PMSC RISK ASSESSMENT - RISK RANKING

Rank	HazardID	Hazard What can go wrong (Event leading to a consequence)	Hazard Scoring
1	FP PMSC RA (F) 14 - 1.1 Collision	Collision	8.5
1	FP PMSC RA (F) 16 - 1.1 Collision	Collision	8.5
3	FP PMSC RA (F&T) 02 - 1.5 Grounding	Grounding	8.375
3	FP PMSC RA (F) 02 - 1.1 Collision	Collision	8.375
5	FP PMSC RA (F&T) 02 - 1.3 Contact	Contact	8.125
5	FP PMSC RA (F) 02 - 1.2 Contact	Contact	8.125
7	FP PMSC RA (F) 10 - 1.5 Fire / Explosion	Fire / Explosion	7.625
7	FP PMSC RA (F) 11 - 1.5 Fire / Explosion	Fire / Explosion	7.625
9	FP PMSC RA (F) 10 - 1.2 Contact	Contact	7.375
10	FP PMSC RA (F&T) 01 - 1.1 Dragging Anchor	Dragging Anchor	7.25
10	FP PMSC RA (F) 14 - 1.2 Contact	Contact	7.25
10	FP PMSC RA (F) 16 - 1.2 Contact	Contact	7.25
10	FP PMSC RA (F) 09 - 1.1 Collision	Collision	7.25
14	FP PMSC RA (T) 02 - 1.2 Contact	Contact	7
15	FP PMSC RA (F) 09 - 1.2 Contact	Contact	6.875
15	FP PMSC RA (F) 07 - 1.3 Grounding	Grounding	6.875
15	FP PMSC RA (F) 05 - 1.4 Sinking / Capsize	Sinking / Capsize	6.875
15	FP PMSC RA (F) 08 - 1.5 Fire / Explosion	Fire / Explosion	6.875
15	FP PMSC RA (F) 07 - 1.5 Fire / Explosion	Fire / Explosion	6.875
15	FP PMSC RA (F) 04 - 1.4 Sinking / Capsize	Sinking / Capsize	6.875
21	FP PMSC RA (F) 09 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	6.75
21	FP PMSC RA (F) 12 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	6.75
23	FP PMSC RA (T) 02 - 1.5 Fire / Explosion	Fire / Explosion	6.625
23	FP PMSC RA (F) 04 - 1.2 Contact	Contact	6.625
25	FP PMSC RA (T) 01 - 1.4 Sinking / Capsize	Sinking / Capsize	6.5
25	FP PMSC RA (F) 15 - 1.5 Fire / Explosion	Fire / Explosion	6.5
25	FP PMSC RA (F&T) 02 - 1.1 Capsizing / Flooding	Capsizing / Flooding	6.5
25	FP PMSC RA (F) 05 - 1.1 Collision	Collision	6.5
29	FP PMSC RA (F) 07 - 1.7 Loss of Dock Level (Lock Gate Operations)	Loss of Dock Level (Lock Gate Operations)	6.375
30	FP PMSC RA (F) 07 - 1.1 Collision	Collision	6.25
30	FP PMSC RA (F) 02 - 1.3 Grounding	Grounding	6.25
30	FP PMSC RA (F) 03 - 1.3 Grounding	Grounding	6.25
30	FP PMSC RA (F&T) 07 - 1.1 - Swamping / turbulence / interaction	Swamping / interaction / turbulence	6.25
30	FP PMSC RA (F) 10 - 1.3 Grounding	Grounding	6.25
30	FP PMSC RA (F) 13 - 1.5 Fire / Explosion	Fire / Explosion	6.25
36	FP PMSC RA (F&T) 04 - 1.2 Contact	Contact	6.125
37	FP PMSC RA (T) 04 - 1.5 Fire / Explosion	Fire / Explosion	6
38	FP PMSC RA (F) 12 - 1.5 Fire / Explosion	Fire / Explosion	5.875
39	FP PMSC RA (F) 15 - 1.4 Sinking / Capsize	Sinking / Capsize	5.75
39	FP PMSC RA (F&T) 01 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	5.75
39	FP PMSC RA (F&T) 03 - 1.1 Contact Refer Also to FP PMSC RA (F&T) 1	Contact	5.75
39	FP PMSC RA (F) 04 - 1.1 Collision (Fishing/Leisure Vessel)	Collision (Fishing/Leisure Vessel)	5.75
43	FP PMSC RA (F) 05 - 1.3 Grounding	Grounding	5.625
43	FP PMSC RA (F) 13 - 1.2 Contact	Contact	5.625
43	FP PMSC RA (T) 01 - 1.2 Contact	Contact	5.625
46	FP PMSC RA (F&T) 06 - 1.3 Fire	Dundee - Feb 2018	5.5
46	FP PMSC RA (F) 03 - 1.2 Contact	Contact	5.5
46	FP PMSC RA (F) 15 - 1.3 Grounding	Grounding	5.5
46	FP PMSC RA (T) 06 - 1.1 Collision	Collision	5.5
46	FP PMSC RA (F) 04 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	5.5
46	FP PMSC RA (F) 08 - 1.4 Sinking / Capsize	Sinking / Capsize	5.5
46	FP PMSC RA (F) 08 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	5.5
53	FP PMSC RA (F) 06 - 1.1 Collision (Fishing/Leisure Vessel)	Collision (Fishing/Leisure Vessel)	5.25
53	FP PMSC RA (F) 03 - 1.1 Collision	Collision	5.25
53	FP PMSC RA (F) 06 - 1.3 Grounding Refer Also to: FP PMSSC RA (F&T)7	Grounding	5.25
53	FP PMSC RA (T) 06 - 1.2 Contact	Contact	5.25
53	FP PMSC RA (T) 04 - 1.1 Collision	Collision	5.25
53	FP PMSC RA (F) 04 - 1.3 Grounding	Grounding	5.25
59	FP PMSC RA (F) 09 - 1.5 Fire / Explosion	Fire / Explosion	5.125
60	FP PMSC RA (F) 06 - 1.2 Contact	Contact	5
60	FP PMSC RA (T) 05 - 1.5 Fire / Explosion	Fire / Explosion	5
60	FP PMSC RA (T) 04 - 1.4 Sinking / Capsize	Sinking / Capsize	5
60	FP PMSC RA (F&T) 10 - 1.1 Loss of Containment (Oil Product)	Loss of Containment (Oil Product)	5
60	FP PMSC RA (F) 14 - 1.3 Grounding	Grounding	5
60	FP PMSC RA (F) 16 - 1.3 Grounding	Grounding	5
60	FP PMSC RA (F) 05 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	5
67	FP PMSC RA (F) 05 - 1.2 Contact	Contact	4.875
67	FP PMSC RA (F) 15 - 1.2 Contact	Contact	4.875
69	FP PMSC RA (F) 13 - 1.4 Sinking / Capsize	Sinking / Capsize	4.75
69	FP PMSC RA (F&T) 10 - 1.1 Loss of Containment (Oil Product)	Loss of Containment (Oil Product)	4.75
69	FP PMSC RA (F&T) 01 - 1.2 Contact	Contact	4.75
69	FP PMSC RA (T) 06 - 1.4 Sinking / Capsize	Sinking / Capsize	4.75
69	FP PMSC RA (T) 04 - 1.2 Contact	Contact	4.75
69	FP PMSC RA (F) 12 - 1.4 Sinking / Capsize	Sinking / Capsize	4.75
75	FP PMSC RA (F&T) 05 - 1.1 Collision with bunker vessel and receiving vessel	vessel	4.625
75	FP PMSC RA (F) 02 - 1.4 Sinking / Capsize	Sinking / Capsize	4.625
77	FP PMSC RA (T) 01 - 1.3 Grounding	Grounding	4.5
77	FP PMSC RA (F) 13 - 1.3 Grounding	Grounding	4.5
77	FP PMSC RA (F) 08 - 1.1 Collision (Fishing/Leisure Vessel)	Collision (Fishing/Leisure Vessel)	4.5
77	FP PMSC RA (F) 01 - 1.4 Sinking / Capsize	Sinking / Capsize	4.5
77	FP PMSC RA (F) 01 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	4.5
77	FP PMSC RA (F) 09 - 1.4 Sinking / Capsize	Sinking / Capsize	4.5
77	FP PMSC RA (F) 07 - 1.4 Sinking / Capsize	Sinking / Capsize	4.5
77	FP PMSC RA (T) 05 - 1.2 Contact	Contact	4.5

77	FP PMSC RA (F&T) 04 - 1.1 Collision with bunker vessel and receiving vessel	vessel	4.5
77	FP PMSC RA (F) 12 - 1.1 Collision	Collision	4.5
87	FP PMSC RA (F) 12 - 1.2 Contact	Contact	4.375
87	FP PMSC RA (F) 11 - 1.2 Contact	Contact	4.375
87	FP PMSC RA (F) 10 - 1.1 Collision	Collision	4.375
87	FP PMSC RA (T) 01 - 1.5 Fire / Explosion	Fire / Explosion	4.375
87	FP PMSC RA (F) 02 - 1.7 Loss of Dock Level (Lock Gate Operations)	Loss of Dock Level (Lock Gate Operations)	4.375
87	FP PMSC RA (T) 02 - 1.4 Sinking / Capsize	Sinking / Capsize	4.375
87	FP PMSC RA (F) 03 - 1.4 Sinking / Capsize	Sinking / Capsize	4.375
87	FP PMSC RA (F) 15 - 1.6 Loss of Containment (Oil Products)	Loss of Containment (Oil Product)	4.375
87	FP PMSC RA (F) 11 - 1.4 Sinking / Capsize	Sinking / Capsize	4.375
96	FP PMSC RA (F) 08 - 1.2 Contact	Contact	4.25
96	FP PMSC RA (F) 07 - 1.2 Contact	Contact	4.25
96	FP PMSC RA (F&T) 02 - 1.2 Fire	Fire	4.25
99	FP PMSC RA (T) 05 - 1.4 Sinking / Capsize	Sinking / Capsize	4.125
99	FP PMSC RA (F) 15 - 1.1 Collision	Collision	4.125
99	FP PMSC RA (F) 11 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	4.125
102	FP PMSC RA (F&T) 01 - 1.4 Sinking / Capsize	Sinking / Capsize	4
102	FP PMSC RA (F&T) 02 - 1.4 Collision	Collision	4
102	FP PMSC RA (F) 01 - 1.2 Contact	Contact	4
102	FP PMSC RA (F) 13 - 1.6 Loss of Containment (oil product) Refer also to FP PMSC RA (F&T)	Loss of Containment (Oil Product)	4
106	FP PMSC RA (F) 14 - 1.4 Sinking / Capsize	Sinking / Capsize	3.875
106	FP PMSC RA (F) 16 - 1.4 Sinking / Capsize	Sinking / Capsize	3.875
106	FP PMSC RA (F) 01 - 1.5 Fire / Explosion	Fire / Explosion	3.875
106	FP PMSC RA (F) 02 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3.875
106	FP PMSC RA (F) 03 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3.875
106	FP PMSC RA (F) 10 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3.875
106	FP PMSC RA (T) 04 - 1.6 Loss of Containment (Oil Products)	Loss of Containment (Oil Products)	3.875
106	FP PMSC RA (T) 05 - 1.1 Collision	Collision	3.875
106	FP PMSC RA (F&T) 08 - 1.1 - Collision / contact	Collision / Contact	3.875
106	FP PMSC RA (F) 02 - 1.5 Fire / Explosion	Fire / Explosion	3.875
116	FP PMSC RA (F) 11 - 1.1 Collision	Collsion	3.75
116	FP PMSC RA (F&T) 05 - 1.3 Loss of Containment (Oil Products)	Loss of Containment (Oil Product)	3.75
116	FP PMSC RA (F&T) 06 - 1.2 Capsize / Flooding	Capsizing / Flooding	3.75
116	FP PMSC RA (F&T) 05 - 1.2 Contact	Contact	3.75
116	FP PMSC RA (T) 02 - 1.1 Collision	Collision	3.75
116	FP PMSC RA (T) 02 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3.75
116	FP PMSC RA (T) 04 - 1.3 Grounding	Grounding	3.75
116	FP PMSC RA (F&T) 08 - 1.2 - Swamping / interaction / turbulence	Swamping / interaction / turbulence	3.75
124	FP PMSC RA (F&T) 03 - 1.2 Grounding Refer Also to FP PMSC RA (F&T) 1	Grounding	3.625
124	FP PMSC RA (F) 01 - 1.1 Collision	Collision	3.625
124	FP PMSC RA (T) 06 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3.625
124	FP PMSC RA (F) 11 - 1.3 Grounding	Grounding	3.625
128	FP PMSC RA (F) 14 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3.5
128	FP PMSC RA (F) 16 - 1.6 Loss of Containment (Oil Products)	Loss of Containment (Oil Product)	3.5
128	FP PMSC RA (F&T) 01 - 1.3 Grounding	Grounding	3.5
128	FP PMSC RA (F) 01 - 1.3 Grounding	Grounding	3.5
128	FP PMSC RA (F) 06 - 1.4 Sinking / Capsize	Sinking / Capsize	3.5
128	FP PMSC RA (T) 02 - 1.3 Grounding	Grounding	3.5
134	FP PMSC RA (F) 12 - 1.3 Grounding	Grounding	3.375
134	FP PMSC RA (T) 01 - 1.1 Collision	Collision	3.375
134	FP PMSC RA (F&T) 06 - 1.4 Hull Damage	Hull Damage	3.375
134	FP PMSC RA (F&T) 05 - 1.4 Fire/Explosion	Fire / Explosion	3.375
134	FP PMSC RA (F&T) 04 - 1.4 Fire/Explosion	Fire / Explosion	3.375
134	FP PMSC RA (T) 04 - 1.7 Allision	Allision	3.375
140	FP PMSC RA (F) 14 - 1.5 Fire / Explosion	Fire / Explosion	3.25
140	FP PMSC RA (F) 16 - 1.5 Fire	Fire	3.25
140	FP PMSC RA (F) 08 - 1.3 Grounding Refer Also to: FP PMSSC RA (F&T)7	Grounding	3.25
140	FP PMSC RA (F) 10 - 1.4 Sinking / Capsize	Sinking / Capsize	3.25
140	FP PMSC RA (F) 10 - 1.7 Loss of Dock Level	Loss of Dock Level	3.25
140	FP PMSC RA (F) 09 - 1.3 Grounding	Grounding	3.25
140	FP PMSC RA (T) 01 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3.25
140	FP PMSC RA (F&T) 01 - 1.5 Fire / Explosion	Fire / Explosion	3.25
140	FP PMSC RA (F&T) 04 - 1.3 Loss of Containment (Oil Products)	Loss of Containment (Oil Product)	3.25
140	FP PMSC RA (F&T) 07 - 1.2 - Collision / contact	Collision / Contact	3.25
150	FP PMSC RA (F) 07 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3.125
150	FP PMSC RA (F) 05 - 1.5 Fire / Explosion	Fire / Explosion	3.125
150	FP PMSC RA (F&T) 09 - 1.4 Loss of Containment / Power / Communication	Loss of Containment / Power / Communication	3.125
150	FP PMSC RA (T) 06 - 1.5 Fire / Explosion	Fire / Explosion	3.125
150	FP PMSC RA (F&T) 09 - 1.1 Contact	Contact	3.125
150	FP PMSC RA (F) 03 - 1.5 Fire / Explosion	Fire / Explosion	3.125
150	FP PMSC RA (F) 04 - 1.5 Fire / Explosion	Fire / Explosion	3.125
150	FP PMSC RA (F) 06 - 1.5 Fire / Explosion	Fire / Explosion	3.125
150	FP PMSC RA (T) 05 - 1.3 Grounding	Grounding	3.125
150	FP PMSC RA (T) 05 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3.125
160	FP PMSC RA (F) 06 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3
160	FP PMSC RA (T) 06 - 1.3 Grounding	Grounding	3
162	FP PMSC RA (F&T) 09 - 1.3 Fire / Explosion	Fire / Explosion	2.75

