Vattenfall Wind Power Ltd

Thanet Extension Offshore Wind Farm

Appendix 25, Annex Q to Deadline 1 Submission: Re-presented Hazard Log

Relevant Examination Deadline: 1

Submitted by Vattenfall Wind Power Ltd

Date: January 2019

Revision A

Drafted By:	Marico Marine
Approved By:	Daniel Bates
Date of Approval:	January 2019
Revision:	A

Revision A	Original Document submitted to the Examining Authority
N/A	
N/A	
N/A	

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Residual Risk Assessment - Risk profile with the full Thanet Extension in place, the future traffic profile and both "Embedded" and "Possible Additional Risk Controls - Reccomended"

Inherent Risk Assessment - Risk profile with the full Thanet Extension in place, the future traffic profile and "Embedded risk" controls

Baseline Risk Assessment - Present day risk profile with the existing TOWF in place

HaziD	Haz Title	Most Likely Consequence							Worst Credible Consequence							Baseline Risk	Embedded Risk Controls									Inherent Risk	Additional Risk Controls									Residual risk
		Consequence Category				Likelihood			Consequence Category				Likelihood														Coordination with Leisure/Fishing			Maintain Lines of Orientation			Relocation of Buoyage			
		People	Property	Environment	Stakeholders	Baseline 1 in X yr	Inherent 1 in X yr	Residual 1 in X yr	People	Property	Environment	Stakeholders	Baseline 1 in X yr	Inherent 1 in X yr	Residual 1 in X yr		Training	ERCOP	Promulgation/Ntm	Reduction in RLB	Aids to Navigation Plan	Blade Clearance	Continuous Monitoring	Sufficient Cable/Burial Protection	Cable Exclusion Area		Baseline 1 in X yr	Inherent 1 in X yr	Residual 1 in X yr	Baseline 1 in X yr	Inherent 1 in X yr	Residual 1 in X yr	Baseline 1 in X yr	Inherent 1 in X yr	Residual 1 in X yr	
1	Collision - O&M ICW O&M	2	2	1	2	10	5	5	4	3	2	4	1000	500	500	3.7	✓	✓								4.0	-	-	-	-	-	-	-	-	-	4.0
2	Collision - O&M ICW Large Commercial	2	2	1	2	100	50	50	4	3	2	4	1000	500	500	3.2	✓	✓								3.5	-	-	-	-	-	-	-	-	-	3.5
3	Collision - O&M ICW Small Commercial	2	2	1	2	50	40	40	4	3	2	3	500	400	400	3.4	✓	✓								3.5	-	-	-	-	-	-	-	-	-	3.5
4	Collision - O&M ICW Fishing Vessel	2	2	1	2	25	10	16	4	3	2	3	1000	500	630	3.4	✓	✓								3.7	25	10	16	-	-	-	-	-	-	3.6
5	Collision - O&M ICW Recreational Craft	2	2	1	1	10	5	8	4	3	2	3	1000	500	790	3.4	✓	✓								3.7	10	5.0	7.9	-	-	-	-	-	-	3.5
6	Collision - Large Commercial ICW Large Commercial	2	3	1	2	25	10	10	4	5	4	4	2510	1000	1000	4.6			✓	✓						5.0	-	-	-	-	-	-	-	-	-	5.0
7	Collision - Large Commercial ICW Small Commercial	2	2	1	2	25	16	16	4	4	4	4	2510	1000	1000	3.6			✓	✓						3.8	-	-	-	-	-	-	-	-	-	3.8
8	Collision - Large Commercial ICW Fishing	2	2	1	2	50	10	10	4	3	2	4	2510	1000	1000	3.2			✓	✓						3.7	-	-	-	-	-	-	-	-	-	3.7
