GSR030

20 January 2023

Online Meeting via Teams

Welcome

GSR030

Friday 20th January 2023

Online Meeting via Teams

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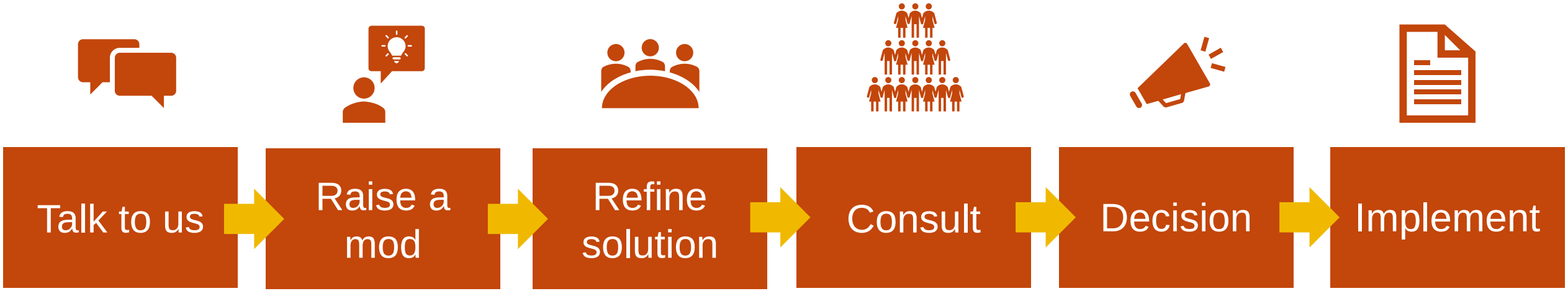
Modification Process

Teri Puddefoot – National Grid ESO Code Administrator

Code Modification Process Overview



Forums

Panels

Workgroups
(Workgroup Consultations)

Ofgem/Panel

Refine solution

Workgroups

- If the proposed solution requires further input from industry in order to develop the solution, a Workgroup will be set up.

- The Workgroup will:
  - further refine the solution, in their discussions and by holding a **Workgroup Consultation**
  - Consider other solutions, and may raise **Alternative Modifications** to be considered alongside the Original Modification
  - Have a **Workgroup Vote** so views of the Workgroup members can be expressed in the Workgroup Report which is presented to Panel

Consult

Code Administrator Consultation

- The Code Administrator runs a consultation on the **final solution(s)**, to gather final views from industry before a decision is made on the modification.

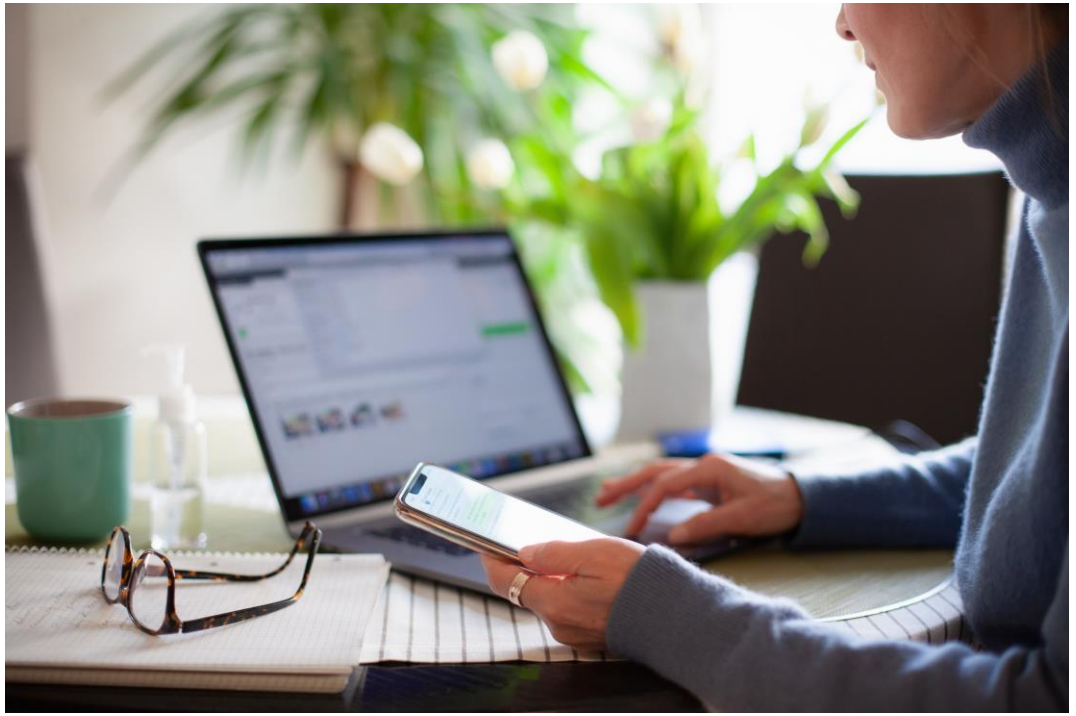
- After this, the modification report is voted on by Panel who also give their views on the solution.