PMSC RISK ASSESSMENT - RISK RANKING

			Most Likely Risk scored at Residual level				Worst Credible Risk scored at Residual level				
Rank	HazardID	Hazard What can go wrong (Event leading to a consequence)	People	Property	Environment	Business	People	Property	Environment	Business	Hazard Scoring
1	FP PMSC RA (F) 14 - 1.1 Collision	Collision	10	10	5	5	10	10	8	10	8.5
1	FP PMSC RA (F) 16 - 1.1 Collision	Collision	10	10	5	5	10	10	8	10	8.50
3	FP PMSC RA (F&T) 02 - 1.5 Grounding	Grounding	6	9	3	9	10	10	10	10	8.375
3	FP PMSC RA (F) 02 - 1.1 Collision	Collision	6	9	6	6	10	10	10	10	8.375
5	FP PMSC RA (F&T) 02 - 1.3 Contact	Contact	5	10	5	10	10	10	5	10	8.125
5	FP PMSC RA (F) 02 - 1.2 Contact	Contact	5	10	5	5	10	10	10	10	8.125
7	FP PMSC RA (F) 10 - 1.5 Fire / Explosion	Fire / Explosion	3	9	6	3	10	10	10	10	7.625
7	FP PMSC RA (F) 11 - 1.5 Fire / Explosion	Fire / Explosion	3	9	6	3	10	10	10	10	7.625
9	FP PMSC RA (F) 10 - 1.2 Contact	Contact	5	10	5	5	6	10	8	10	7.375
10	FP PMSC RA (F&T) 01 - 1.1 Dragging Anchor	Dragging Anchor	5	5	5	5	8	10	10	10	7.25
10	FP PMSC RA (F) 14 - 1.2 Contact	Contact	5	5	5	5	10	10	8	10	7.25
10	FP PMSC RA (F) 16 - 1.2 Contact	Contact	5	5	5	5	10	10	8	10	7.25
10	FP PMSC RA (F) 09 - 1.1 Collision	Collision	5	5	5	5	10	10	8	10	7.25
14	FP PMSC RA (T) 02 - 1.2 Contact	Contact	8	8	4	8	6	6	8	8	7
15	FP PMSC RA (F) 09 - 1.2 Contact	Contact	3	6	3	3	10	10	10	10	6.875
15	FP PMSC RA (F) 07 - 1.3 Grounding	Grounding	3	6	6	6	10	10	6	8	6.875
15	FP PMSC RA (F) 05 - 1.4 Sinking / Capsize	Sinking / Capsize	3	9	6	3	10	6	8	10	6.875
15	FP PMSC RA (F) 08 - 1.5 Fire / Explosion	Fire / Explosion	3	9	6	3	10	6	8	10	6.875
15	FP PMSC RA (F) 07 - 1.5 Fire / Explosion	Fire / Explosion	3	9	6	3	10	6	8	10	6.875
15	FP PMSC RA (F) 04 - 1.4 Sinking / Capsize	Sinking / Capsize	3	9	6	3	10	6	8	10	6.875
21	FP PMSC RA (F) 09 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3	3	6	6	6	10	10	10	6.75
21	FP PMSC RA (F) 12 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3	3	6	6	6	10	10	10	6.75
23	FP PMSC RA (T) 02 - 1.5 Fire / Explosion	Fire / Explosion	9	9	6	6	5	5	5	8	6.625
23	FP PMSC RA (F) 04 - 1.2 Contact	Contact	5	10	5	5	6	8	6	8	6.625
25	FP PMSC RA (T) 01 - 1.4 Sinking / Capsize	Sinking / Capsize	8	8	8	8	5	5	5	5	6.5
25	FP PMSC RA (F&T) 02 - 1.1 Capsizing / Flooding	Capsizing / Flooding	3	3	3	3	10	10	10	10	6.5
25	FP PMSC RA (F) 15 - 1.5 Fire / Explosion	Fire / Explosion	10	10	5	10	5	5	3	4	6.5
25	FP PMSC RA (F) 05 - 1.1 Collision	Collision	4	4	2	2	10	10	10	10	6.5
29	FP PMSC RA (F) 07 - 1.7 Loss of Dock Level (Lock Gate Operations)	Loss of Dock Level (Lock Gate Operations)	5	5	5	10	4	6	8	8	6.375
30	FP PMSC RA (F) 07 - 1.1 Collision	Collision	3	3	3	3	8	10	10	10	6.25
30	FP PMSC RA (F&T) 07 - 1.1 - Swamping / turbulence / interaction	Swamping / interaction / turbulence	9	6	3	6	10	4	2	10	6.25
30	FP PMSC RA (F) 02 - 1.3 Grounding	Grounding	3	6	6	3	6	8	8	10	6.25
30	FP PMSC RA (F) 03 - 1.3 Grounding	Grounding	3	6	6	3	6	8	8	10	6.25
30	FP PMSC RA (F) 10 - 1.3 Grounding	Grounding	3	9	3	3	2	10	10	10	6.25
30	FP PMSC RA (F) 13 - 1.5 Fire / Explosion	Fire / Explosion	10	10	5	5	5	5	5	5	6.25
36	FP PMSC RA (F&T) 04 - 1.2 Contact	Contact	3	6	3	3	8	10	8	8	6.125
37	FP PMSC RA (T) 04 - 1.5 Fire / Explosion	Fire / Explosion	8	8	6	6	5	5	5	5	6
38	FP PMSC RA (F) 12 - 1.5 Fire / Explosion	Fire / Explosion	3	9	6	9	5	5	5	5	5.875
39	FP PMSC RA (F&T) 01 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3	3	3	3	4	10	10	10	5.75
39	FP PMSC RA (F&T) 03 - 1.2 Grounding Refer Also to FP PMSC RA (F&T) 1	Grounding	4	6	4	2	6	8	8	8	5.75
39	FP PMSC RA (F) 15 - 1.4 Sinking / Capsize	Sinking / Capsize	8	8	4	8	5	5	3	5	5.75
39	FP PMSC RA (F) 04 - 1.1 Collision (Fishing/Leisure Vessel)	Collision (Fishing/Leisure Vessel)	3	3	3	3	10	8	8	8	5.75
43	FP PMSC RA (F) 05 - 1.3 Grounding	Grounding	3	6	6	6	6	6	6	6	5.625
43	FP PMSC RA (F) 13 - 1.2 Contact	Contact	5	10	5	5	5	5	5	5	5.625
43	FP PMSC RA (T) 01 - 1.2 Contact	Contact	5	10	5	5	5	5	5	5	5.625
46	FP PMSC RA (F&T) 06 - 1.3 Fire	Fire	6	9	3	6	5	5	5	5	5.5
46	FP PMSC RA (F) 03 - 1.2 Contact	Contact	5	5	5	5	6	6	6	6	5.5
46	FP PMSC RA (F) 15 - 1.3 Grounding	Grounding	5	10	5	10	3	4	3	4	5.5
46	FP PMSC RA (T) 06 - 1.1 Collision	Collision	3	6	6	3	8	6	4	8	5.5
46	FP PMSC RA (F) 04 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3	3	6	6	4	6	8	8	5.5
46	FP PMSC RA (F) 08 - 1.4 Sinking / Capsize	Sinking / Capsize	3	6	6	3	10	4	4	8	5.5
46	FP PMSC RA (F) 08 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3	3	6	6	4	6	8	8	5.5
53	FP PMSC RA (F) 03 - 1.1 Collision	Collision	4	6	4	4	6	6	6	6	5.25
53	FP PMSC RA (F) 06 - 1.1 Collision (Fishing/Leisure Vessel)	Collision (Fishing/Leisure Vessel)	4	2	2	2	10	10	10	6.5	5.25
53	FP PMSC RA (F) 06 - 1.3 Grounding Refer Also to: FP PMSSC RA (F&T)7	Grounding	4	2	2	2	8	8	8	5	5.25
53	FP PMSC RA (T) 04 - 1.1 Collision	Collision	4	8	4	6	5	5	5	5	5.25
53	FP PMSC RA (T) 06 - 1.2 Contact	Contact	5	5	5	5	6	6	4	6	5.25
53	FP PMSC RA (F) 04 - 1.3 Grounding	Grounding	2	4	4	2	6	8	8	8	5.25
59	FP PMSC RA (F) 09 - 1.5 Fire / Explosion	Fire / Explosion	3	9	6	3	5	5	5	5	5.125
60	FP PMSC RA (F&T) 11 - 1.1 Loss of Containment (Oil Product)	Loss of Containment (Oil Product)	5	5	5	5	5	5	5	5	5
60	FP PMSC RA (F) 06 - 1.2 Contact	Contact	4	4	4	2	10	10	8	6.5	5
60	FP PMSC RA (T) 04 - 1.4 Sinking / Capsize	Sinking / Capsize	5	5	5	5	5	5	5	5	5
60	FP PMSC RA (T) 05 - 1.5 Fire / Explosion	Fire / Explosion	6	6	3	6	5	5	4	5	5
60	FP PMSC RA (F) 14 - 1.3 Grounding	Grounding	5	5	5	5	4	6	4	6	5
60	FP PMSC RA (F) 16 - 1.3 Grounding	Grounding	5	5	5	5	4	6	4	6	5.00
60	FP PMSC RA (F) 05 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	2	2	4	4	6	6	8	8	5
67	FP PMSC RA (F) 05 - 1.2 Contact	Contact	3	6	3	3	6	6	6	6	4.875
67	FP PMSC RA (F) 15 - 1.2 Contact	Contact	5	10	5	5	4	4	3	3	4.875
69	FP PMSC RA (F) 13 - 1.4 Sinking / Capsize	Sinking / Capsize	3	5	5	5	5	5	5	5	4.75
69	FP PMSC RA (F&T) 01 - 1.2 Contact	Contact	4	6	4	4	5	5	5	5	4.75
69	FP PMSC RA (F&T) 10 - 1.1 Loss of Containment (Oil Product)	Loss of Containment (Oil Product)	5	5	5	5	3	5	5	5	4.75
69	FP PMSC RA (T) 04 - 1.2 Contact	Contact	3	9	3	6	3	5	4	5	4.75
69	FP PMSC RA (T) 06 - 1.4 Sinking / Capsize	Sinking / Capsize	6	8	4	6	3	4	3	4	4.75
69	FP PMSC RA (F) 12 - 1.4 Sinking / Capsize	Sinking / Capsize	3	5	5	5	5	5	5	5	4.75
75	FP PMSC RA (F&T) 05 - 1.1 Collision with bunker vessel and receiving vessel	Collision with bunker vessel and receiving vessel	6	6	3	3	4	5	5	5	4.625
75	FP PMSC RA (F) 02 - 1.4 Sinking / Capsize	Sinking / Capsize	4	4	5	4	5	5	5	5	4.625
77	FP PMSC RA (T) 01 - 1.3 Grounding	Grounding	2	6	2	6	5	5	5	5	4.5
77	FP PMSC RA (F) 13 - 1.3 Grounding	Grounding	6	6	2	2	5	5	5	5	4.5
77	FP PMSC RA (F&T) 04 - 1.1 Collision with bunker vessel and receiving vessel	Collision with bunker vessel and receiving vessel	6	6	2	2	5	5	5	5	4.5
77	FP PMSC RA (F) 01 - 1.4 Sinking / Capsize	Sinking / Capsize	4	5	4	4	5	5	5	4	4.5
77	FP PMSC RA (F) 01 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	2	4	6	6	3	5	5	5	4.5
77	FP PMSC RA (F) 07 - 1.4 Sinking / Capsize	Sinking / Capsize	4	6	4	6	5	4	3	4	4.5
77	FP PMSC RA (F) 08 - 1.1 Collision (Fishing/Leisure Vessel)	Collision (Fishing/Leisure Vessel)	2	6	4	4	5	5	5	5	4.5
77	FP PMSC RA (F) 09 - 1.4 Sinking / Capsize	Sinking / Capsize	3	6	4	3	5	5	5	5	4.5
77	FP PMSC RA (T) 05 - 1.2 Contact	Contact	3	9	3	6	3	5	3	4	4.5
77	FP PMSC RA (F) 12 - 1.1 Collision	Collision	4	4	4	4	5	5	5	5	4.5
87	FP PMSC RA (F) 12 - 1.2 Contact	Contact	3	6	3	3	5	5	5	5	4.375
87	FP PMSC RA (F) 11 - 1.2 Contact	Contact	3	6	3	3	5	5	5	5	4.375
87	FP PMSC RA (F) 10 - 1.1 Collision	Collision	3	6	3	3	5	5	5	5	4.375
87	FP PMSC RA (T) 01 - 1.5 Fire / Explosion	Fire / Explosion	3	6	3	3	5	5	5	5	4.375
87	FP PMSC RA (F) 02 - 1.7 Loss of Dock Level (Lock Gate Operations)	Loss of Dock Level (Lock Gate Operations)	3	3	3	9	3	5	4	5	4.375
87	FP PMSC RA (F) 03 - 1.4 Sinking / Capsize	Sinking / Capsize	4	4	5	4	4	4	5	5	4.375

