

APPENDIX 7

Risk Register

The Appendix summarises the measures that have been put in place, or can if necessary be put in place to ensure that the project is successful and delivers at least the anticipated level of benefits. For ease of reference the measures are grouped below under four categories.

Risk Type	Inherent risk (before mitigation)			Description	Mitigation Actions	Residual Risk (after mitigation)		
	Risk Impact	Risk Likelihood	Risk Rating			Risk Impact	Risk Likelihood	Risk Rating
Technical	5	2	10	Fundamental technical flaw in concept	No new technologies to be used. Joint bodies already in use onshore. Independent reviews of technical feasibility See also Category #1 in Appendix 8	5	1	5
Technical	5	2	10	Wave Sentinel damaged during conversion	Ensure high safety standards through subcontractors tender process & inspection. Insurance to cover cost of repairs	3	1	3
Legal	5	3	15	Unable to agree contract with GMSL	MoU already signed	5	1	5
Comm'l	3	4	9	Cost overrun in vessel conversion cost	Costs independently validated Contingency amount provided See also Category #2 in Appendix 8	3	2	6
Comm'l	3	4	9	Cost overrun in joint development and testing	Costs independently validated Contingency amount provided See also Category #2 in Appendix 8	3	2	6
Technical	4	3	15	Joints fail test	Multiple sequential tests allow for recovery from a failure. Option for extra-conservative design (eg use 220kV joint at 150kV)	3	2	6
Technical	5	2	10	Vessel fails trials	Early design verification Remedial work under fixed price or within contingency. Programme slack available.	3	2	6

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	Risk Impact	Risk Likelihood	Risk Rating			Risk Impact	Risk Likelihood	Risk Rating
Com'l	5	1	5	GMSL financial distress / bankruptcy	Letter of credit from may be called to reclaim funding provided should cost be disallowed in this type of circumstance.	3	1	3
Com'l	4	2	8	Jointing subcontractor financial distress / bankruptcy	Several capable companies. Designs based on off-the-shelf onshore joints. Default IPR rules. So subcontract can be moved if necessary.	3	2	6
Com'l	5	1	5	ACMA disbands	GMSL would seek establish a commercially equivalent private cable repair service to replace ACMA. Otherwise compensation.	3	1	3
Com'l	5	2	10	ACMA members vote against doing cable repairs	Chair of ACMA has discussed with main members; will agree unless major difficulties emerge at detailed design stage. ACMA vote at initial stage (<4% cost at risk)	5	1	5
Com'l	5	2	10	ACMA prices increase substantially	Unlikely given ACMA stability. Possible to claim compensation if ACMA membership becomes unattractive.	3	2	6
Com'l	5	3	15	Wave Sentinel does not remain in ACMA	Compensation payable should vessel leave. Creates incentive on GMSL to ensure that it remains.	3	3	9
Com'l	3	2	6	Slow adoption of Solution due to lack of awareness of benefits	GMSL/ACMA have already started "marketing" of services	3	1	3
Com'l	3	2	6	Slow adoption of Solution for commercial reasons	Using ACMA - means that the cost and time for a repair will be much better than can be obtained using current approach. See Appendix 8 Category #4.	3	1	3
Skills	3	3	9	Delays obtaining suitably trained jointers to assist making for universal joint	Long term call off with joint development subcontractor	3	2	6
Com'l	3	3	9	Universal joint developer demands high fees for trained jointers and/or training services	Long term call off with joint development subcontractor	3	1	3
Enviro	3	3	9	Delays obtaining marine licences for repair work reduce benefit of project	Ensure "ahead of need" marine licences for repair are put in place while project is underway.	3	1	3

Risk Type	Inherent risk (before mitigation)			Description	Mitigation Actions	Residual Risk (after mitigation)		
	Risk Impact	Risk Likelihood	Risk Rating			Risk Impact	Risk Likelihood	Risk Rating
Technical	3	3	9	Delays locating faults reduce benefit of project	TCS putting in place a portfolio of fault location techniques. To be referenced in project report.	3	1	3
Com'l	5	3	15	Benefits assumed in cost-benefit analysis do not emerge at level expected	Very conservative assumptions used in cost-benefit, so probability of undershooting is extremely low, and potential mangntude of undershoot is similarly lowered.	4	1	4
Technical	4	4	16	Other OFTOs (or insurers) are unhappy with risks associated with universal joint, reducing use	Joint is tested to Cigre standards, with multiple tests covering range of possible combinations. Although there is a non-compliance with the Cigre requirement for "system" tests this is mitigated by ensuring the tests cover the worst case field stress within the joint.	4	2	8
Technical	4	3	12	Delays in vessel conversion	Experienced project management. Programme slack	2	2	4
Technical	4	3	12	Delays in joint design/fabrication/testing	Experienced project management. Programme slack	2	3	6
Technical	3	5	20	Universal joint not suitable for all future windfarm export cables	Acknowledge that universal joint cannot expect to deal with all potential future cable types. Cost-benefit analysis is conservatively based on the joint being usable for just 20% of new cables 2015-2030.	1	5	5

Risk Impact is graded from 1 (manageable) to 5 (critical)

Risk Likelihood is graded from 1 (very remote) to 5 (almost certain)

Risk Rating is product of Rick Impact and Risk Likelihood. "High Risk" is typically defined as a Risk Rating in excess of 15.