Decision

- Dependent on the Governance Route that was decided by Panel when the modification was raised
- **Standard Governance:** Ofgem makes the decision on whether or not the modification is implemented
- **Self-Governance:** Panel makes the decision on whether or not the modification is implemented
  - an appeals window is opened for 15 days following the Final Self Governance Modification Report being published

Implement

- The Code Administrator implements the final change which was decided by the Panel / Ofgem on the agreed date.



Objectives and Timeline

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Objectives for GSR030

Objectives of Workgroup 1

- Understand Proposal
- Check Terms of Reference
- Make an initial review of Legal Text

Timeline for GSR 030 – Proposed Timeline - *Workgroup*

Milestone	Date	Milestone	Date
Modification presented to Panel	09 November 2022	Workgroup Report Showstopper	01 June 2023
Workgroup Nominations (15 Working Days)	14 November 2022 to 09 December 2022	Workgroup Report – Submission to Panel	04 July 2023
Workgroup 1 Proposer's presentation, check Terms of Reference, initial review of legal text	20 January 2023	Panel to ratify Workgroup Report	12 July 2023
Workgroup 2 Bipole, anchor drag risk, N-1-1 criteria	02 February 2023	Code Administrator Consultation	17 July 2023 to 11 August 2023
Workgroup 3 Scoping for cost benefit and impact assessment	13 February 2023	DFMR Submission to Panel	05 September 2023
Workgroup 4 Refine solution(s) and materials to be provided with Workgroup Consultation	03 March 2023	DFMR Panel Vote	13 September 2023
Workgroup 5 Finalise Workgroup Consultation document	15 March 2023	FMR to Ofgem	25 September 2023
Workgroup Consultation	27 March 2023 to 19 April 2023	Ofgem decision	25 September 2023 to 27 October 2023
Workgroup 6 Discuss consultation responses, refine solution and legal text	05 May 2023	Implementation Date	TBC
Workgroup 7 Finalise Workgroup Report and Legal text	16 May 2023		

Terms of Reference

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Terms of Reference

Workgroup Term of Reference	Location in Workgroup Report (to be completed at Workgroup Report stage)
If there is no reliability data available, consider alternative ways of assessing the risks and the benefits for the increase of the loss of infeed risk.	
Consider risk-based approach for the specification of any restriction on the loss of infeed risk associated with multiple cables sharing the same route.	
Consider retrospective impact on existing cables.	

Proposer's Solution

Bieshoy Awad/Fiona Williams

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Content

- Why Change recap
- Workshop update
- Updated Risks
- Work in Progress

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Why Change Recap?

- Current limit restricts to current normal loss of infeed risk of 1320MW leading to potential sub-optimal investment