9	Collision - Large Commercial ICW Recreational Craft	3	2	1	2	50	10	10	5	3	2	4	2510	1000	1000	4.2			✓	✓						4.8	-	-	-	-	-	-	-	-	-	4.8
10	Collision - Small Commercial ICW Small Commercial	2	2	1	2	50	25	25	4	4	2	4	2510	1000	1000	3.3			✓	✓						3.5	-	-	-	-	-	-	-	-	-	3.5
11	Collision - Small Commercial vs Fishing	2	2	1	2	50	25	25	4	3	2	3	2510	1000	1000	3.1			✓							3.4	-	-	-	-	-	-	-	-	-	3.4
12	Collision - Small Commercial ICW Recreational	2	2	1	2	50	25	25	4	3	2	3	2510	1000	1000	3.1			✓							3.4	-	-	-	-	-	-	-	-	-	3.4
13	Collision -Fishing ICW Recreational	2	2	1	2	10	10	10	4	3	2	3	1000	1000	1000	3.6			✓							3.6	-	-	-	-	-	-	-	-	-	3.6
14	Collision - Fishing ICW Fishing	2	2	1	2	10	10	10	4	3	2	3	1000	1000	1000	3.6			✓							3.6	-	-	-	-	-	-	-	-	-	3.6
15	Collision - Recreational ICW Recreational	2	2	1	2	1	1	1	4	3	2	3	1000	1000	1000	4.7			✓							4.7	-	-	-	-	-	-	-	-	-	4.7
16	Contact - O&M Vessel in Contact with WTG	2	2	1	2	5	3	3	4	3	2	4	500	250	250	4.0	✓	✓			✓	✓				4.5	-	-	-	5.0	2.5	2.5	-	-	-	4.5
17	Contact - Large Commercial Shipping in Contact with WTG	2	2	1	3	63	25	32	4	5	4	5	6310	2510	3160	4.3		✓		✓	✓	✓				4.7	-	-	-	-	-	-	63	25	32	4.6
18	Contact - Small Commercial Vessel in Contact with WTG	2	2	1	2	16	6	8		4	2	3	1580	630	790	3.5		✓		✓	✓	✓				3.9	-	-	-	16	6.3	7.9	16	6.3	7.9	3.8
19	Contact - Fishing Craft in Contact with WTG	2	2	1	2	3	2	2	4	3	2	3	250	160	200	4.4		✓	✓	✓	✓	✓	✓			4.7	2.5	1.6	2.0	2.5	1.6	2.0	2.5	1.6	2.0	4.6
20	Contact - Recreational Vessel in Contact with WTG	2	2	1	2	10	6	10	4	3	2	3	1000	630	1000	3.6		✓		✓	✓	✓				3.8	10	6.3	10	10	6.3	10	-	-	-	3.6
21	Grounding of O&M Vessel	2	2	1	2	100	100	100	3	3	2	4	1000	1000	1000	3.1		✓								3.1	-	-	-	-	-	-	-	-	-	3.1
22	Grounding of Commercial Shipping	1	2	1	2	10	5	5	3	4	3	4	100	50	50	4.1			✓	✓						4.5	-	-	-	-	-	-	-	-	-	4.5
23	Grounding of Small Commercial	2	2	1	2	10	10	10	4	3	2	3	100	100	100	4.1			✓	✓						4.1	-	-	-	-	-	-	-	-	-	4.1
24	Grounding of Fishing Vessel	2	2	1	2	5	5	5	4	3	2	3	100	100	100	4.3			✓					✓		4.3	-	-	-	-	-	-	-	-	-	4.3
25	Grounding of Recreational	2	2	1	2	5	5	5	4	3	2	3	500	500	500	4.0			✓					✓		4.0	-	-	-	-	-	-	-	-	-	4.0
26	Obstruction - Small vessel (O&M/small commercial/non-commercial) Fouls Cables	1	1	1	2	10	5	5	4	4	2	4	100	50	50	3.8	✓		✓					✓	✓	4.2	-	-	-	-	-	-	-	-	-	4.2
27	Obstruction - Large Commercial Vessel Fouls Cables	1	1	1	3	100	50	50	1	2	1	5	1000	500	500	3.4	✓		✓					✓	✓	3.6	-	-	-	-	-	-	-	-	-	3.6
28	Obstruction - O&M Vessel Encounters Unexploded Ordnance	1	1	1	2	100	100	100	3	4	2	3	1000	1000	1000	2.8	✓									2.8	-	-	-	-	-	-	-	-	-	2.8
29	Small vessel capsizes or swamps due to movement of project vessels	1	1	1	1	50	10	10	4	3	2	3	1000	500	500	2.1	✓									2.2	-	-	-	-	-	-	-	-	-	2.2