87	FP PMSC RA (F) 15 - 1.6 Loss of Containment (Oil Product)	Loss of Containment (Oil Product)	5	5	10	5	2	2	3	3	4.375
87	FP PMSC RA (T) 02 - 1.4 Sinking / Capsize	Sinking / Capsize	4	4	3	4	5	5	5	5	4.375
87	FP PMSC RA (F) 11 - 1.4 Sinking / Capsize	Sinking / Capsize	1	5	4	5	5	5	5	5	4.375
96	FP PMSC RA (F) 08 - 1.2 Contact	Contact	3	6	3	3	5	4	5	5	4.25
96	FP PMSC RA (F) 07 - 1.2 Contact	Contact	3	6	3	3	5	4	5	5	4.25
96	FP PMSC RA (F&T) 02 - 1.2 Fire	Fire	4	4	2	4	5	5	5	5	4.25
99	FP PMSC RA (F) 15 - 1.1 Collision	Collision	4	6	4	4	4	4	3	4	4.125
99	FP PMSC RA (T) 05 - 1.4 Sinking / Capsize	Sinking / Capsize	4	4	3	4	4	4	5	5	4.125
99	FP PMSC RA (F) 11 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3	3	6	6	2	3	5	5	4.125
102	FP PMSC RA (F&T) 01 - 1.4 Sinking / Capsize	Sinking / Capsize	3	3	3	3	5	5	5	5	4
102	FP PMSC RA (F&T) 02 - 1.4 Collision	Collision	2	4	2	4	5	5	5	5	4
102	FP PMSC RA (F) 01 - 1.2 Contact	Contact	2	6	4	2	5	5	4	4	4
102	FP PMSC RA (F) 13 - 1.6 Loss of Containment (oil product) Refer also to FP PMSC RA (F&T)5	Loss of Containment (Oil Product)	3	3	6	3	2	5	5	5	4
106	FP PMSC RA (F) 14 - 1.4 Sinking / Capsize	Sinking / Capsize	3	4	3	3	5	5	3	5	3.875
106	FP PMSC RA (F) 16 - 1.4 Sinking / Capsize	Sinking / Capsize	3	4	3	3	5	5	3	5	3.88
106	FP PMSC RA (F&T) 08 - 1.1 - Collision / contact	Collision / Contact	6	2	2	6	5	2	3	5	3.875
106	FP PMSC RA (F) 01 - 1.5 Fire / Explosion	Fire / Explosion	3	4	3	3	5	5	3	5	3.875
106	FP PMSC RA (F) 02 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3	3	6	6	2	3	4	4	3.875
106	FP PMSC RA (F) 03 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3	3	6	6	2	3	4	4	3.875
106	FP PMSC RA (F) 10 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3	3	6	6	2	3	4	4	3.875
106	FP PMSC RA (T) 04 - 1.6 Loss of Containment (Oil Products)	Loss of Containment (Oil Products)	2	4	4	4	3	4	5	5	3.875
106	FP PMSC RA (T) 05 - 1.1 Collision	Collision	4	4	4	4	4	5	2	4	3.875
106	FP PMSC RA (F) 02 - 1.5 Fire / Explosion	Fire / Explosion	3	3	3	2	5	5	5	5	3.875
116	FP PMSC RA (F) 11 - 1.1 Collision	Collsion	2	4	2	2	5	5	5	5	3.75
116	FP PMSC RA (F&T) 05 - 1.2 Contact	Contact	4	2	2	2	5	5	5	5	3.75
116	FP PMSC RA (F&T) 05 - 1.3 Loss of Containment (Oil Products)	Loss of Containment (Oil Product)	3	3	3	6	1	4	5	5	3.75
116	FP PMSC RA (F&T) 06 - 1.2 Capsize / Flooding	Capsizing / Flooding	2	2	4	2	5	5	5	5	3.75
116	FP PMSC RA (F&T) 08 - 1.2 - Swamping / interaction / turbulence	Swamping / interaction / turbulence	6	2	2	2	5	5	3	5	3.75
116	FP PMSC RA (T) 02 - 1.1 Collision	Collision	4	6	2	4	3	4	3	4	3.75
116	FP PMSC RA (T) 02 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3	3	6	3	2	4	4	5	3.75
116	FP PMSC RA (T) 04 - 1.3 Grounding	Grounding	2	4	4	4	2	4	5	5	3.75
124	FP PMSC RA (F&T) 03 - 1.1 Contact Refer Also to FP PMSC RA (F&T) 1	Contact	3	3	3	3	3	5	4	5	3.625
124	FP PMSC RA (F) 01 - 1.1 Collision	Collision	2	4	2	2	5	5	5	4	3.625
124	FP PMSC RA (T) 06 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	4	4	8	4	1	2	3	3	3.625
124	FP PMSC RA (F) 11 - 1.3 Grounding	Grounding	2	4	2	2	4	5	5	5	3.625
128	FP PMSC RA (F) 14 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	4	4	4	4	2	2	4	4	3.5
128	FP PMSC RA (F) 16 - 1.6 Loss of Containment (Oil Product)	Loss of Containment (Oil Product)	4	4	4	4	2	2	4	4	3.50
128	FP PMSC RA (F&T) 01 - 1.3 Grounding	Grounding	2	4	2	4	1	5	5	5	3.5
128	FP PMSC RA (F) 01 - 1.3 Grounding	Grounding	1	3	2	3	5	5	5	4	3.5
128	FP PMSC RA (F) 06 - 1.4 Sinking / Capsize	Sinking / Capsize	9	6	3	2	6	8	10	6.88	3.5
128	FP PMSC RA (T) 02 - 1.3 Grounding	Grounding	3	3	3	6	2	4	3	4	3.5
134	FP PMSC RA (F) 12 - 1.3 Grounding	Grounding	1	3	1	4	3	5	5	5	3.375
134	FP PMSC RA (T) 01 - 1.1 Collision	Collision	2	3	1	1	5	5	5	5	3.375
134	FP PMSC RA (F&T) 04 - 1.4 Fire/Explosion	Fire / Explosion	2	2	2	1	5	5	5	5	3.375
134	FP PMSC RA (F&T) 05 - 1.4 Fire/Explosion	Fire / Explosion	2	2	2	1	5	5	5	5	3.375
134	FP PMSC RA (F&T) 06 - 1.4 Hull Damage	Hull Damage	1	2	1	3	5	5	5	5	3.375
134	FP PMSC RA (T) 04 - 1.7 Allision	Allision	1	3	1	2	5	5	5	5	3.375
140	FP PMSC RA (F) 14 - 1.5 Fire / Explosion	Fire / Explosion	2	4	2	2	5	4	3	4	3.25
140	FP PMSC RA (F) 16 - 1.5 Fire	Fire / Explosion	2	4	2	2	5	4	3	4	3.25
140	FP PMSC RA (F) 08 - 1.3 Grounding Refer Also to: FP PMSSC RA (F&T)7	Grounding	2	4	2	2	4	4	4	4	3.25
140	FP PMSC RA (F) 10 - 1.4 Sinking / Capsize	Sinking / Capsize	1	2	2	1	5	5	5	5	3.25
140	FP PMSC RA (F) 10 - 1.7 Loss of Dock Level	Loss of Dock Level	1	1	1	6	2	5	5	5	3.25
140	FP PMSC RA (F) 09 - 1.3 Grounding	Grounding	2	4	2	2	1	5	5	5	3.25
140	FP PMSC RA (T) 01 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	2	2	2	2	3	5	5	5	3.25
140	FP PMSC RA (F&T) 01 - 1.5 Fire / Explosion	Fire / Explosion	2	2	1	1	5	5	5	5	3.25
140	FP PMSC RA (F&T) 04 - 1.3 Loss of Containment (Oil Products)	Loss of Containment (Oil Product)	3	3	3	3	1	4	4	5	3.25
140	FP PMSC RA (F&T) 07 - 1.2 - Collision / contact	Collision / Contact	3	2	1	2	5	5	3	5	3.25
150	FP PMSC RA (F) 07 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3	3	3	2	4	4	3	3	3.125
150	FP PMSC RA (F) 05 - 1.5 Fire / Explosion	Fire / Explosion	3	3	3	2	4	4	3	3	3.125
150	FP PMSC RA (F&T) 09 - 1.1 Contact	Contact	2	2	2	2	2	5	5	5	3.125
150	FP PMSC RA (F&T) 09 - 1.4 Loss of Containment / Power / Communication	Loss of Containment / Power / Communication	2	2	2	2	2	5	5	5	3.125
150	FP PMSC RA (F) 03 - 1.5 Fire / Explosion	Fire / Explosion	3	3	3	2	4	4	3	3	3.125
150	FP PMSC RA (F) 04 - 1.5 Fire / Explosion	Fire / Explosion	3	3	3	2	4	4	3	3	3.125
150	FP PMSC RA (F) 06 - 1.5 Fire / Explosion	Fire / Explosion	3	3	2	1	4	4	5	3	3.125
150	FP PMSC RA (T) 05 - 1.3 Grounding	Grounding	2	2	4	6	1	1	4	5	3.125
150	FP PMSC RA (T) 05 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	2	2	6	4	1	1	4	5	3.125
150	FP PMSC RA (T) 06 - 1.5 Fire / Explosion	Fire / Explosion	3	3	3	3	4	4	2	3	3.125
160	FP PMSC RA (F) 06 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	2	2	4	2	6	8	8	5	3
160	FP PMSC RA (T) 06 - 1.3 Grounding	Grounding	3	3	3	3	3	4	2	3	3
162	FP PMSC RA (F&T) 09 - 1.3 Fire / Explosion	Fire / Explosion	1	1	1	1	3	5	5	5	2.75

FORTH PORTS LIMITED
Risk Assessment

INSERT TITLE

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)				
				Likelihood	Overall Risk				Likelihood	Overall Risk			
					People	Property	Environment	Business		People	Property	Environment	Business
1.1													
1.2													
1.3													
1.4													
1.5													
			Risk Ranking										

Risk Assessment Scoring Matrix

LIKELIHOOD

1 = Extremely unlikely (More than 100 years)
2 = Remote (10 - 99 years)
3 = Reasonably likely (1 - 9 years)
4 = Likely (Once per Year)
5 = Frequent (More than once per year)

CONSEQUENCE

PEOPLE:
1 = None
2 = Minor, single slight Injury
3 = Slight, multiple moderate or single major injury
4 = Serious, multiple major injuries or single fatality
5 = Major, more than 1 fatality

PROPERTY:
1 = negligible < £5000
2 = Minor > £5000
3 = Moderate >£50,000
4 = Serious, > £500,000
5 = major, > £2,000,000

ENVIRONMENT:
1 = Negligible, No Action required
2 = Minor spill Tier 1 local response,
3 = Moderate spill, Tier 2 some outside assistance
4 = Moderate spill, Tier 2 greater outside assistance
5 = Major spill, Tier 3 national response

BUSINESS:
1 = Negligible impact < £5000
2 = Minor impact > £5000
3 = Moderate impact > £50,000, bad local publicity, short term reduction of activity.
4 = Serious Impact, >£500,000, bad widespread publicity, temporary Port Facility shutdown.

OVERALL RISK

Likelihood						
	5	5	10	15	20	25
	4	4	8	12	16	20
	3	3	6	9	12	15
	2	2	4	6	8	10
	1	1	2	3	4	5
		1	2	3	4	5
		Consequence				

RED The Higher numbers(Greater than 10) in the matrix are considered “High-risk”, These activities should not be carried out without additional controls being put in place to reduce the risk.

