ESO

Code Administrator Meeting Summary

Meeting name: GSR030 Workgroup Meeting 9

Date: 06/09/2024

Contact Details

Chair: **Teri Puddefoot**

Proposer: Bieshoy Awad

Key areas of discussion

1. Introductions

The Chair gave an overview of the meeting purpose, of working through the modification process and refining the solution, from today working through action and outcomes, looking over workgroup consultation work that has been completed since the last meeting, and look at the timelines for review and the number of meetings needed prior to going out to consultation.

2. Actions

The Chair took the Workgroup through the actions that remain open and those proposed to be closed. See below for the updates.

20 – Compile legal text to cover TORs – open – ongoing

21 – Applicable levels of risk – Closed

22 – Data from Orsted – looking at different way to handle this. Possible new action to cover this in different approach. Action not relevant - close.

23 – Relevant to action 22 close

28 – Figures are included in the report – close.

29 – TP to chase – open

30 – Wording and Diagrams in consultation – wording updated, and Workgroup members will need to review to see if anything missing. – Close.

31 – Legal text needs to be moved out. This was put in workgroup discussions, need to decide if needs to be put in annex. open

32 – All to share any benefits. Narrative now written, workgroup need to review and confirm any updates or if sufficient – close. (May need to look, as part of a question)

33 – All now have access. TP to check XZ and LJ access. – close

34 – BA to review Chapter 9 affected by code – close

35 – BA to check for missing text, sections rewritten - close

36 – Title and information sources, need to ensure the references being used are quantified on where they are from – ongoing

37 – workgroup decision on reasonable links. Not believed to be relevant due to the revision of wording – Paused.

38 – Frequency probability, closed

39 - Comms to panel, related to retrospective applications, believe this may not be needed - paused.

40 – why HMD costs for landing cost, costs have been requested, will add to document when received – ongoing.

3. Workgroup Consultation Document

The proposer worked through the document with the members highlighting significant changes, and where updates have been made:

Page 11 & 12 – this section has been restructured, benchmarked against what is currently secured based on probability of events. The section now covers events that are going to be secured by design and frequency of events that are not. For e.g., Busbar for red line faults, previous examples and discussion around probabilities that were mentioned varied between a 5-7 years' timeline, which suggested that majority of the events could be improbable and not necessarily sufficient and therefore some safeguarding required should the design and methodology changes.

The Proposer expanded on impact of what simultaneous loss on the networks would be and this is now split into 3 sections:

- Loss of "in feed" covers the probability of impact and capability on securing the impact on the network, relating to the GW statistics of the wind speed disconnection and actual impact on the network, probability of reduction in the frequency of these events and the effects on and radial output.
- Loss of reactive capability
- Requirement to distribute flows on the onshore system.

The proposer took the members through the tables on examples of probability and the impact for the likelihood of frequency for events and the timelines of high-end scales, such as every 7 years etc., based on reliability of supply.

The likelihood of events would cause demand disconnection and loss of in-feed. The likelihood of leverage and the number of stages required to operate effectively, and frequency response work needed for sensitivity and reliability of demand. For e.g., low demand would incur multiple stages, high demand, 20GW would only have one stage. Stage one is approx. 5-million and stage two about the same, very significant level of demand for LFTD connection.

AP34 AB/BM to have discussion on the worse case scenario, for lifetime issue for implementation report. Re damage to cable involving a new vendor. Value in wording regards repair, assessments needing confirming on who this belongs to and restriction in respect of Euro/GB and the extra defence levels required.

Page 16 - The proposer discussed with the members examples of loss of inertia on offshore windfarm and loss of grid forming. This loss could be significant however should not have a lax support on dealing with this. Grid forming converters are translated onshore however the windfarm would need to be operating at 70% is this being factored into the statistics for loss of in-feed and should be addressed on an annual basis to look at the implication of loss of DC links. The probabilities are improbable and should not be the main driver, concentration should be on the LFTD stability, reactive capability, and solution to drive the risk down.