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		Consequence Category				Likelihood			Consequence Category				Likelihood				Construction Planning/Coordination	Training	Continuous Monitoring	ERCOP	Promulgation/NtM	Reduction in RLB	Aids to Navigation Plan	Blade Clearance	Sufficient Cable Burial/Proction	Cable Exclusion Area		Safety Zones			Coordination with PLA VTS			Guard Vessels			Coorperation with Port of Ramsgate			Coordination with Leisure/Fishing			Maintain Lines of Origin/Symmetry			Relocation of Buoyage			
		People	Property	Environment	Stakeholders	Baseline 1 in X yr	Inherent 1 in X yr	Residual 1 in X yr	People	Property	Environment	Stakeholders	Baseline 1 in X yr	Inherent 1 in X yr	Residual 1 in X yr													Baseline 1 in X yr	Inherent 1 in X yr	Residual 1 in X yr	Baseline 1 in X yr	Inherent 1 in X yr	Residual 1 in X yr	Baseline 1 in X yr	Inherent 1 in X yr	Residual 1 in X yr	Baseline 1 in X yr	Inherent 1 in X yr	Residual 1 in X yr	Baseline 1 in X yr	Inherent 1 in X yr	Residual 1 in X yr	Baseline 1 in X yr	Baseline 1 in X yr	Inherent 1 in X yr	Residual 1 in X yr	Inherent 1 in X yr	Residual 1 in X yr	
1	Collision - Large Construction Vessel ICW Large Construction Vessel	2	2	1	2	N/A	100	100	4	5	4	4	N/A	10000	10000	N/A	✓	✓	✓	✓							3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4
2	Collision - Large Construction Vessel ICW Large Commercial	2	2	1	2	N/A	50	63	4	5	4	4	N/A	1000	1585	N/A	✓	✓	✓	✓	✓						3.9	N/A	50	63	N/A	50	63	N/A	50	63	N/A	50	63	-	-	-	-	-	-	-	-	-	3.8
3	Collision - Large Construction Vessel ICW Small Commercial	2	2	1	2	N/A	10	25	4	4	3	4	N/A	1000	2512	N/A	✓	✓	✓	✓	✓						3.9	N/A	10	25	N/A	10	25	N/A	10	25	N/A	10	25	-	-	-	-	-	-	-	-	-	3.5
4	Collision - Large Construction Vessel ICW Fishing Vessel	2	2	1	2	N/A	10	25	4	3	2	4	N/A	1000	2512	N/A	✓	✓	✓	✓	✓						3.7	N/A	10	25	-	-	-	N/A	10	25	N/A	10	25	N/A	10	25	-	-	-	-	-	-	3.3
5	Collision - Large Construction Vessel ICW Recreational	2	2	1	2	N/A	10	25	4	3	2	4	N/A	1000	2512	N/A	✓	✓	✓	✓	✓						3.7	N/A	10	25	-	-	-	N/A	10	25	N/A	10	25	N/A	10	25	-	-	-	-	-	-	3.3
6	Collision - Large Construction ICW Small Construction/O&M	2	2	1	2	N/A	10	10	4	4	2	4	N/A	1000	1000	N/A	✓	✓	✓	✓	✓						3.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.8
7	Collision - Small Construction/O&M ICW Small Construction/O&M	2	2	1	2	10	3	3	4	3	2	4	1000	251	251	3.7	✓	✓	✓	✓							4.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.5
8	Collision - Small Construction/O&M ICW Large Commercial	2	2	1	2	100	25	32	4	3	2	4	1000	251	316	3.2	✓	✓	✓	✓	✓						3.7	100	25	32	100	25	32	100	25	32	-	-	-	-	-	-	-	-	-	-	-	-	3.6
9	Collision - Small Construction/O&M ICW Small Commercial	2	2	1	2	50	25	50	4	3	2	3	501	251	501	3.4	✓	✓	✓	✓	✓						3.6	50	25	50	50	25	50	50	25	50	-	-	-	50	25	50	-	-	-	-	-	-	3.4
10	Collision - Small Construction/O&M ICW Fishing	2	2	1	2	25	10	16	4	3	2	3	1000	251	501	3.4	✓	✓	✓	✓	✓						3.9	25	10	16	25	10	16	25	10	16	25	10	16	25	10	16	-	-	-	-	-	-	3.6
11	Collision - Small Construction/O&M ICW Recreational	2	2	1	1	10	3	5	4	3	2	3	1000	251	501	3.4	✓	✓	✓	✓	✓						4.1	10	3	5	10	3	5	10	3	5	-	-	-	-	-	-	-	-	-	-	-	-	3.7
12	Collision - Large Commercial ICW Large Commercial	2	3	1	2	25	10	13	4	5	4	4	2512	1000	1259	4.6					✓	✓					5.0	-	-	-	25	10	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.9
13	Collision - Large Commercial ICW Small Commercial	2	2	1	2	25	16	20	4	4	4	4	2512	1000	1259	3.6					✓	✓					3.8	-	-	-	25	16	20	-	-	-	-	-	-				-	-	-	-	-	-	3.7
14	Collision - Large Commercial ICW Fishing	2	2	1	2	50	10	16	4	3	2	4	2512	1000	1585	3.2					✓	✓					3.7	-	-	-	50	10	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5
15	Collision - Large Commercial ICW Recreational Craft	3	2	1	2	50	10	16	5	3	2	4	2512	1000	1585	4.2					✓						4.8	-	-	-	50	10	16	-	-	-	-	-	-	50	10	16	-	-	-	-	-	-	4.5