AMBER Hazards with risk factors within these bands (6 - 10) are termed “consider”. These lower risk factors are considered acceptable, but still need careful monitoring to ensure that everything has been done to reduce the consequences and likelihood.

GREEN The lower numbers(5 and below) in the matrix are considered “low-risk”, but should still be monitored to ensure that controls remain effective.

DEF

CAUSES
System Failure
Human Error / Failure
Environmental Conditions
CONTROLS
Aids to Navigation

Legislation & Guidance
Conservancy
Emergency Plans

:INITIONS

DEFINITION
A breakdown of any system hardware or operating system. Examples of a system failure include but is not limited to: - Any technical failure on board a vessel / craft - Technical failure with the VTS monitoring system - AtoN failure - Error with survey data - Failure with conservancy maintenance & verification process - Techinical failure with the lock gates - Techinical failure resulting in loss of dock level
Human failure examples can be: - Failure of FTNS to follow and execute proper processes and procedures. - Bridge team Error - Human error due to lack of care or attention - Human error due to violation of law, procedure or guidance
Environmental Condition exmples can include, but are not limited to: - High winds - Rough Seas - Restricted visibility - Strong current / tide - Siltation
An Aid to Navigation is a device, system or service, external to vessels, designed and operated to enhance safe and efficient navigation of individual vessels and/or traffic. These can include but are not limited to: - Buoys - Lights - Lighthouses - Sound signals - Portable Pilot Unit (PPU) - AIS - ECDIS - RADAR - GPS - Port Entry Lights

Legislation and guidance refers to all appliicable legislation and guidance related to the navigational safety of vessels, examples of these can include but is not limited to: - Forth Ports Bye Laws - General Directions - Marine Procedures Guidelines and Information - Towage Guidelines - All other relevant international and national legislation - Notice to Mariners
- Surveying and survey programming - Promulgation of survey data - Dredging and dredging programme - Aids to Navigation maintenance and verification
- Forth Ports contingency plans - Local Authority contingency plans - National contingency plans

FORTH PORTS LIMITED
Navigational Risk Assessment

Forth River Passage - Standard Vessel

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score
					Overall Risk					Overall Risk				
				Likelihood	People	Property	Environment	Business	Likelihood	People	Property	Environment	Business	
1.1	Collision	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage	2	6	6	3	2	2	10	10	10	10	7.125
1.2	Contact	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage	3	3	6	3	3	1	5	5	5	5	4.375
1.3	Grounding	System Failure Human Error Environmental Conditions	Pilotage FTNS Aids to Navigation Conservancy Weather Forecasting / Tidal Predictions Emergency Plans Notice to Mariners Legislation & Guidance	3	3	3	3	6	1	5	5	5	5	4.375
1.4	Sinking / Capsize	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Emergency Plans Weather Forecasting / Tidal Predictions Notice to Mariners	1	3	5	4	4	1	5	5	5	5	4.5
1.5	Fire / Explosion	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Emergency Plans	3	6	6	3	6	2	10	10	10	10	7.625
1.6	Loss of Containment (oil products)	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Emergency Plans Weather Forecasting / Tidal predictions Conservancy Vetting (Tankers)	4	4	4	8	8	1	3	5	5	5	5.25

MRFs: 54/21 (Close quarters situation), 66/21 (Mechanical Failure), 05/22 (Mechanical Failure), 11/22 (Mechanical Failure) 32/22 (Mechanical Failure) 01/23 (Mechanical Failure), 05/23 (Mechanical failure), 22/23 (Mechanical Failure), 25/23 (Mechanical Failure)

Most likely: Collision between 2 commercial vessels around the bridges area resulting in minimal damage.

Worst credible: Collision betweenVLCC and cruise vessel resulting in total loss of vessels and loss of life.

Most likely: Vessel has slow speed impact with buoy resulting in minimal damage.

Worst credible: Large impact allision with bridge resulting in extreme damage to vessel and bridge, and loss of life.

Most likely: Vessel touches the bottom and continues on voyage with minimal damage.

Worst credible: Vessel hard aground, cannot be refloated resulting in major disruption to ports, extreme damage and loss of contaminent.

Most likely: Commercial Vessel sinks outwith main shipping areas, all crew safely abandon ship

Worst credible: Cruise vessel sinks resulting in total loss of vessel and loss of life.

Most likely: Small fire on board which is quickly and easily extinguished.

Worst credible: Uncontrollable fire, total loss of vessel and cargo, and loss of life.

Most likely: Small spill of non-persistant product that dissipates naturally.

Worst credible: Large scale spill which cannot be contained resulting in port closures and extensive environmental impact.

Content Reviewed	Changes Made
MRFs and POLREPs reviewed. Overall vessel numbers calling at Forth, also vessel type and size. Number , nature, and size of ongoing projects.	**Risk Scoring updated, Collision - Most Likely + Grounding - Most Likely + Sinking - Most Likely scenarios updated**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F) 1/08	**Revised Bv / Date** CHM, MM, HMFO, HMFI, HMDD, Man Tow&PV / Oct 2012
Risk Assessment - Forth River Passage (Standard Vessel)	**Review Due** Aug-25	**Revised By / Date** MMT August 23

FORTH PORTS LIMITED
Navigational Risk Assessment

Port of Leith - Arrival / Sailing Leith Approach Buoy to Berth with Outer Berth Works

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score
					Overall Risk					Overall Risk				
				Likelihood	People	Property	Environment	Business	Likelihood	People	Property	Environment	Business	
1.1	Collision	System Failure Human Error Environmental Conditions	Enhanced Pilotage Console Controller FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Additional towage Aids to Navigation Conservancy	3	6	9	6	6	2	10	10	10	10	8.375
1.2	Contact	System Failure Human Error Environmental Conditions Quayside Obstruction	Enhanced Pilotage Console Controller FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Additional towage due to outer berth works Aids to Navigation Conservancy Fendering Quay edge 'cargo clear' demarkation Cranes properly stowed on quayside Swing Bridge Procedure Forth Ports H&S Procedures Aids to Navigation	5	5	10	5	5	2	10	10	10	10	8.125
1.3	Grounding	System Failure Human Error Environmental Conditions	Enhanced Pilotage Console Controller FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Additional towage Aids to Navigation Conservancy Cargo operations procedures (Including MCA Bulk-handling Regulations)	3	3	6	6	3	2	6	8	8	10	6.25
1.4	Sinking / Capsize	System Failure Human Error Environmental Conditions	Pilotage Console Controller FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Aids to Navigation Conservancy	1	4	4	5	4	1	5	5	5	5	4.625
1.5	Fire / Explosion	System Failure Human Error Environmental Conditions	Pilotage FTNS Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting Marine Guidelines & Port Information	1	3	3	3	2	1	5	5	5	5	3.875
1.6	Loss of Containment (Oil Products)	System Failure Human Error Environmental Conditions	Enhanced Pilotage Console Controller FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Additional towage due to outer berth works Aids to Navigation Conservancy	3	3	3	6	6	1	2	3	4	4	3.875
1.7	Loss of Dock Level (Lock Gate Operations)	System Failure Human Error Environmental Conditions	Lockgate operational procedures Port Planned Maintenance system Lock Gates - Interlocks to prevent opening all lock gates simultaneously Training / Auditing of Port Staff	3	3	3	3	9	1	3	5	4	5	4.375

MRFs: 67/21 (Contact), 71/22 (mechanical failure) 01/22 (contact), 12/22 (loses Gangway)14//22 (disloged coping stone) 26/22 (contact) 29/22 (communication failure), 33/22 (Contact), 51/22 (mechanical failure), 53/22 (contact), 20/23 (Contact), 31/23 (Contact) 35/23 (mechanical failures) 36/23 (Mechanical Failure)

Most Likely: Collision with small vessel resulting in no damage.

Worst Credible: Collision involving cargo vessel and cruise ship. Resulting in the loss of vessel and loss of life.

Most Likely: Slow speed impact with quay resulting in minimal damage to vessel or jetty.

Worst Credible: Large impact resulting in extreme damage to vessel and infrastructure. Quayside no longer able to operate and vessel requiring repair possible death / loss of containment.

Most Likely: Vessel grounded in soft mud and floats on following tide without damage.

Worst Credible: Vessel hard aground, cannot be refloated at the Port enterance. Port is closed indefinaitly and major damage to vessel.

Most Likely: Vessel sinks in approach to port, total loss of ship, and crew abandon ship.

Worst Credible: Vessel sinks in approach to port, total loss of ship and crew.

Most Likely: Small fire on-board quickly extinguished.

Worst Credible: Uncontrollable fire, total loss of vessel , crew and cargo.

Most Likely: Small spill of non-persistent product.

Worst Credible: Large scale spill which cannot be contained resulting in port closure and extensive environmental impact.

Most Likely: Loss of containment but does not result in significant loss of dock level. Possible impact to large draft movements.

Worst Credible: Large loss of dock level. Deep drafted vessel take the bottom of dock. Possible large scale damage to vessels and infrastructure.

Content Reviewed	Changes Made
MRFs and POLREPs reviewed. Overall vessel numbers calling at Forth, also vessel type and size. Number , nature, and size of ongoing projects.	**Additional controls due to Outer Berth Works, Scoring updated where required**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F) 2/06	**Risk Assessment Team / Date** MM, HMFO / 3rd Dec2012
Risk Assessment - Port of Leith	**Review Due** May-25	**Revised By / Date** MMT -Leith , May 2023

FORTH PORTS LIMITED
Navigational Risk Assessment

Port of Rosyth - Arrival / Sailing No1 Rosyth Channel Buoy to Berth

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score
				Likelihood	Overall Risk				Likelihood	Overall Risk				
					People	Property	Environment	Business		People	Property	Environment	Business	
1.1	Collision	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	2	4	6	2	2	1	5	5	5	5	4.25
1.2	Contact	System Failure Human Error Environmental Conditions Quayside Obstruction	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Aids to Navigation Conservancy Fendering Quay edge 'cargo clear' demarkation Cranes properly stowed on quayside Aids to Navigation	3	3	6	6	3	1	5	5	5	5	4.75
1.3	Grounding	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Cargo operations procedures (Including MCA Bulk-handling Regulations)	2	2	6	4	6	1	5	5	5	5	4.75
1.4	Sinking / Capsize	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage	1	3	5	5	5	1	5	5	5	5	4.75
1.5	Fire / Explosion	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Emergency Plans	1	3	3	3	2	1	4	4	3	3	3.125
1.6	Loss of Containment (Oil Products)	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage	3	3	3	6	6	2	4	6	8	8	5.5

MRFs: 21/22 (Mechanical Failure), 30/22 (communication failure), 43/22 (mechanical failure) 67/22 (failure to report defect)

Most likely: Collision between 2 vessels at slow speed resulting in minimal damage and no injuries.

Worst credible: Collision between two cruise vessels resulting in loss of vessels and loss of life.

Most likely: Vessel has slow speed impact with buoy resulting in minimal damage.

Worst credible: Large cruise vessel contacts quayside at high speed resulting in significant damage to vessel, quayside, and serious injuries / loss of life.

Most likely: Vessel grounds in soft mud and refloats on following tide with minimal damage.

Worst credible: Vessel hard aground, cannot be refloated resulting in major disruption to ports, extreme damage and loss of contaminent.

Most likely: Vessel sinks, all crew / passengers safely abandon ship.

Worst credible: Vessel sinks resulting in total loss of vessel, and loss of life.

Most likely: Small fire on board which is quickly and easily extinguished.

Worst credible: Uncontrollable fire, total loss of vessel and cargo, and loss of life.

Most likely: Small spill of non-persistant product that dissipates naturally.

Worst credible: Large scale spill which cannot be contained resulting in port closures and extensive environmental impact.

Content Reviewed	Changes Made
MRFs reviewed - contact. Vessel numbers, size, and type in the area. Ongoing projects that have an impact.	**Risk Scoring updated / Collision - Most likely scanrio updated**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F) 03/06	**Risk Assessment Team / Date** MM, HMFO / 9th Jan 2013
Risk Assessment - Port of Rosyth	**Review Due** Aug-25	**Revised By / Date** MMT, Aug 2023

FORTH PORTS LIMITED
Navigational Risk Assessment

Port of Methil - Arrival / Sailing Methil Pilot Station to Berth

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score	
				Likelihood	Overall Risk				Likelihood	Overall Risk					
					People	Property	Environment	Business		People	Property	Environment	Business		
1.1	Collision	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Aids to Navigation Conservancy	3	3	3	3	3	2	10	8	8	8	5.75	MRF 08/22 (Contact), 61/22 (Contact), 08/23 (Mechanical Failure) Most likely: Vessel collides with small craft resulting in no damage to the larger vessel and no/minor to damage to the smaller vessel. Results in no injuries to persons Worst credible: Vessel collides heavily with small craft resulting in extensive damage to both vessels and multiple injuries/fatalities
1.2	Contact	System Failure Human Error Environmental Conditions Quayside Obstruction	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Conservancy Fendering Cranes properly stowed on quayside Dock Gatemen Procedures	5	5	10	5	5	2	6	8	6	8	6.625	Most likely: Vessel makes light contact with object/quay resulting in no/minor damage to the vessel and quay Worst credible: Vessel makes heavy contact with object/quay resulting in extensive damage to both vessel and quay and possible injuries
1.3	Grounding	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Aids to Navigation Conservancy Cargo operations procedures (Including MCA Bulk-handling Regulations) Dock gate procedure	2	2	4	4	2	2	6	8	8	8	5.25	Most likely: Vessel runs aground with no damage to vessel, no pollution and can be refloated with the tide Worst credible: Vessel runs aground causing extensive damage to the vessel, major pollution and blocking entrance to ports
1.4	Sinking / Capsize	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Aids to Navigation Conservancy Cargo operations procedures (Including MCA Bulk-handling Regulations) Dock gate procedure	3	3	9	6	3	2	10	6	8	10	6.875	Most likely: Small Vessel sinks/capsizes within harbour with everyone safely evactuated and no loss of life Worst credible: Vessel sinks/capsizes in entrance of harbour with multiple fatalities and total loss of vessel
1.5	Fire / Explosion	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans	1	3	3	3	2	1	4	4	3	3	3.125	Most likely: Small fire on board which is quickly and easily extinguished. Worst credible: Uncontrollable fire, total loss of vessel and cargo, and loss of life.
1.6	Loss of Containment (Oil Products)	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	3	3	3	6	6	2	4	6	8	8	5.5	Most likely: Small spill of non-persistant product that dissipates naturally. Worst credible: Large scale spill which cannot be contained resulting in port closures and extensive environmental impact.