Page 17 – the proposer advised of the options to manage the generator and TO impact to assets and unavailability of asset and loss of links due to mechanical failure of two cable assets:

- Option 1 – Significant risk

- Option 2 – Treat loss of any two subsea assets, as secure event
- Option 3 – neglect issue, assume risk is minimised by design.
- Option 4 – Define risk level, e.g., require anything with higher probability, clear direction to industry and agree level of probability. The risks may be different for capacity and levels of connection.
- Option 5 Looking to drive this option within the organisation as the preferred option. Mostly related to, two things:
    - Subsea cable, risk-based approach, minimise the risk on likelihood of happening. Significant / not significant the owner will be responsible for capping the risk and required to ensure terminal overload does not happen for simultaneous loss of service. They will need to secure risk in real time.
    - Clawback for risk materialising at a later stage, then these cables will be reclassified, and appropriate restrictions applied to ensure this event does not have substantial effect on users. This will be enduring, and the risk mitigated, with flexibility to make the correct design parameters.

The proposer advised that the legal text would capture this process and how this worked to ensure nobody is being disadvantaged. The proposer advised that this would be an STC piece regarding the probability of an event happening. This will need to be developed and acknowledged regarding simultaneous loss by design.

NN – advised in principle this could be a preferred option, however, need to reflect this in the developer defining risk calculation and approach before illuminating the risk. Suggestion of having a postmortem for having a calculation to respond and define the event for the risk.

The proposer advised adding a narrative around:

- Material risk and necessity of signifying a bad decision.
- The actual outage and the need to impose restrictions.

GA suggested the need for clarification on who is responsible for the asset and who is going to accept responsibility for any problems/damage.

The proposer advised that the blame needs to be apportioned as required in respect of shared assets and should be clarified in the STC process, to include the lifetime issue of damage to unrelated cables and the involvement of other vendors would need reappraisal of risk so transfer of cause can be identified and managed in a certain way. The implications are different however the evaluation would still be the same.

4. Workgroup Consultation Review

The proposer discussed with the members the Legal text, which has been reviewed the main part is the definition of shared subsea cable sections near each other.

The proposer took the members through the legal text definition of subsea cable routes. The implications of each criterion where loss of circuit fault or security event we merit the same criteria to apply from this. The proposer asked the members if they are content the spelling responsibilities is the right thing or should they be made agnostic or does this cause risk to someone of the final design and or operation. Does this reflect discussion that the workgroup has been having or missed anything.

The members had discussion on the practical concerns that would have to be bought to ESO and explanation of the potential of cascade fail, and how this expectation would be put in place under best practice. Discussions suggested for the need to identify sufficient mechanical implications and the level of risk for assessing the criteria. Loss of risk feed would be ‘X’ implications of risk and would be of significant impact risk and would drive the risk to significant level. Geological events that may damage cables could be extremely difficult to assess and would need to be assessed by a case-by-case basis during design for risk assessments. The level of detail would need to be looked at in terms

of risk and how much detail is put on the public domain due to malicious acts, and how much material is put in document consultation process, which Ofgem may wish to limit define the events of the risk assessment and or information is published. For offshore transmission licences assets, once the appointed person is in situ, they should be adopting the same design parameters to ensure the event is managed under best practice.

NN suggested that the definition "identified by ESO following external event under simultaneous failure……", this is too unilateral and does not consider that just because a fault occurs, it does not mean anything wrong has been done. If two cables are installed next to each other the risk is always going to be there, different levels. The way it is written in the text is that it can be interpreted as soon as an event happens National Grid can reduce the asset to 1800MW for capability. This could be after an assessment was completed previously for previous defined assessment, may be adjusted.

The proposer suggested that using the STC process in required timelines, analysis, and risk this would not incur too much cost loss, as the contractual risk may be limited. ESO would accept actions are acted upon in a reasonable manner, however, would need to act quickly to access and limit the risk.

GA – suggested that the point to consider would a second event, following all work done, and right thing to do, followed by second and third incident. How long would it take for someone to realise maybe the assessment was wrong?