16	Collision - Small Commercial ICW Small Commercial	2	2	1	2	50	25	32	4	4	2	4	2512	1000	1585	3.3					✓	✓					3.5	-	-	-	50	25	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4
17	Collision - Small Commercial vs Fishing	2	2	1	2	50	25	50	4	3	2	3	2512	1000	2512	3.1					✓						3.4	-	-	-	50	25	50	-	-	-	-	-	-	50	25	50	-	-	-	-	-	-	3.1
18	Collision - Small Commercial vs Recreational	2	2	1	2	50	25	50	4	3	2	3	2512	1000	2512	3.1					✓						3.4	-	-	-	50	25	50	-	-	-	-	-	-	50	25	50	-	-	-	-	-	-	3.1
19	Collision -Fishing ICW Recreational	2	2	1	2	10	10	10	4	3	2	3	1000	1000	1000	3.6					✓						3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.6
20	Collision - Fishing ICW Fishing	2	2	1	2	10	10	10	4	3	2	3	1000	1000	1000	3.6					✓						3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.6
21	Collision - Recreational ICW Recreational	2	2	1	2	1	1	1	4	3	2	3	1000	1000	1000	4.7					✓						4.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.7
22	Contact - Large Construction Vessel in Contact with WTG	2	2	1	2	N/A	10	10	3	3	2	4	N/A	251	251	N/A			✓	✓			✓	✓			3.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.9
23	Contact - Small Construction/O&M Vessel in Contact with WTG	2	2	1	2	5	1	1	4	3	2	4	501	100	100	4.0		✓	✓	✓			✓	✓			5.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	1	1	-	-	-	5.2
24	Contact - Large Commercial Shipping in Contact with WTG	2	2	1	3	63	25	40	4	5	4	5	6310	2512	3981	4.3			✓	✓	✓	✓	✓	✓			4.7	63	25	40	63	25	40	-	-	-	-	-	-	-	-	-	-	-	-	63	25	40	4.5
25	Contact - Small Commercial Vessel in Contact with WTG	2	2	1	2	16	6	10	4	4	2	3	1585	631	1000	3.5			✓	✓	✓		✓	✓			3.9	16	6	10	16	6	10	-	-	-	-	-	-	-	-	-	16	6	10	16	6	10	3.7
26	Contact - Fishing Craft in Contact with WTG	2	2	1	2	3	2	2	4	3	2	3	251	158	200	4.4			✓	✓	✓		✓	✓			4.7	3	2	2	-	-	-	-	-	-	-	-	-	3	2	2	3	2	2	3	2	2	4.6
27	Contact - Recreational Craft in Contact with WTG	2	2	1	2	10	6	10	4	3	2	3	1000	631	1000	3.6			✓	✓	✓	✓	✓	✓			3.8	10	6	10	-	-	-	-	-	-	-	-	-	10	6	10	10	6	10	10	6	10	3.6
28	Grounding of Large Construction Vessel	2	2	1	2	N/A	10	10	3	4	2	4	N/A	1000	1000	N/A		✓			✓						3.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.7
29	Grounding of Small Construction/O&M Vessel	2	2	1	2	100	10	10	3	3	2	4	1000	501	501	3.1		✓			✓						3.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.7
30	Grounding of Commercial Shipping	1	2	1	2	10	5	5	3	4	3	4	100	50	50	4.1					✓	✓					4.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.5
31	Grounding of Small Commercial	2	2	1	2	10	10	10	4	3	2	3	100	100	100	4.1					✓	✓					4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.1
32	Grounding of Fishing Vessel	2	2	1	2	5	5	5	4	3	2	3	100	100	100	4.3					✓				✓		4.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.3
33	Grounding of Recreational Craft	2	2	1	2	5	5	5	4	3	2	3	501	501	501	4.0					✓				✓		4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.0
34	Obstruction - Small vessel (O&M/fishing/recreational) Fouls Cables	1	1	1	2	10	5	10	4	4	2	4	100	50	100	3.8					✓				✓	✓	4.2	-	-	-	-	-	-	10	5	10	-	-	-	10	5	10	-	-	-	-	-	-	3.8
35	Obstruction - Large Construction Vessel Fouls Cables	1	1	1	3.3	N/A	5	5	1	2	1	5	N/A	50	50	N/A					✓				✓		4.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.7
36	Obstruction - Large Commercial Vessel Fouls Cables	1	1	1	3	100	50	100	1	2	1	5	N/A	501	1000	3.4					✓				✓	✓	3.6	100	50	100	100	50	100	100	50	100	-	-	-	-	-	-	-	-	-	-	-	-	3.4
37	Obstruction - Construction Vessel Encounters Unexploded Ordnance	1	1	1	2	100	10	10	3	4	2	3	N/A	1000	1000	2.8		✓									3.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.2
38	Small vessel capsizes or swamps due to movement of project vessels	1	1	1	1	50	5	5	4	3	2	3	N/A	501	501	2.1		✓									2.2	-	-	-	-	-	-	-	-	-	-	-	-	50	5	5	-	-	-	-	-	-	2.2