Content Reviewed	Changes Made
MRF and POLREPS review Number of vessels calling, other traffic in the vicinity, and vessel type calling.	**Risk Scoring updated, Grounding - Most Likely scenario updated**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F) 4/05	**Risk Assessment Team / Date** HMFO, HMDD, MM / 16th Jan 2013
Risk Assessment - Port of Methil	**Review Due** Aug-25	**Revised By / Date** MMT , August 2023

FORTH PORTS LIMITED
Navigational Risk Assessment

Methil Energy Park - Arrival/Sailing Methil Pilot Station to Berth

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score
					Overall Risk					Overall Risk				
				Likelihood	People	Property	Environment	Business	Likelihood	People	Property	Environment	Business	
1.1	Collision	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Aids to Navigation Conservancy External standby tugs audited and issued with restricted towage licence for emergencies.	2	4	4	2	2	2	10	10	10	10	6.5
1.2	Contact	System Failure Human Error Environmental Conditions Quayside / Seabed Obstruction	Pilotage FTNS Legislation & Guidance Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Fendering Methil Energy Park Procedures External standby tugs audited and issued with restricted towage licence for emergencies. Fendering	3	3	6	3	3	2	6	6	6	6	4.875
1.3	Grounding	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Survey / dredging Programme / Schedule (By Operator) Methil Energy park Procedures	3	3	6	6	6	2	6	6	6	6	5.625
1.4	Sinking / Capsize	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Aids to Navigation Conservancy Fendering SE Quayside Regulations & Risk Assessment External standby tugs audited and issued with restricted towage licence for emergencies.	3	3	9	6	3	2	10	6	8	10	6.875
1.5	Fire / Explosion	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Aids to Navigation Conservancy	1	3	3	3	2	1	4	4	3	3	3.125
1.6	Loss of Containment (Oil Products)	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Survey Programme / Schedule (By Operator)	2	2	2	4	4	2	6	6	8	8	5

No relevant MRFs since previous review

Most likely: Collision between small craft and larger vessel at slow speed resulting in minimal damage and no injuries.

Worst credible: Collision between two commercial vessels resulting in loss of vessels and loss of life.

Most likely: Vessel has slow speed impact with buoy resulting in minimal damage.

Worst credible: Large vessel contacts quayside at high speed resulting in significant damage to vessel, quayside, and serious injuries / loss of life.

Most likely: Vessel toches the bottom when manouvring with minimal damage.

Worst credible: Vessel hard aground, cannot be refloated resulting in disruption to ports, extreme damage and loss of contaminent.

Most likely: Vessel sinks, all crew / passengers safely abandon ship.

Worst credible: Vessel sinks in harbour approach resulting in total loss of vessel and loss of life.

Most likely: Small fire on board which is quickly and easily extinguished.

Worst credible: Uncontrollable fire, total loss of vessel and cargo, and loss of life.

Most likely: Small spill of non-persistant product that dissipates naturally.

Worst credible: Large scale spill which cannot be contained resulting in port closures and extensive environmental impact.

Content Reviewed	Changes Made
MRFs and POLREPs reviewed. Overall vessel numbers calling at Forth, also vessel type and size. Number , nature, and size of ongoing projects.	**Likelyhood and Risk Scoring updated, Grounding - Most Likely scenario updated**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F) 5/04	**Risk Assessment Team / Date** HMFO, HMDD, MM / 23rd Jan 2013
Risk Assessment - Methil	**Review Due** Aug-25	**Revised By / Date** MMT, August 2023

FORTH PORTS LIMITED
Navigational Risk Assessment

Port of Kirkcaldy - Arrival / Sailing Close Approaches of Dock to Berth

MRF: 17/23 (contact)

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score	
					Overall Risk					Overall Risk					
				Likelihood	People	Property	Environment	Business	Likelihood	People	Property	Environment	Business		
1.1	Collision	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Aids to Navigation Conservancy	2	4	4	2	2	2	10	10	10	10	6.5	Most likely: Collision between Kirkcaldy vessel and small recreational / commercial vessel resulting in minimal damage Worst credible: Collision between outbound Kirkcaldy vessel and other vessel in anchorage resulting in extreme damage and loss of life.
1.2	Contact	System Failure Human Error Environmental Conditions Quayside Obstruction	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Fendering Cranes properly stowed on quayside	4	4	4	4	4	2	8	10	10	8	6.5	Most likely: Vessel has slow speed impact with quayside whilst berthing resulting in minimal damage. Worst credible: High impact with quayside whilst berthing resulting in extreme damage to vessel and quayside, and loss of life.
1.3	Grounding	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Cargo operations procedures (Including MCA Bulk-handling Regulations)	2	2	4	2	2	2	6	8	8	8	5	Most likely: Vessel touches the bottom on following tide with minimal damage. Worst credible: Vessel hard aground, cannot be refloated resulting in major disruption to ports, extreme damage and loss of contaminent.
1.4	Sinking / Capsize	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Aids to Navigation Conservancy	3	3	9	6	3	2	10	6	8	10	6.875	Most likely: Vessel sinks outwith main shipping areas, all crew safely abandon ship Worst credible: Vessel sinks resulting in total loss of vessel and loss of life.
1.5	Fire / Explosion	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans	1	3	3	3	2	1	5	4	3	5	3.5	Most likely: Small fire on board which is quickly and easily extinguished. Worst credible: Uncontrollable fire, total loss of vessel and cargo, and loss of life.
1.6	Loss of Containment (Oil Products)	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Aids to Navigation Conservancy	2	2	2	4	4	2	6	6	8	8	5	Most likely: Small spill of non-persistant product that dissipates naturally. Worst credible: Large scale spill which cannot be contained resulting in port closures and extensive environmental impact.

Content Reviewed	Changes Made
MRFs updated, Vessel call numbers reviewed	**Collision - Most likely scenario updated, Risk Scoring updated,**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F) 6/06	**Risk Assessment Team / Date** HMFO, HMDD, MM / 23rd Jan 2013
Risk Assessment - Port of Kirkcaldy	**Review Due** Aug-25	**Revised By / Date** MMT, August 2023

FORTH PORTS LIMITED
Navigational Risk Assessment

Port of Burntisland - Arrival / Sailing Close Approaches of Dock to Berth

MRFs: 28/22 (Black out)

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score	
				Likelihood	Overall Risk				Likelihood	Overall Risk					
					People	Property	Environment	Business		People	Property	Environment	Business		
1.1	Collision	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Dock gate procedure	3	3	3	3	3	2	8	10	10	10	6.25	Most likely: Collision at slow speed between large vessel and small commercial, leisure, or fishing vessel resulting in minimal damage Worst credible: High impact collision between two vessels and resulting in extreme damage and loss of life.
1.2	Contact	System Failure Human Error Environmental Conditions Quayside Obstruction	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Aids to Navigation Conservancy Fendering Cranes properly stowed on quayside Forth Ports H&S Procedures Dock Gatemen Procedures	3	3	6	3	3	1	5	4	5	5	4.25	Most likely: Vessel has slow speed impact with quayside whilst berthing resulting in minimal damage. Worst credible: High impact with quayside whilst berthing resulting in extreme damage to vessel and quayside, and loss of life.
1.3	Grounding	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Cargo operations procedures (Including MCA Bulk-handling Regulations) Dock Gate Procedure	3	3	6	6	6	2	10	10	6	8	6.875	Most likely: Vessel touches the bottom with minimal damage. Worst credible: Vessel hard aground, cannot be refloated resulting in major disruption to ports, extreme damage and loss of contaminent.
1.4	Sinking / Capsize	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Aids to Navigation Conservancy Dock Gate Procedure	2	4	6	4	6	1	5	4	3	4	4.5	Most likely: Vessel sinks, all crew safely abandon ship Worst credible: Vessel sinks resulting in total loss of vessel, cargo, and loss of life.
1.5	Fire / Explosion	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Emergency Plans	3	3	9	6	3	2	10	6	8	10	6.875	Most likely: Small fire on board which is quickly and easily extinguished. Worst credible: Uncontrollable fire, total loss of vessel and cargo, and loss of life.
1.6	Loss of Containment (Oil Products)	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Aids to Navigation Conservancy	1	3	3	3	2	1	4	4	3	3	3.125	Most likely: Small spill of non-persistant product that dissipates naturally. Worst credible: Large scale spill which cannot be contained resulting in port closures and extensive environmental impact.
1.7	Loss of Dock Level (Lock Gate Operations)	System Failure Human Error Environmental Conditions	Port Planned Maintenance system Training / Auditing of Port Staff Dockgate Procedure	5	5	5	5	10	2	4	6	8	8	6.375	Most likely: Fault with gates which is repaired before major loss of dock level. Worst credible: Fault with gates which cannot be repaired before major loss of dock level resulting in vessels aground with extreme damage.

Content Reviewed	Changes Made
MRFs review - contact - likelihood already 5. Vessels calling at B'island - number, type, size. Other operatrions in the area	**Risk Scoring updated - Collision worst credible / Grounding most likely scenario updated**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F) 7/05	**Risk Assessment Team / Date** HMFO, MM / 16th Jan 2013
Risk Assessment - Port of Burntisland	**Review Due** Aug-25	**Revised By / Date** MMT, August 2023

FORTH PORTS LIMITED
Navigational Risk Assessment

Inverkeithing - Arrival / Sailing Saint David's Beacon to Berth

MRF: 020/19 (Contact)

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score	
					Overall Risk					Overall Risk					
				Likelihood	People	Property	Environment	Business	Likelihood	People	Property	Environment	Business		
1.1	Collision	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	2	2	6	4	4	1	5	5	5	5	4.5	Most likely: Collision between small craft and larger vessel at slow speed resulting in minimal damage and no injuries. Worst credible: Collision between two commercial vessels resulting in loss of vessels and loss of life.
1.2	Contact	System Failure Human Error Environmental Conditions Quayside Obstruction	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Fendering Cranes properly stowed on quayside	3	3	6	3	3	1	5	4	5	5	4.25	Most likely: Vessel has slow speed impact with the quay resulting in minimal damage. Worst credible: Commercial vessel makes a high impact contact with the quay resulting in significant damage to vessel, quayside, and serious injuries / loss of life.
1.3	Grounding Refer also: Risk Assessment (F&T) 7	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Aids to Navigation Conservancy	2	2	4	2	2	1	4	4	4	4	3.25	Most likely: Vessel touches the bottow in soft mud and rcontinues sailing with minimal damage. Worst credible: Vessel hard aground, cannot be refloated resulting in major disruption to port, extreme damage and loss of contaminent.
1.4	Sinking / Capsize	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Aids to Navigation Conservancy	3	3	6	6	3	2	10	4	4	8	5.5	Most likely: Small Vessel sinks, all crew / passengers safely abandon ship. Worst credible: Small Vessel sinks in harbour approach resulting in total loss of vessel and loss of life.
1.5	Fire / Explosion	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Weather Forecasting / Tidal Predictions Emergency Plans	3	3	9	6	3	2	10	6	8	10	6.875	Most likely: Small fire on board which is quickly and easily extinguished. Worst credible: Uncontrollable fire, total loss of vessel and cargo, and loss of life.
1.6	Loss of Containment (Oil Products)	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Aids to Navigation Conservancy	3	3	3	6	6	2	4	6	8	8	5.5	Most likely: Small spill of non-persistant product that dissipates naturally. Worst credible: Large scale spill which cannot be contained resulting in port closures and extensive environmental impact.