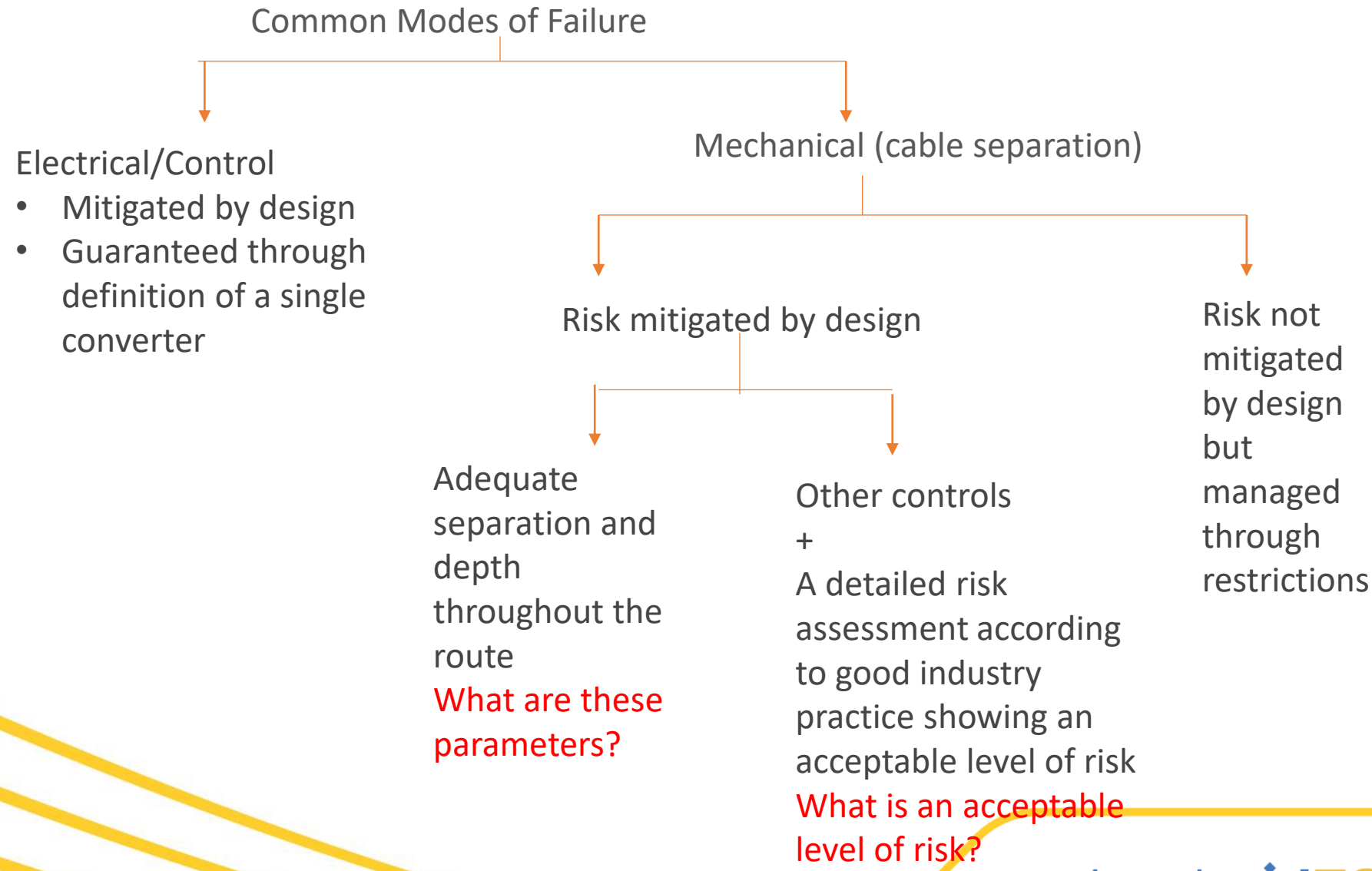
- Currently no differentiation between monopole and bipole which could lead to unnecessary restriction on the use of certain technologies

Factors to consider for bipole separation/isolation?

- **Power Systems Factors**:
- Completely independent and can clear faults and allow maintenance without affecting the other pole
- Immediate ramp down to half capacity for a fault on the metallic return
- Definition of isolation