AP35 BA to look at developing skeleton on what STC can provide a process would look like and then arrange another discussion to pass this with DEZNZ resilience team. Possible conversation with GA and NN.

The proposer asked the members if they were content with the legal text and writing down the responsibilities or should they be made agnostic.

AP36 TP – to speak to legal on this point and how much information should be included in the detail.

The proposer discussed the loss of MW risk, to determine response frequency cost up to the point of 1800mw units if nothing connects than this cost would be marginal.

- Increase of number of events per year if the frequency of drops below 49.Hz. If the converters are unreliable that would be significant and might trip wires and spending money on this. The importance of this is that this money is capped based on the assessment and is capped on £12M per year. E.g., If we were to secure all the work for 49.2 Hz per second then our frequency costs would increase to approx. £12M per year. This number is insignificant based on the capacity benefits we would achieve.

The detail of the analysis is saying that if we have no DC links with converters with 1800 MW options then this is the number of frequency excursions per year, if we have one link then the above is the costs per year. We would need to precure 18% additional frequency response. If we had a link that trips 1-5/10 times a year this is the same analysis. The methodology analysis for the frequency discount report to work out the numbers. Inefficient links would need to be secured all the time. Multiple link due to the correlation of wind output across GB, have not been quantified yet and will need to be looked at.

The proposer discussed the wording under retrospective application considerations, for dealing with this. If cables are in proximity of each other with capacity of 1800MW then this would possibly fail design criteria. Having looked at the numbers not a significant risk. It may mean the cables need to be secured in real time. The big difference is for e.g., two windfarms in proximity would not produce significant risk but would need to look at the process for what risks could be in wind capacity for proximity. However, the big risk is for anchor drag and a request has been made for estates to provide a list of sites that have a particular cable distance of 250 meters from each other. The proposer asked the members if they felt this was a reasonable ask?

GA suggested this was a good number anything bigger would move into the space of terrorism.

The proposer advised that this would be used as a guidance.

AP37 ALL - The proposer requested the members to review the narrative of part 2.

5. Timeline Review

TP – requested confirmation from the workgroup on how many more workgroup meetings they would need following this, before going out to consultation?

- Agreement that a further workgroup meeting was required to discuss the information identified today and TORs – end Oct 2024
- Followed by a further workgroup meeting to discuss implementation and final information before consultation - end Nov 2024
- Possible ½ day workgroup for voting – Dec 2024 to be confirmed.

AP38 – TP to circulate dates.

Next Steps

Proposer to review document as per discussions and comments.

Proposer to look at skeleton STC process for cascade fail.

All to review part 2 of document and give feedback.

Dates to be circulated for next workgroups.

AOB

None

Actions

For the full action log, click here.

Action number	Workgroup Raised	Owner	Action	Comment	Due by	Status
34	7	BA/BM	Implementation report			
35	7	BA	Look at developing skeleton on what STC can provide a process			
36	7	TP	Contact legal to discuss website publications and the content for FOI and data protection.			

37	7	ALL	Proposer requested all to review the narrative of part 2
38	7	TP	Circulate dates of next workgroup meetings

Attendees

Name	Initial	Company	Role
Teri Puddefoot	TP	ESO	Chair
Karen Stanton-Hughes	KSH	ESO	Technical Secretary
Bieshoy Awad	BW	ESO	Proposer
Frank Kasibante	FK	ESO	ESO Rep
Nicola Barberis Negra	NN	Orsted	Workgroup Member
Xioa-Ping Zhang	XZ	Bham.ac	Workgroup Member
Roddy Wilson	RW	SSEN	Workgroup Member
George Arvanitakis	GA	XLinks	Observer
Aleem Abid	AA	NGV	Observer
Benjamin Marshall	BM	National HVDC Centre	Alternate Workgroup Member
Lewis Johnson	LJ	BP	Workgroup Member
Fiona Williams	FW	ESO	

Apologies			
Steve Baker	SB	ESO	ESO Rep