Content Reviewed	Changes Made
MRFs review Vessels calling at B'island - number, type, size. Other operatrions in the area	**Risk Scoring updated**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F) 8/04	**Risk Assessment Team / Date** HMFO, HMDD, MM / 23rd Jan 2013
Risk Assessment - Inverkeithing	**Review Due** Aug-25	**Revised By / Date** MMT August 2023

FORTH PORTS LIMITED
Navigational Risk Assessment

Braefoot Jetty - Arrival / Sailing Eastern Limits to Berth

MRFs reviewed: 34/22 (close quarters), 38/22 (infringment of regulations), 21/23 (mechanical failure)

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score	
				Likelihood	Overall Risk				Likelihood	Overall Risk					
					People	Property	Environment	Business		People	Property	Environment	Business		
1.1	Collision	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	5	5	5	5	5	2	10	10	8	10	7.25	Most likely: Collision between small workboat and larger vessel at slow speed resulting in minimal damage and no injuries. Worst credible: Collision between tanker and tug / line boat resulting in loss of vessel, loss of life and pollution
1.2	Contact	System Failure Human Error Environmental Conditions Jetty Obstruction	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Jetty Regulations Jetty Supervisor	3	3	6	3	3	2	10	10	10	10	6.875	Most likely: Vessel has slow speed impact with terminal resulting in minimal damage. Worst credible: Large vessel has a high impact with jetty / tanker alongside resulting in significant damage to vessels, jetty, and serious injuries / loss of life.
1.3	Grounding	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Jetty Regulations	2	2	4	2	2	1	1	5	5	5	3.25	Most likely: Vessel touchest he bottom in soft mud and continues sailing with minimal damage. Worst credible: Vessel hard aground, cannot be refloated resulting in major disruption to port, extreme damage and loss of contaminent.
1.4	Sinking / Capsize	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Jetty Regulations	3	3	6	4	3	1	5	5	5	5	4.5	Most likely: Small Vessel sinks, all crew / passengers safely abandon ship. Worst credible: Vessel sinks in approach to jetties resulting in total loss of vessel and loss of life.
1.5	Fire / Explosion	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Weather Forecasting / Tidal Predictions Emergency Plans Conservancy Jetty Regulations	3	3	9	6	3	1	5	5	5	5	5.125	Most likely: Small fire on board which is quickly and easily extinguished. Worst credible: Uncontrollable fire, total loss of vessel and cargo, loss of life and large scale pollution
1.6	Loss of Containment (Oil Products)	System Failure Human Error Environmental Conditions	Pilotage (Within compulsory pilotage Area) FTNS Forth Ports Byelaws & General Directions for Navigation Emergency Plans / OPRC Weather Forecasting Notice to Mariners Marine Guidelines & Port Information Jetty Regulations	3	3	3	6	6	2	6	10	10	10	6.75	Most likely: Small spill of non-persistant product that dissipates naturally. Worst credible: Large scale spill which cannot be contained resulting in port closures and extensive environmental impact.

Content Reviewed	Changes Made
MRFs reviewed Vessel numbers consulted, as well as type and size.	**Risk Scoring updated, Contact - Worst credible scenario / Grounding most likely / Sinking + Capsizing most likely scenario updated**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F) 9/05	**Risk Assessment Team / Date** HMFO, HMD, MM / 23rd Jan 2013
Risk Assessment - Braefoot Jetty	**Review Due** Aug-25	**Revised By / Date** MMT, August 2023

FORTH PORTS LIMITED
Navigational Risk Assessment

Port of Grangemouth - Arrival/Sailing Hen & Chickens to Berth

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score	
				Likelihood	Overall Risk				Likelihood	Overall Risk					
					People	Property	Environment	Business		People	Property	Environment	Business		
1.1	Collision	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Diversionary Channel Jetty / Terminal Guidelines STS Operations Manual Vessel vetting (tankers)	3	3	6	3	3	1	5	5	5	5	4.375	Most likely: In dock collision between inbound / outbound vessel and small vessel at slow speed resulting in minimal damage. Worst credible: Collision between inbound/outbound Grangemouth at higher speed resulting in total loss of vessels and loss of life.
1.2	Contact	System Failure Human Error Environmental Conditions Quayside Obstruction	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Fendering Cranes properly stowed on quayside Dockhead Staff STS Operations Manual Jetty / Terminal Guidelines Vessel vetting (tankers)	5	5	10	5	5	2	6	10	8	10	7.375	Most likely: Vessel has slow speed impact with lead in or fenders resulting in minimal damage. Worst credible: Vessel has heavy impact with lock structure resulting in exreme damage to vessel, locks, and loss ofbusiness due to potential port closure.
1.3	Grounding	Technical Failure Human Error Enviornmental Conditions Surveying Omission Failure of Aids to Navigation Unknown Underwater Obstruction	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	3	3	9	3	3	2	2	10	10	10	6.25	Most likely: Vessel grounds in soft mud and refloats on following tide with damage. Worst credible: Vessel hard aground, cannot be refloated resulting in major disruption to ports, extreme damage and loss of contaminent.
1.4	Sinking / Capsize	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Cargo operations procedures (Including MCA Bulk-handling Regulations) Jetty / Terminal Guidelines Vessel vetting (tankers)	1	1	2	2	1	1	5	5	5	5	3.25	Most likely: workboat sinks, all crew safely abandon ship Worst credible: Vessel sinks between H&C and locks resulting in total loss of vessel & cargo, channel closure, and loss of life.
1.5	Fire / Explosion	System Failure Human Error Environmental Conditions	Pilotage FTNS Emergency Plans / OPRC Legislation & Guidance Weather Forecasting Jetty/Terminal Guidelines Vessel vetting (tankers)	3	3	9	6	3	2	10	10	10	10	7.625	Most likely: Small fire on board which is quickly and easily extinguished. Worst credible: Uncontrollable fire on vessel containing munitions, total loss of vessel and cargo, and loss of life.
1.6	Loss of Containment (Oil Products)	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Weather Forecasting / Tidal Predictions Emergency Plans Conservancy Bunkering Procedure Cargo operations procedures (Including MCA Bulk-handling Regulations)	3	3	3	6	6	1	2	3	4	4	3.875	Most likely: Small spill of non-persistant product that dissipates naturally. Worst credible: Large scale spill which cannot be contained resulting in port closures and extensive environmental impact.
1.7	Loss of Dock Level	System Failure Human Error Environmental Conditions	Lockgate operational procedures Port Planned Maintenance system Lock Gates - Interlocks to prevent opening all lock gates simultaneously Training / Auditing of Port Staff Impounding Pumps	3	1	1	1	6	1	2	5	5	5	3.25	Most likely: Fault with ompounding pumps which is repaired before major loss of dock level. Worst credible: Fault with gates which cannot be repaired before major loss of dock level resulting in vessels aground with extreme damage.

MRFs: 53/21 (contact), 61/21 (Contact), 62/21 (contact) 68/21 (contact) 02/22 (tow Line parted), 04/22 (Bow Thruster Failure) 07/22 (contact) , 13/22 (contact), 15/22 (object in propulsion unit) 16/22 (mechanical failure), 20/22 (contact), 23/22 (Contact), 35/22 (loose fender weight), 36/22 (contact), 37/22 (Bridle Parted), 52/22 (Bridle parted), 60/22 (contact), 65/22 (Gangway contact with bollard), 68/22 (Mechanical Failure), 04/23 (mechanical failure), 07/23 (Pilot ladder), 09/23 (contact), 10/23 (mechanical failure), 12/23 (contact), 18/23 (contact), 19/23 (lock gates closed as vessel approached) 28/23 (mechanical failure), 29/23 (mechanical failure)

Content Reviewed	Changes Made
MRFs reviewed - significant number of contacts - one major contact,	**Risk Scoring updated. Collision (most likely + worst credible) / Contact (most likely + worst credible) / Sinking + Capsizing (worst credible) scenarios updated**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F) 10/06	**Risk Assessment Team / Date** DMM, HMFI / 19th Dec 2012
Risk Assessment - Port of Grangemouth Hen & Chickens to Berth	**Review Due** Aug-25	**Revised By / Date** MMT, August 2023

FORTH PORTS LIMITED
Navigational Risk Assessment

Crombie Berthing/Sailing

No significant MRFs during time from previous review.

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score	
				Likelihood	Overall Risk				Likelihood	Overall Risk					
					People	Property	Environment	Business		People	Property	Environment	Business		
1.1	Collision	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	2	2	4	2	2	1	5	5	5	5	3.75	Most likely: Collision between vessel and small vessel at slow speed resulting in minimal damage Worst credible: Collision between Crombie vessel carrying munitions and inbound/outbound Grangemouth tanker resulting in total loss of vessels and loss of life.
1.2	Contact	System Failure Human Error Environmental Conditions Jetty Obstruction	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Fendering Cranes properly stowed on quayside	3	3	6	3	3	1	5	5	5	5	4.375	Most likely: Vessel has slow speed impact with jetty whilst berthing resulting in minimal damage. Worst credible: High impact with jetty whilst berthing resulting in extreme damage to vessel and jetty, and loss of life.
1.3	Grounding	System Failure Human Error Environmental Conditions Unknown Underwater Obstruction	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	2	2	4	2	2	1	4	5	5	5	3.625	Most likely: Vessel grounds in soft mud and refloats on following tide with damage. Worst credible: Vessel hard aground, cannot be refloated resulting in major disruption to ports, extreme damage and loss of contaminent.
1.4	Sinking / Capsize	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	1	1	5	4	5	1	5	5	5	5	4.375	Most likely: Vessel sinks outwith main shipping areas, all crew safely abandon ship Worst credible: Vessel sinks in main channel near Crombie resulting in total loss of vessel, channel closure, and loss of life.
1.5	Fire / Explosion	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Weather Forecasting / Tidal Predictions Emergency Plans Towage Jetty/Terminal Guidelines	3	3	9	6	3	2	10	10	10	10	7.625	Most likely: Small fire on board which is quickly and easily extinguished. Worst credible: Uncontrollable fire on vessel containing munitions, total loss of vessel and cargo, and loss of life.
1.6	Loss of Containment (Oil Products)	System Failure Human Error Environmental Conditions	FTNS Legislation & Guidance Weather Forecasting / Tidal Predictions Emergency Plans Towage Bunkering Procedure Standby vessel for bunkering operations	3	3	3	6	6	1	2	3	5	5	4.125	Most likely: Small spill of non-persistant product that dissipates naturally. Worst credible: Large scale spill which cannot be contained resulting in port closures and extensive environmental impact.

Content Reviewed	Changes Made
No MRFs since pervious review. Number of vessels calling at Crombie, as well as type and size.	**Risk Scoring updated. Collision (most likely), contact (worst credible) Scenario updated**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F) 11/07	**Risk Assessment Team / Date** DMM, HMFI / 19th Dec2012
Risk Assessment - Crombie	**Review Due** Aug-25	**Revised By / Date** MMT, August 2023

FORTH PORTS LIMITED
Navigational Risk Assessment

Hound Point - Arrival/Sailing Eastern Limits to Berth

MRFs since previous review: 10/22 (mechanical failure), 66/22 (towline parted)

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score	
				Likelihood	Overall Risk				Likelihood	Overall Risk					
					People	Property	Environment	Business		People	Property	Environment	Business		
1.1	Collision	System Failure Human Error Environmental Conditions	Pilotage (Within compulsory pilotage Area) - 2 Pilots FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Hound Point Marine Guidelines PPU	4	4	4	4	4	1	5	5	5	5	4.5	Most likely: Collision between small workboat and larger vessel at slow speed resulting in minimal damage and no injuries. Worst credible: Collision between two laden tankers resulting in loss of vessels, loss of life and large scale pollution
1.2	Contact	System Failure Human Error Environmental Conditions Jetty Obstruction	Pilotage (Within compulsory pilotage Area) - 2 Pilots FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Fendering Hound Point Marine Guidelines PPU / Hound Point Docking System	3	3	6	3	3	1	5	5	5	5	4.375	Most likely: Vessel has slow speed impact with jetty resulting in minimal damage. Worst credible: Large vessel has a high impact contact with another vessel alongside hound point resulting in significant damage to vessels, jetty, loss of containment and serious injuries / loss of life.
1.3	Grounding	System Failure Human Error Environmental Conditions Unknown Underwater Obstruction	Pilotage (Within compulsory pilotage Area) - 2 Pilots FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Hound Point Marine Guidelines	1	1	3	1	4	1	3	5	5	5	3.375	Most likely: Vessel grounds in soft mud and refloats on following tide with minimal damage. Worst credible: Vessel hard aground, cannot be refloated resulting in major disruption to port, extreme damage and loss of contaminent.
1.4	Sinking / Capsize	System Failure Human Error Environmental Conditions	Pilotage (Within compulsory pilotage Area) - 2 Pilots FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Hound Point Marine Guidelines	1	3	5	5	5	1	5	5	5	5	4.75	Most likely: Vessel sinks, all crew / passengers safely abandon ship. Worst credible: Vessel sinks in approach to jetties resulting in total loss of vessel and loss of life.
1.5	Fire / Explosion	System Failure Human Error Environmental Conditions	Pilotage (Within compulsory pilotage Area) - 2 Pilots FTNS Legislation & Guidance Weather Forecasting / Tidal Predictions Towage Emergency Plans Hound Point Marine Guidelines	3	3	9	6	9	1	5	5	5	5	5.875	Most likely: Small fire on board which is quickly and easily extinguished. Worst credible: Uncontrollable fire, total loss of vessel and cargo, loss of life and large scale pollution
1.6	Loss of Containment (Oil Products)	System Failure Human Error Environmental Conditions	Pilotage (Within compulsory pilotage Area) - 2 Pilots FTNS Forth Ports Byelaws & General Directions for Navigation Emergency Plans / OPRC Weather Forecasting Notice to Mariners Marine Guidelines & Port Information Hound Point Marine Guidelines	3	3	3	6	6	2	6	10	10	10	6.75	Most likely: Small spill of non-persistant product that dissipates naturally. Worst credible: Large scale spill which cannot be contained resulting in port closures and extensive environmental impact.

