emphasising the distinction between bipolar arrangements and symmetric monopole configurations. Highlighting that not all links have double-pole converter configurations; for example, the Nemo interconnector operates under a symmetric monopole arrangement with less redundancy, meaning a single pole failure could disable the entire link until resolved. This nuance was supported by diagrams and examples to ensure clarity in the legal text and Workgroup Report. The discussion confirmed that the current definition appropriately covers bipolar arrangements, and symmetric monopoles are treated as single converters, which does not necessitate additional definitions at this time.

### **DC High-Speed Switch (Isolator) Definition and Functionality**

The definition and role of the DC high-speed switch was discussed, with some Workgroup members proposing renaming it to a "high-speed isolator" to better reflect its function. The device is crucial for isolating faulted poles in bipolar DC links to maintain operation of the healthy pole, thus preventing a full trip of the converter.

One Workgroup member clarified that these switches do not clear faults themselves but isolate the faulted pole to allow the converter to continue operating asymmetrically. The Workgroup debated the necessity of specifying the device's speed and operational characteristics, agreeing that it must operate within protection timeframes to be effective, though the exact technical details remain open for refinement. The performance standard should focus on the outcome—maintaining operation of the unaffected pole—rather than prescribing specific equipment architectures, leaving design choices to OEMs (Original Equipment Manufacturers).

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### Discussion on Terminology and Legal Text Consistency

The Workgroup talked about whether to use the term "switch" or "isolator," thinking about which is clearer and more accurate for the industry. For now, they decided to keep using "high-speed switch" in the definition, but they might switch to "high-speed isolator" if it helps avoid confusion. They also agreed that the legal text should match the technical principles and recommendations the Workgroup has set out.

### Shared Subsea Cable Route and Transmission Circuit Definitions

Treatment of shared subsea cable routes was reviewed and how to align outage conditions on these routes with those for double circuits on overhead lines. A particular focus was on whether certain assets, such as the Western Link, are part of the Angus Transmission System, affecting how they are secured and regulated. The Workgroup discussed and acknowledged discrepancies in historical standards across Transmission Operator areas and emphasised that if parts of a shared subsea cable route belong to the Angus system, they must be secured accordingly. The implications of parallel versus radial infeed circuits on system stability and operational security were also considered, with recognition that design choices impact whether certain events become secured events requiring operational responses.

It was agreed to continue refining legal text and definitions offline, incorporating feedback from OEMs and experts. There was a consensus to maintain clarity in definitions while focusing on performance requirements rather than equipment-specific mandates. Further discussions with stakeholders were planned to resolve outstanding issues, such as the exact status of certain transmission circuits and the inclusion of illustrative diagrams in reports, recognising that diagrams are generally not included in standards but may aid understanding in supplementary materials.

## Actions Update

**Action 20:** Agreed this would be closed once Proposer has reviewed the updated ToR with Workgroup members at the next meeting 02/09. **Open**

**Action 29:** NN to confirm once emails have been checked. **Open**

**Action 39:** Aligns with action 20, to be close together. **Open**

**Action 42:** Proposer confirmed this has been actioned and Panel were keen for the Workgroup to proceed. Offline discussion to be had with AU before closing this action. **Open**

**Action 46:** Proposer to check Workgroup Consultation to see if question has been added, can then be closed. **Open**

**Action 49:** Proposer and NN agreed this have been actioned and the Workgroup Consultation reflects both views. **Closed**

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**Action 50:** Emails sent to Ofgem; proposer is satisfied with representation. **Closed.**

**Action 52:** Proposer confirmed this has been actioned. **Closed.**

**Action 53: Closed**

**Action 54: Open**

**Action 55: Open**

**Action 56: Open**

## Next Steps

The next Workgroup is scheduled for 02 September, agenda items will include review of the Workgroup Consultation Report, legal text, outstanding actions and Terms of Reference.

## Actions

For the full action log, click [here](#).

| Action Number | Workgroup Raised | Owner         | Action   | Due by | Status                |
|---------------|------------------|---------------|--|--------|-----------------------|
| 20            | WG4              | BA/FW         | Compile text to cover ToR 3 Consider retrospective impact on existing cables.  | WG15   | Propose to close WG17 |
| 29            | WG6              | NN/LC         | Slides from WG 5 were to be reviewed and updated before sharing with the Workgroup for publication.  | WG15   | Propose to close WG17 |
| 39            | WG7              | BA/SQSS Panel | Offshore Transmission Owners to be contacted about the likelihood of mechanical failures (which can be managed confidentially) for the Proposer to assess. | WG15   | Propose to close WG17 |
| 42            | WG10             | BA/TP         | Discuss scope with Panel and confirm   | WG15   | Propose to close WG17 |

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|    |      |            |   |      |                       |
|----|------|------------|---|------|-----------------------|
| 46 | WG12 | All        | Workgroup to review and decide if Annex 3 (including draft proposal for STC) should be deleted from the report. | WG17 | Propose to close WG17 |
| 54 | WG15 | BA/GG      | To discuss the 5 options included on the Workgroup Consultation Report  | WG17 | Open                  |
| 55 | WG15 | BA/SB      | Check with legal team regarding the definition of "shared subsea cable route" and its implications              | WG17 | Open                  |
| 57 | WG16 | BA/AU      | Arrange a meeting and develop a table that outlines the impacts on various circuit types.                       | WG17 | Open                  |
| 58 | WG16 | BA         | To draft wording re: "DC high speed isolator"   | WG17 | Open                  |
| 59 | WG16 | BA/LJ/Ross | To arrange meeting to discuss "Offshore Transmission Circuit" Definition  | WG17 | Open                  |
| 60 | WG16 | BA/SB/DS   | To update legal text from the meeting and forward to Workgroup Members to review and give feedback as required. | WG17 | Open                  |

## Attendees

| Name                 | Initial | Company | Role                |
|----------------------|---------|---------|---------------------|
| Deborah Spencer      | DB      | NESO    | Chair               |
| Karen Stanton-Hughes | KSH     | NESO    | Technical Secretary |

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|                       |     |                |                                  |
|-----------------------|-----|----------------|----------------------------------|
| Bieshoy Awad          | BA  | NESO           | Proposer                         |
| Steve Baker           | SB  | NESO           | NESO Rep                         |
| Andrew Urguhart       | GG  | SSE            | Workgroup<br>Member              |
| Ben Marshall          | BM  | SSE            | Workgroup<br>Member<br>Alternate |
| George Arvanitakis    | GA  | Xlinks         | Observer                         |
| Lewis Johnson         | LJ  | BP             | Workgroup<br>Member              |
| Nicola Barberis Negra | NBG | Orsted         | Workgroup<br>Member              |
| Nigel Platt           | NP  | Siemens Energy | Workgroup<br>Alternate           |
| Xioa-Ping Zhang       | XPZ | Birmingham.ac  | Workgroup<br>Member              |