

Code Administrator Meeting Summary

Meeting name: Workgroup Meeting 4

Date: 21/09/2022

Contact Details

Chair: Teri Puddefoot (Terri.Puddefoot@nationalgrideso.com)

Proposer: Bieshoy Awad (Bieshoy.Awad@nationalgrideso.com)

Key areas of discussion

The Chair opened the meeting and outlined the objectives of the session to:

- Review the modification timeline
- Review the last set of actions
- Review the proposal on the SQSS Infeed Loss Risk
- Consider any additional questions for the Workgroup Consultation
- Review the Terms of Reference

Timeline

The timeline was shared with the Workgroup by the Chair.

Action Review – please refer to the meeting slides (p8)

Action 9 – leave open and follow up with action owner (MG)

Action 11 & 12 – now closed

Action 13 – ongoing with the Proposer, a revised guidance note to be shared

Action 14 – to be closed following the presentation from Orsted in this meeting

SQSS Infeed Loss Risk Change Proposal

The Proposer and ESO representative took the group through a recap of where the project is currently, including:

- Revised definitions
- A recap of modes of failure
- The original proposal for mitigation of anchor risk (this includes key placeholder figures for discussion following the Workgroup's assessment on setting the parameters for risk assessments).

A Workgroup member noted that no level of compass deviation for marine craft is permitted by the maritime authorities so asked whether this had been considered in context of this solution (i.e. distances between cables

that would create stray fields). Workgroup members discussed whether buried depth of cables would mitigate this and whether a detailed risk assessment would cover this. The Proposer and other Workgroup members noted this as a valid concern to be considered.

The Proposer noted that for a design project, anchor drag distance would need to be considered in plans. If the planned distance between cables was below a defined threshold, a risk assessment would be needed and a project may need to be adapted by burying cables deeper or reinforcing the project to reduce risk. If a risk cannot be reduced, the capacity of the cable would be capped. A Workgroup member noted that a risk assessment for burial depth would include a lot of variation for different vessels (and therefore anchor drag) over the lifespan of the project.

A representative from Orsted shared slides for a modelling exercise they have undertaken which reviewed the methodology used to assess the probability of cable strikes (for multiple cables). The existing Carbon Trust methodology takes into account the different distributions and types of vessels, soil, likelihood of incidents, water depth and distance to danger etc. for calculating anchor drag distances. The concept being that this can then be used by developers to generate an estimate of cable depth for an acceptable level of risk (acceptable level of risk TBC by the Workgroup) and assessment of how to mitigate against a strike.

Some general comments from the modelling were that:

- Separation of cables decreased the likelihood of one event hitting multiple cables
- Risk will be impacted more by where the cable is located than the length of the cable

Orsted modelled whether the Carbon Trust methodology, currently used for single cables, could be used to model for multiple cable scenarios and concluded that it could be used for this purpose.

A Workgroup member noted that a measure used for repairing cables is to have a minimum distance between them of 2 x water depth to allow for repair of one without damaging the other.

When questioned on the level of sophistication of the model (i.e. whether it used standard traffic patterns/water currents etc.), the Orsted representatives noted that plots were based on realistic data, not real data, and that while the model could be made more complex it was not deemed necessary. For levels of actual risk, Workgroup members were asked to speak to Orsted directly.

A Workgroup member asked whether having one cable at the surface and one buried was a potential solution, to which an Orsted representative confirmed that it was a possibility in principle, but practically a developer would want to bury both cables due to their value.

A Workgroup member asked for the reasons a single anchor type was used in the model, to which the Orsted representative noted that they were looking for general behaviours and trends rather than a defined separation distance.

The modelling exercise concluded that cable separation was necessary, but it was difficult to model all variations of all parameters to produce a single standard value (minimum distance).

National Grid agreed to using CBRA as the methodology for cable installation and agreed to review internally before further discussion (ACTION 15)

A Workgroup member noted that the distance that cables run parallel to each other was referenced in the original text for the modification, but the Orsted work implies the separation distance is more critical. Orsted suggested that they could model for how parallel cables are, but it was not deemed as a relevant factor.

The Proposer discussed the use of risk probability from a double circuit overhead line fault as an initial baseline for multiple marine cables if factoring in a rudimentary adjustment by a magnitude of 10 as a starting point for perceived risk. The overhead circuit example uses risk per km values, but if this value isn't feasible from Orsted's modelling (the location of a cable being more impactful to risk than length of cable), other comparisons would be needed to compare marine cables to. A Workgroup member noted that due to different risks across a length of cable, assessing risk was more complicated than splitting cables into sections to find the highest risk as a limiting value.