Content Reviewed	Changes Made
MRFs; No contacts since last review Changes to guidelines or procedures affecting HP. Number of vessels calling, and other traffic in the vicinity.	**Risk Scoring updated. Contact (worst credible) scenario**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F) 12/05	**Risk Assessment Team / Date** DMM, HMFI / 19th Dec 2012
Risk Assessment - Houndpoint Arrival / Sailing Eastern Limits to	**Review Due** Aug-25	**Revised By / Date** MMT, August 2023

FORTH PORTS LIMITED
Navigational Risk Assessment

Cruise Vessels at Anchorage (Hound Point / Newhaven)

MRF: 18/22 (mechanical failure)

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score	
					Overall Risk					Overall Risk					
				Likelihood	People	Property	Environment	Business	Likelihood	People	Property	Environment	Business		
1.1	Dragging Anchor	System Failure Human Error Environmental Conditions	Designated and proven anchorages Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	5	5	5	5	5	1	5	5	5	5	5	Most likely: Vessel drags anchor, then pays out more chain resulting in no further dragging. Worst credible: Vessel drags anchor resulting in vessel going aground or making contact with bridge/Hound Point Terminal. Vessel suffers extreme damage and possibbilty of loss of life.
1.2	Contact	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	5	5	10	5	5	1	5	5	5	5	5.625	Most likely: Vessel has slow speed impact with small vessel resulting in minimal damage. Worst credible: Vessel has high speed impact with bridge/jetty resulting in significant damage to vessel and loss of life.
1.3	Grounding	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Tender pack	2	6	6	2	2	1	5	5	5	5	4.5	Most likely: Vessel grounds in soft mud and refloats on following tide with minimal damage. Worst credible: Vessel hard aground, cannot be refloated resulting in major disruption to ports, extreme damage and loss of contaminent.
1.4	Sinking / Capsize	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	1	3	5	5	5	1	5	5	5	5	4.75	Most likely: Vessel sinks, all crew and passengers safely abandon ship Worst credible: Vessel sinks resulting in total loss of vessel, and loss of life.
1.5	Fire / Explosion	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	5	10	10	5	5	1	5	5	5	5	6.25	Most likely: Small fire on board which is quickly and easily extinguished. Worst credible: Uncontrollable fire, total loss of vessel, and loss of life.
1.5	Loss of Containment (Oil Products) - Refer also to FP PMSC RA (F&T)5	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	3	3	3	6	3	1	2	5	5	5	4	Most likely: Small spill of non-persistant product that dissipates naturally. Worst credible: Large scale spill which cannot be contained resulting in port closures and extensive environmental impact.

Content Reviewed	Changes Made
MRFs review - Other traffic in the vicinity - type, size, density Cruise specific procedures, forms and guidelines.	**Risk Scoring updated.**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F) 13/07	**Risk Assessment Team / Date** HMFO, MM, DMM, HMD, MT&PV / 13th Feb 2013
Risk Assessment - Cruise Vessels at Anchorage (Hound Point / Newhaven)	**Review Due** Aug-25	**Revised By / Date** MMT August 2023

FORTH PORTS LIMITED
Navigational Risk Assessment

Forth - River Transit + Berthing/Sailing Small Commercial Craft (Tugs, Workboats etc)

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score	
					Overall Risk					Overall Risk					
				Likelihood	People	Property	Environment	Business	Likelihood	People	Property	Environment	Business		
1.1	Collision	System Failure Human Error Environmental Conditions	FTNS Legislation & Guidance General Directions (GD19) Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Liaison with Local Authorities & Boat Clubs Audit and license procedure	3	3	6	3	3	2	10	8	6	10	6.125	MRFs: 70/21 (Vessel picked up weight in locks) 72/21 (Fouled unit) 02/22 Pated Towline, 09/22 (Pilot Vessel Engine Alarm), 15/22 (Fouled unit) 35/22 (Fouled Unit), 46/22 (Fouled unit) 47/22 (Faulty unit) 54/22 (Fouled unit) 57/22 (Mechanical Failure) 02//23 MOB Mayday Call / 14/23 (Hull Beach) / 22/23 (Mechanical Failure) / 30/23 (Fouled Propeller)
1.2	Contact	System Failure Human Error Environmental Conditions Change to Shore Infrastructure / Obstruction on the Quay Floating Debris	FTNS Legislation & Guidance General Directions (GD19) Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Liaison with Local Authorities & Boat Clubs Audit and license procedure	5	5	10	5	5	2	10	8	8	8	7.375	Most likely: Collision between two small vessels at slow speed resulting in minimal damage and no injuries. Worst credible: Collision between two small commercial craft at high speed resulting in loss of vessels and loss of life.
1.3	Grounding	System Failure Human Error Environmental Conditions	FTNS Legislation & Guidance General Directions (GD19) Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Conservancy Liaison with Local Authorities & Boat Clubs Audit and license procedure	3	3	6	3	3	1	4	5	4	5	4.125	Most likely: Small workboat low impact with floating debris resulting in minimal damage. Worst credible: High impact Contact with bridge, quayside, jetty resulting in significant damage and loss of life.
1.4	Sinking / Capsize	System Failure Human Error Environmental Conditions	FTNS Legislation & Guidance General Directions (GD19) Weather Forecasting / Tidal Predictions Emergency Plans Conservancy Liaison with Local Authorities & Boat Clubs Audit and license procedure	2	2	10	8	10	2	10	10	8	10	8.5	Most likely: Vessel hard aground, cannot be refloated resulting in major disruption to ports, extreme damage and loss of contaminent. Most likely: Vessel sinks, all crew safely abandon ship Worst credible: Vessel sinks resulting in total loss of vessel, and loss of life.
1.5	Fire / Explosion	System Failure Human Error Environmental Conditions	FTNS Legislation & Guidance General Directions (GD19) Weather Forecasting / Tidal Predictions Emergency Plans Conservancy Liaison with Local Authorities & Boat Clubs Audit and license procedure	4	4	8	4	8	2	10	10	8	10	7.75	Most likely: Small fire on board which is quickly and easily extinguished. Worst credible: Uncontrollable fire, total loss of vessel and cargo, and loss of life.
1.6	Loss of Containment (oil products)	System Failure Human Error Environmental Conditions	FTNS Legislation & Guidance General Directions (GD19) Weather Forecasting / Tidal Predictions Emergency Plans Conservancy Liaison with Local Authorities & Boat Clubs Audit and license procedure	4	4	4	4	4	2	6	6	8	8	5.5	Most likely: Small spill of non-persistant prodcut that dissipates naturally. Worst credible: Large scale spill which cannot be contained resulting in port closures and extensive environmental impact.

Content Reviewed	Changes Made
veral contact incidents with one major incident resulting in a large cost to c	**Risk Scoring updated.**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F) 14/07	**Risk Assessment Team / Date** MT&PV, HMFO, MM, DMM, HMD / 13TH Feb 2013
Risk Assessment - Forth - River Transit + Berthing/Sailing Small	**Review Due** Aug-25	**Revised By / Date** MMT August 2023

FORTH PORTS LIMITED
Navigational Risk Assessment

Cruise Vessel Tender Operations (Newhaven / Hound Point)

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score
				Likelihood	Overall Risk				Likelihood	Overall Risk				
					People	Property	Environment	Business		People	Property	Environment	Business	
1.1	Collision	System Failure Human Error Environmental Conditions	Legislation & Guidance FTNS Weather Forecasting, Tidal Predictions & Monitoring Tender Pro-forma & Passage Planning Tender Pack	5	10	10	5	5	2	10	10	8	10	8.5
1.2	Contact	System Failure Human Error Environmental Conditions Change to Shore Infrastructure / Obstruction on the Quay Floating Debris	FTNS Legislation & Guidance Weather Forecasting / Tidal Predications & Monitoring Tender Traffic Control Procedures Tender Proforma and Passage Planning Tender Pack	5	5	5	5	5	2	10	10	8	10	7.25
1.3	Grounding	System Failure Human Error Environmental Conditions Uncharted Object	FTNS Weather Forecasting / Tidal Predictions Legislation & Guidance Emergency Plans Conservancy Tender Proforma and Passage Planning Tender Pack	5	5	5	5	5	2	4	6	4	6	5
1.4	Sinking / Capsize	System Failure Human Error Environmental Conditions	FTNS Weather Forecasting / Tidal Predictions Legislation & Guidance Emergency Plans Conservancy Tender Proforma and Passage Planning Tender Pack	1	3	4	3	3	1	5	5	3	5	3.875
1.5	Fire	System Failure Human Error Environmental Conditions	FTNS Weather Forecasting / Tidal Predictions Legislation & Guidance Emergency Plans	2	2	4	2	2	1	5	4	3	4	3.25
1.6	Loss of Containment (oil products)	System Failure Human Error Environmental Conditions	FTNS Weather Forecasting / Tidal Predictions Legislation & Guidance Emergency Plans Conservancy Tender Proforma and Passage Planning Tender Pack	4	4	4	4	4	1	2	2	4	4	3.5

MRF: 55/21 (Contact), 56/21 (Contact), 57/21 (contact), 58/21 contact, 17/22 Damage to tender, 31/22 (contact), 24/23 (mechanical failure)

Most likely: Collision between two tenders at slow speed resulting in minimal damage and no injuries.

Worst credible: Collision between a commercial vessel and tender carrying passengers resulting in loss of tender and loss of life.

Most likely: Tender has slow speed impact with pontoon resulting in minimal damage.

Worst credible: Tender has heavy impact with pontoon resulting in significant damage to tender and loss of life.

Most likely: Tender grounds in soft mud and continues sailing with minimal damage

Worst credible: Tender hard aground, cannot be refloated resulting in major disruption to ports, extreme damage and loss of contaminent.

Most likely: Tender sinks, all crew and passengers safely abandon ship

Worst credible: Tender sinks resulting in total loss of vessel and loss of life.

Most likely: Small fire on board which is quickly and easily extinguished.

Worst credible: Uncontrollable fire, total loss of vessel, and loss of life.

Most likely: Small spill of non-persistant product that dissipates naturally.

Worst credible: spill which cannot be contained resulting in environmental impact.

Content Reviewed	Changes Made
Greatly reduced amount of cruise traffic due to COVID which has impacted the amount of incidents.	**Risk Scoring updated.**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F) 15/06	**Risk Assessment Team / Date** MM, DMM, HMFO March 2014
Risk Assessment - Cruise Vessel Tender Operations (Hound Point /	**Review Due** Aug-25	**Revised By / Date** MMT August 2023

FORTH PORTS LIMITED
Navigational Risk Assessment

Port of Leith - Arrival / Sailing Leith Approach Buoy to Berth with Jack-Up Barge on Leith Approaches

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score	No MRFs
				Likelihood	Overall Risk				Likelihood	Overall Risk					
					People	Property	Environment	Business		People	Property	Environment	Business		
1.1	Collision / Allision	System Failure Human Error Environmental Conditions Jack-Up Barge in Approach Channel	Pilotage (Compulsory over 45m) Console Controller FTNS (Notice to Mariners) Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage (compulsory >60m) Aids to Navigation Conservancy Vessel moves assesed on case by case basis with regards to manoeuvrability	4	7	10	6	10	2	6	6	6	6	7.125	Most Likely: Collision with small vessel / Jack-up Barge resulting in minor damage. Worst Credible: Collision involving cargo vessel and Jack-Up Barge. Resulting in the loss of vessel , barge and loss of life.
1.2	Contact	System Failure Human Error Environmental Conditions Jack-Up barge at Jetty	Pilotage (Compulsory over 45m) Console Controller FTNS (Notice to Mariners) Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage (Compulsory over 60m) Aids to Navigation Conservancy Vessel moves assesed on case by case basis with regards to manoeuvrability	5	7	10	6	10	2	6	6	6	6	7.125	Most Likely: Slow speed impact with quay resulting in minimal damage to vessel or jetty. Worst Credible: Large impact resulting in extreme damage to vessel and infrastructure. Quayside no longer able to operate and vessel requiring repair possible death / loss of containment.
1.3	Grounding	System Failure Human Error Environmental Conditions Change of Approach to due to Jack-Up Barge	Pilotage (Compulsory over 45m) Console Controller FTNS (Notice to Mariners) Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage (compulsory over 60m) Aids to Navigation Conservancy Vessel moves assesed on case by case basis with regards to manoeuvrability	3	3	6	6	3	2	6	8	8	10	6.25	Most Likely: Vessel grounded in soft mud and floats on following tide without damage. Worst Credible: Vessel hard aground, cannot be refloated at the Port entrance. Port is closed indefinaitly and major damage to vessel.
1.4	Sinking / Capsize	System Failure Human Error Environmental Conditions	Pilotage Console Controller FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Aids to Navigation Conservancy	1	4	4	5	4	1	4	4	5	5	4.375	Most Likely: Vessel sinks in approach to port, total loss of ship, and crew abandon ship. Worst Credible: Vessel sinks in approach to port, total loss of ship and crew.
1.5	Fire / Explosion	System Failure Human Error Environmental Conditions	Pilotage FTNS Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting Marine Guidelines & Port Information	1	3	3	3	2	1	4	4	3	4	3.25	Most Likely: Small fire on-board quickly extinguished. Worst Credible: Uncontrollable fire, total loss of vessel , crew and cargo.
1.6	Loss of Containment (Oil Products)	System Failure Human Error Environmental Conditions	Pilotage Console Controller FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Aids to Navigation Conservancy	3	3	3	6	6	1	2	3	4	4	3.875	Most Likely: Small spill of non-persistent product. Worst Credible: Large scale spill which cannot be contained resulting in port closure and extensive environmental impact.
1.7	Loss of Dock Level (Lock Gate Operations)	System Failure Human Error Environmental Conditions	Lockgate operational procedures Port Planned Maintenance system Lock Gates - Interlocks to prevent opening all lock gates simultaneously Training / Auditing of Port Staff	3	3	3	3	9	1	5	5	4	5	4.625	Most Likely: Loss of containment but does not result in significant loss of dock level. Possible impact to large draft movements. Worst Credible: Large loss of dock level. Deep drafted vessel take the bottom of dock. Possible large scale damage to vessels and infrastructure.