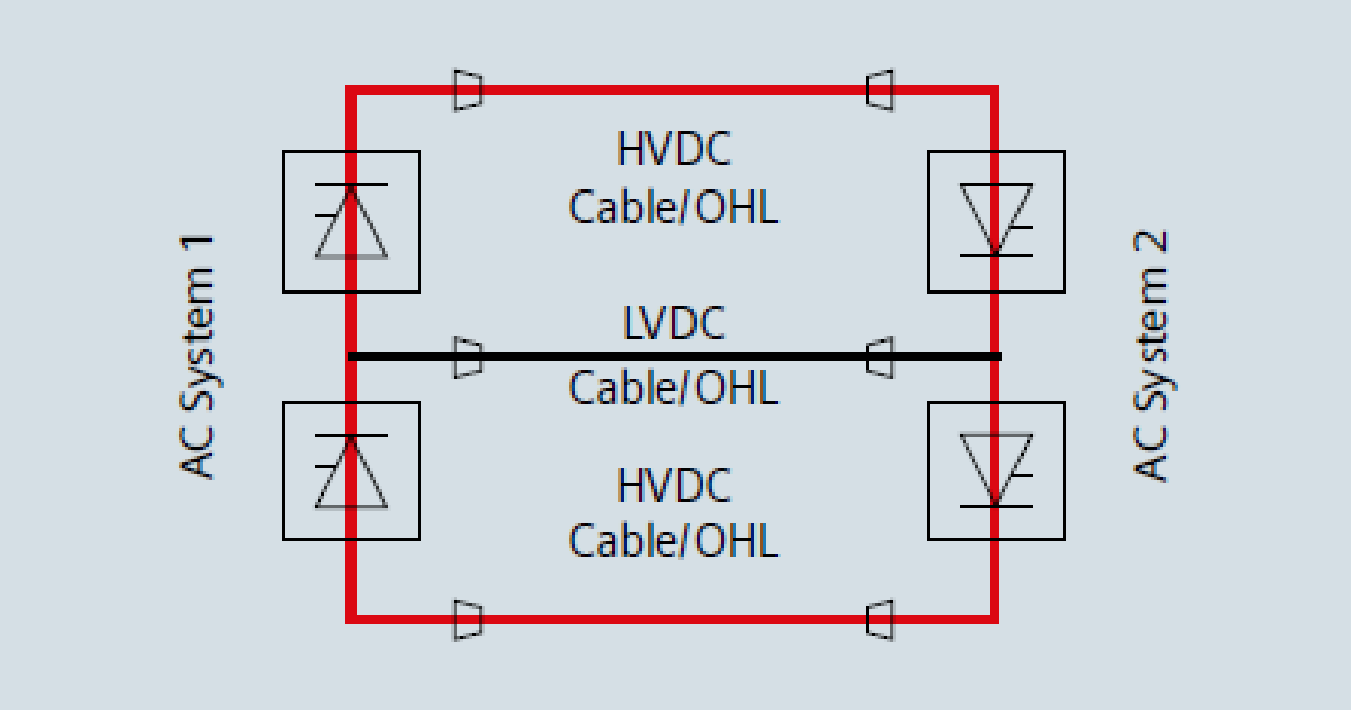
- **Cable Separation Factors**:
- Compass – need to reduce interference/ neutral magnetic field
- Environmental (fish) – electric and magnetic field
- Anchor drag and associated insurance costs
- Maintenance issues

Modes of Failure:



Issue 1

Bipole with metallic return



How?

- Electrical Part
- allow DC converters using a bipolar configuration with no common mode of failure to be treated as two separate converters – broadly agreed
- Revise the definition of an offshore transmission circuit to avoid restricting DC bipolar configurations –broadly agreed
- Potentially restrict 2 cables running too close – need to look at industry standards for anchor drag risk
- Potentially revise N-1-1

Revised Definitions:

broadly agreed, will be confirmed at workgroup

DC converter:

Any apparatus used as part of the national electricity transmission system to convert alternating current electricity to direct current electricity, or vice-versa. A DC Converter is a standalone operative configuration at a single site comprising one or more converter bridges, together with one or more converter transformers, converter control equipment, essential protective and switching devices and auxiliaries, if any, used for conversion. In a bipolar arrangement, where there is a common mode of failure that would cause a fault outage on either of the two poles to affect the other pole or where there are operational requirements that would mean that a planned outage on either of the two poles would require the other pole to be unavailable, a DC Converter represents the bipolar configuration. Otherwise, each of the two poles is a separate DC converter.