An Orsted representative requested that, as they are used as baseline comparisons, the requirements for overhead circuits be shared with the group, along with how risk is calculated for them. (ACTION 19)

A Workgroup member was not comfortable with the risk comparisons with overhead circuits, and marine cables being given a degree of risk a factor of 10 higher than overhead circuits (without due consideration), as there would be significant monetary implications to industry. The Proposer and Orsted agreed to consider the factor of 10 for what an acceptable level of risk is to balance against what’s reasonably practical. The Proposer would send a narrative to Orsted to support this re: values to consider. (ACTION 19)

The Proposer noted that they would create commentary for it to include in the Workgroup Report.

Regarding to the risk level (e.g., a 1 in X year event), the Proposer noted that this was related to consumer risk rather than asset life. The Workgroup was to consider the values for the acceptable level of risk. (ACTION 21 & 23)

The Proposer is to review the wording of the definitions as the term ‘2500 years’ is typically used for one cable so more consideration could be taken for a figure relating to multiple cables. (ACTION 16)

The Proposer noted that drag distance would need to be defined in the SQSS for what it is, how to calculate it or where to find the calculation in an industry accessible document (Orsted’s support would be required for this).

Orsted confirmed that the Carbon Trust methodology required no changes for multiple cable scenarios but suggested that they provide information to the Workgroup on:

- Assessing what a level of acceptable risk is (ACTION 21)
- Text to be included in the SQSS re: the Carbon Trust methodology and drag distance, and units involved for assessing risk (ACTION 21)

A Workgroup member noted that the current wording for this modification would feature in Chapter 7 of the SQSS, however due to 2GW cables wording may be needed in Chapter 4. This was acknowledged by the Proposer as potentially a separate modification.

Workgroup members suggested a couple of weeks was needed to review the actions from this session.

Terms of Reference

Workgroup members reviewed the Terms of Reference.

It was agreed that ToR 1 and 2 had been covered significantly and ToR 3 would need some additional text from the Proposer to address consideration of retrospective cables. (ACTION 20)

Next Steps

Actions will be shared and followed up on ahead of the next Workgroup.

The slides from Orsted presented in the Workgroup meeting will also be shared with the Workgroup.

Actions

Action number	Workgroup Raised	Owner	Action	Comment	Due by	Status
9	WG2	MG	Provide detail on bipole / rigid bipole faults		WG5	Open
13	WG3	BA	A sentence should be added to an appropriate existing guidance note to ensure faults on metallic returns are addressed. Suggested sentence and		Ongoing	Open

			suggested guidance note where this will sit to be provided,			
15	4	National Grid	Review use of CBRA for cable installation to discuss at the next meeting	NA	19.10	Open
16	4	BA	Send amended wording for the definitions slide from today's presentation		25.09	Open
17	4	BA	Consider other possible impacting factors, such as compass deviation		29.09	Open
18	4	JG	Share slides from today's WG presentation (after checking for commercially sensitive information)		25.09	Closed
19	4	BA	Share overhead circuit risk tolerances, calculations and rationale behind what's deemed an acceptable level of risk (and relevance to cable scenarios)		29.09	Open
20	4	BA, FW	Compile text to cover ToR 3 - Consider retrospective impact on existing cables.		05.10	Open
21	4	LC	Consider what acceptable levels of risk are, what could be included in the SQSS & BA's suggested units involved for assessing risk		05.10	Open
22	4	NN, BA, LC	To discuss offline - risk and associated costs (investment in reinforcing the network and build/maintenance). BA to send a written narrative to help Orsted understand this ahead of a discussion		05.10	Open
23	4	All	Consider details of the above once shared and provide a proposal for discussion at the next WG		05.10	Open

Attendees

Name	Initial	Company	Role
Teri Puddefoot	TP	Code Administrator, ESO	Chair
Elana Byrne	EB	Code Administrator, ESO	Tech Sec
Bieshoy Awad	BA	ESO	Proposer
Fiona Williams	FW	ESO	ESO Rep
Allan Griffiths	AG	National Grid	Workgroup Member

Colin Foote	CF	The National HVDC Centre	Workgroup Member
Darren Jones	DJ	Hitachi Energy	Workgroup Member
Lewis Johnson	LJ	BP	Workgroup Member Alternate
Nicola Barberis Negra	NN	Orsted	Workgroup Member
Nigel Platt	NP	Siemens Energy	Workgroup Member
Noel McGoldrick	NM	NGET	Workgroup Member
Steve Baker	SB	ESO	Workgroup Member
Wuxing Liang	WL	The Crown Estate	Workgroup Member Alternate
Xiao-Ping Zhang	XZ	Academia	Workgroup Member Alternate
George Arvanitakis	GA	Xlinks	Observer
Jose Antonio Reyna Gutierrez	JG	Orsted	Observer/Presenter
Lawrence Cross	LC	Orsted	Observer
Mads Thøisen	MT	Orsted	Observer
Mick Chowns	MC	RWE Renewables	Observer