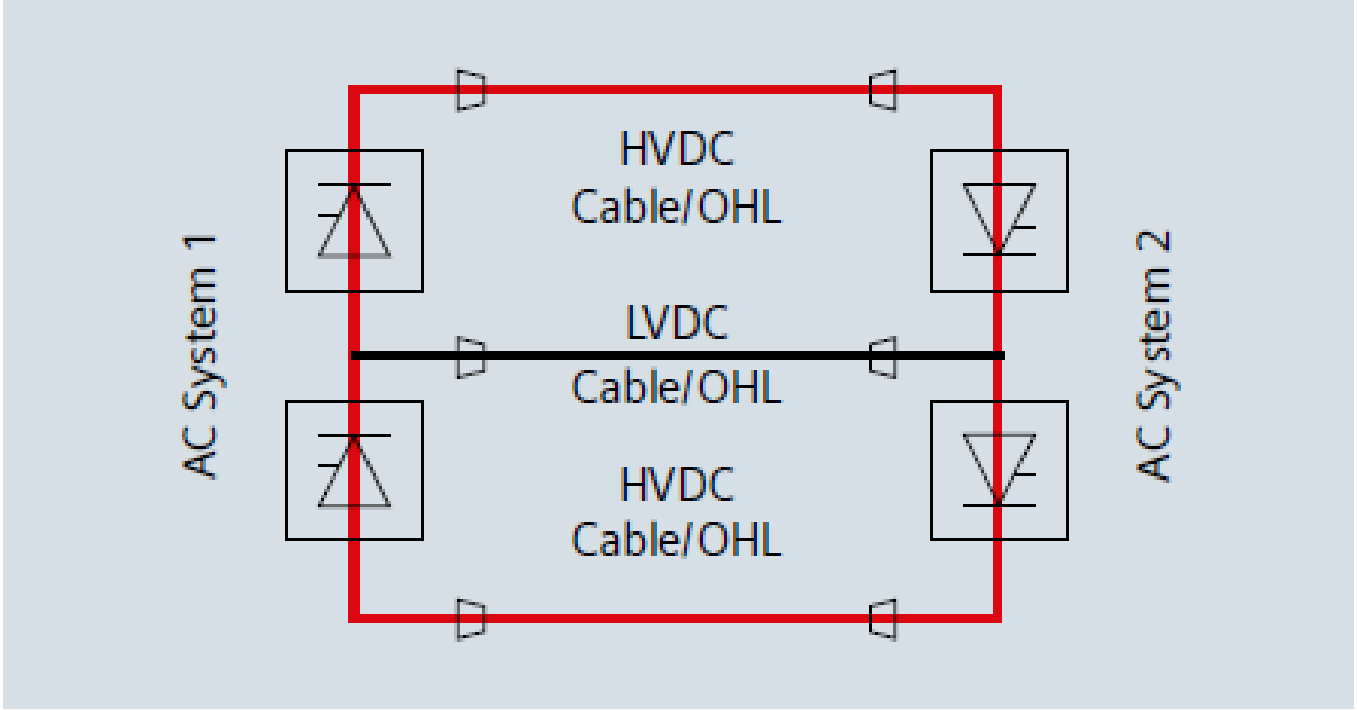
Offshore Transmission Circuit:

Part of an offshore transmission system between two or more circuit-breakers which includes, for example, transformers, reactors, cables, overhead lines and DC converters but excludes busbars and onshore transmission circuits. Elements of an offshore DC system within an *offshore transmission circuit* which can be isolated by means of a control system action in response to a *secured event* without affecting the rest of the circuit shall be treated as an independent *offshore transmission circuit* when applying the said *secured event.*

Is the N-1-1criteria sufficiently robust to ensure faults on metallic returns are addressed

7.8.2 following a *fault outage* of a single cable *offshore transmission circuit* during a *planned outage* of another cable *offshore transmission circuit* the resulting loss of power *infeed* shall not exceed the *infrequent infeed loss risk*.

To be discussed by workgroup



Issue 2 – change to infeed loss risk

Why?

Assumption made during HND project, facilitates better use of offshore routes and landing points and better optimization of offshore transmission assets

How?

- Change “normal” to “infrequent” in 7.7.2.1 and 7.7.12.1
- There is a need to calculate costings for reduced number of landing points versus increased frequency costs

Costings for increase to infrequent infeed loss for offshore?

- Asset costs for reduced number of landing points
- Increase in frequency response costs
- we need to look at the cost savings associated with 1 vs 2 HVDC link connections for a capacity range from 1320MW to 1800MW

Issue 2 – change to infeed loss risk

Issues to consider:

- Will it lead to increase in number of excursions below 49.5Hz
- Whether there will be any costs associated with restricting this increase of frequency excursions
- Whether the costs outweigh the benefits delivered by facilitating recommendations of HND.
- To be decided through the workgroup process

Legal Text

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Draft Legal Text

7.7.2.1 *following a planned outage or a fault outage of a single DC converter on the offshore platform, the loss of power infeed shall not exceed the* ~~normal~~ infrequent *infeed loss risk*". This will include providing clear definition and requirements for bipole circuits.

7.12.2.1 following a planned outage or a fault outage of a single DC converter at the onshore DC conversion facilities, the loss of power infeed shall not exceed the ~~normal~~ infrequent infeed loss risk.

7.8.2 following a *fault outage* of a single cable *offshore transmission circuit* during a planned outage of another cable offshore transmission circuit the further loss of power infeed shall not exceed the infrequent infeed loss risk.

7.8.3 following the concurrent fault outage of any two cable *offshore transmission circuits sharing the same route*, the loss of power infeed shall not exceed the infrequent infeed loss risk;

Draft Legal Text

Definitions section:

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Offshore Cable Circuits Sharing the Same Route:

Two or more cable *offshore transmission circuits* that run within a distance of 250 meters from each other for a distance of 1000 meters or more.

Next Steps

Teri Puddefoot– National Grid ESO Code Administrator

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