Content Reviewed	Changes made
MRFs and POLREPs reviewed. Overall vessel numbers calling at Forth, also vessel type and size. Number , nature, and size of ongoing projects.	

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F) 16	**Risk Assessment Team / Date** MM, MO / 11th October 2021
Risk Assessment - Port of Leith	Oct-23	**Revised By / Date**

FORTH PORTS LIMITED
Navigational Risk Assessment

Tay River Passage - Arr/Dep Buoy to Berth

No MRFs

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score	
				Likelihood	Overall Risk				Likelihood	Overall Risk					
					People	Property	Environment	Business		People	Property	Environment	Business		
1.1	Collision	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	1	2	3	1	1	1	5	5	5	5	3.375	Most Likely: Collision with small craft. Worst Credible: Collision between cruise vessel and rig
1.2	Contact	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	5	5	10	5	5	1	5	5	5	5	5.625	Most Likely: Light Contact with the quayside. Worst Credible: Extremly heavy landing structural damage to Quay and vessel
1.3	Grounding	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	2	2	6	2	6	1	5	5	5	5	4.5	Most Likely : Grounding on soft material, no loss of containment with vessel continuing on. Worst Credible: Grounding on solid sea bed, loss of containment vessel unable to refloat.
1.4	Sinking / Capsize	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	2	8	8	8	8	1	5	5	5	5	6.5	Most Likely : Small craft sinking with no casualties Worst Credible: Cruise vessel sinking with loss of vessel and fatalities
1.5	Fire / Explosion	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Weather Forecasting / Tidal Predictions Emergency Plans	3	3	6	3	3	1	5	5	5	5	4.375	Most Likely : Small fire onboard, quickly extinguished . Worst Credible: Vessel uncontrolable fire, vessel total loss.
1.6	Loss of Containment (oil products)	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Vetting (Tankers)	2	2	2	2	2	1	3	5	5	5	3.25	Most likely: Small spill of non-persistant product that dissipates naturally. Worst credible: Large scale spill which cannot be contained resulting in port closure and extensive environmental impact.

Content Reviewed	Changes Made
All content reviewed	**Risk Scoring updated.**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (T) 01/06	**Risk Assessment Team / Date** DMM, HMD 13th Dec 2012
Risk Assessment - River Passage Tay (General)	**Review Due** Aug-25	**Revised By / Date** CHM/HMET/MMD/MCM / MODAugust 2023

FORTH PORTS LIMITED
Navigational Risk Assessment

Port of Dundee - Oil Rigs - Arrival/Sailing Port Limits to Berth

MRF: None

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score	
				Likelihood	Overall Risk				Likelihood	Overall Risk					
					People	Property	Environment	Business		People	Property	Environment	Business		
1.1	Collision	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Planning meeting Conservancy Towage Audit Declaration / Tug Vetting Large Vessel Movement Notice to Mariners	2	4	4	4	4	1	5	5	5	5	4.5	Most Likely: Collision with small craft while underway. Worst Credible: Collision with Tug/anchor handler in fairway.
1.2	Contact	System Failure Human Error Environmental Conditions Change to Shore Infrastructure / Obstruction on the Quay Communication Error	Pilotage / Towmaster FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Planning meeting Conservancy Additional Fendering (if achievable on berth) Towage Audit Declaration / Tug Vetting Simulation Trials	2	2	6	2	6	2	8	10	8	10	6.5	Most Likely: Contact with navigational buoy Worst Credible: Heavy Contact with berthed vessel/rig
1.3	Grounding	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Towage Audit Declaration / Tug Vetting Simulation Trials	2	2	2	4	6	1	5	5	5	5	4.25	Most Likely : Tug Grounding on soft material, no loss of containment and vessel continuing Worst Credible: Tug / AHT Grounding on solid sea bed, loss of containment vessel unable to refloat.
1.4	Sinking / Capsize	Collision Contact Grounding Technical Failure Bridge Team Error	Pilotage / Towmaster FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Planning meeting Conservancy Towage Audit Declaration / Tug Vetting Simulation Trials	1	5	5	5	5	1	5	5	5	5	5	Most Likely:Sinking of Tug during operation Worst Credible: Sinking within navigational channel loss of containment.
1.5	Fire / Explosion	Collision Contact Human Error Technical Failure Loss of Containment	Pilotage / Towmaster FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Planning meeting Towage Audit Declaration / Tug Vetting	3	3	6	3	3	1	5	5	5	5	4.375	Most Likely: Small fire on vessel, extinguished on board Worst Credible: Large fire on rig, complete loss.
1.6	Loss of Containment (oil products)	System Failure Human Error Environmental Conditions	Pilotage / Towmaster FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Planning meeting Conservancy Towage Audit Declaration / Tug Vetting Bunkering Procedure	2	2	2	2	2	1	3	5	5	5	3.25	Most likely: Small spill of non-persistant product that dissipates naturally. Worst credible: Large scale spill which cannot be contained resulting in port closure and extensive environmental impact.

Content Reviewed	Changes Made
All content reviewed	**Risk Scoring updated.**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (T) 05/06	**Risk Assessment Team / Date** DMM, HMD 09th January 2013
Risk Assessment - Port of Dundee - Oil Rigs - Arrival/Sailing Port	**Review Due** Aug-25	**Revised By / Date** CHM/HMET/MMD/MCM / MOD August 2023

FORTH PORTS LIMITED
Navigational Risk Assessment

Tay - River Transit + Berthing/Sailing Small Commercial Craft (Tugs, Workboats etc.)

MRF: 064/22 (tow rope parted), 62/22 (mechanical failure), 27/23 (contact), 37/23 (

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score	
				Likelihood	Overall Risk				Likelihood	Overall Risk					
					People	Property	Environment	Business		People	Property	Environment	Business		
1.1	Collision	Technical Failure Bridge Team Error Environmental Conditions	FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Audits Liaison with Local Authoritys & Boat Clubs	2	2	4	2	2	2	10	10	10	10	6.25	Most Likely: Collision with another small craft on river. Worst Credible: Collision with other small vessel causing loss of both vessels.
1.2	Contact	Technical Failure Bridge Team Error Environmental Conditions Change to Shore Infrastructure / Obstruction on the Quay	FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Audits Liaison with Local Authoritys & Boat Clubs	5	5	10	5	5	2	10	10	8	10	7.875	Most Likely: Light contact with the quayside while berthing. Worst Credible: Heavy Contact with another berthed small vessel resulting in loss of both vessels
1.3	Grounding	Technical Failure Bridge Team Error Environmental Conditions Surveying Omission	FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Audits Liaison with Local Authoritys & Boat Clubs Conservancy	2	2	2	2	2	1	4	4	4	4	3	Most Likely: Grounding of smalll vessel on soft silt, which continue on (tidal basin). Worst Credible: Grounding on hard rock, causing loss of containment, unable to refloat on same tide.
1.4	Sinking / Capsize	Collision Contact Grounding Technical Failure Bridge Team Error	FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Audits Liaison with Local Authoritys & Boat Clubs	2	4	8	6	6	1	4	4	4	4	5	Most Likely: sinking of small vessel outside of navigational channel, with limited loss of containment. Worst Credible: Sinking of small vessel within navigational channel with loss of containment.
1.5	Fire / Explosion	Collision Contact Grounding Human Error Technical Failure Loss of Containment	FTNS Tay Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting Marine Guidelines & Port Information Notice to Mariners Survey / dredging Programme / Schedule Pilot Vessel training & Certification Good Housekeeping Towage Guidelines Small Vessel SMS	3	3	6	3	3	1	5	5	5	5	4.375	Most Likely: small fire which is extinguished by crew. Worst Credible: Major fire leading to total loss of vessel.
1.6	Loss of Containment (oil products)	Collision Grounding Human Error Contact Technical Failure Sinking / Capsizing Fire / Explosion Environmental Conditions	FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Audits Liaison with Local Authoritys & Boat Clubs Bunkering Procedure	2	2	2	2	2	1	3	5	5	5	3.25	Most Likely: Small loss of non-persistant oil product. Worst Credible: Large spill of persistant product.

Content Reviewed	Changes Made
All content reviewed	**Risk Scoring updated.**

FORTH PORTS LIMITED	Document ID	Risk Assessment Team / Date
	FP PMSC RA (T) 06/04	DMM, HMD 09th January 2013
Risk Assessment - River Tay Transit + Berthing/Sailing Small	**Review Due** Aug-25	**Revised By / Date** CHM/HMFT/MMD/MCM / MOD August 2023

FORTH PORTS LIMITED
Navigational Risk Assessment

Forth & Tay - Vessels at Anchor

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score
				Likelihood	Overall Risk				Likelihood	Overall Risk				
					People	Property	Environment	Business		People	Property	Environment	Business	
1.1	Dragging Anchor	Environmental Conditions Human Error / Failure System Failure	Designated and Proven Anchorages FTNS Weather Forecasting / Tidal Predictions Towage Byelaws & General Directions Pilotage Emergency Plans / OPRC	5	5	5	5	5	2	8	10	10	10	7.25
1.2	Contact	Environmental Conditions Human Error / Failure System Failure	Pilotage (typically only Cruise vessels @ Newhaven + South Queensferry) FTNS Towage Byelaws & General Directions Weather Forecasting / Tidal Predictions Designated and Proven Anchorages Notice to Mariners Emergency Plans / OPRC	2	4	6	4	4	1	5	5	5	5	4.75
1.3	Grounding	Environmental Conditions Human Error / Failure System Failure	Pilotage (typically only Cruise vessels @ Newhaven + South Queensferry) Passage plan – master / pilot information exchange FTNS Towage Weather Forecasting / Tidal Predictions & Tidal Monitoring Designated and Proven Anchorages Emergency Plans / OPRC	2	2	4	2	4	1	1	5	5	5	3.5
1.4	Sinking / Capsize	Environmental Conditions Human Error / Failure System Failure	Pilotage (typically only Cruise vessels @ Newhaven + South Queensferry) FTNS Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting / Tidal Predictions	3	3	3	3	3	1	5	5	5	5	4
1.5	Fire / Explosion	Human Error / Failure System Failure	Pilotage (typically only Cruise vessels @ Newhaven + South Queensferry) FTNS Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting	1	2	2	1	1	1	5	5	5	5	3.25
1.6	Loss of Containment (Oil Products)	Environmental Conditions Human Error / Failure System Failure	Pilotage (typically only Cruise vessels @ Newhaven + South Queensferry) FTNS Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting Notice to Mariners Marine Guidelines & Port Information Bunkering Procedure	3	3	3	3	3	2	4	10	10	10	5.75

MRF: 022/22 Loss of Anchor 069/21 (Dragging Anchor) 050/20 (fouled anchor), 049/20(fouled anchor), 017/18 (Dragging Anchor)

Most likely: Vessel drags anchor, then pays out more chain resulting in no further dragging.

Worst credible: Vessel drags anchor resulting in vessel going aground or making contact with bridge/jetty. Vessel suffers extreme damage and possibbilty of loss of life.

Most likely: Vessel has slow speed impact with buoy resulting in minimal damage.

Worst credible: Vessel has high speed impact with bridge/jetty resulting in significant damage to vessel and loss of life.

Most likely: Vessel grounds in soft mud and refloats on following tide with minimal damage.

Worst credible: Vessel hard aground, cannot be refloated resulting in major disruption to ports, extreme damage and loss of contaminent.

Most likely: Vessel sinks, all crew safely abandon ship

Worst credible: Vessel sinks resulting in total loss of vessel, and loss of life.

Most likely: Small fire on board which is quickly and easily extinguished.

Worst credible: Uncontrollable fire, total loss of vessel, and loss of life.

Most likely: Small spill of non-persistant product that dissipates naturally.

Worst credible: Large scale spill which cannot be contained resulting in port closures and extensive environmental impact.

Content Reviewed	Changes Made
All	Updated Causes to new standard
Controls	Specified that pilotage is only used for Cruise vessels @ Newhaven/ S Queens.
Dragging Anchor	Decrease in Most Likely Property Risk
Contact	Decrease in Most Likely Business Risk
Grounding	Most likely risks reduced
Loss of Containment	Most Likely Risks reduced / Worst Credible Likelihood and risk increased

FORTH PORTS LIMITED	Document ID FP PMSC RA (F&T) 1/06	Risk Assessment Team / Date DMM, HMFO, HMFI, HMD, MT&PV / 11th Jan 2013
Risk Assessment - Vessels at Anchor	Review Due Jul-24	Revised By / Date July 2022, MMT

FORTH PORTS LIMITED
Navigational Risk Assessment

Forth & Tay - Towage Operations

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score
				Likelihood	Overall Risk				Likelihood	Overall Risk				
					People	Property	Environment	Business		People	Property	Environment	Business	
1.1	Capsizing / Flooding	Environmental Conditions Human Error / Failure System Failure	Towage Guidelines Tug SMS FTNS Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting / Tidal Predictions Pilotage Crew Training Pre Operations Checks/ Briefings Emergency Tow Release	3	3	3	3	3	2	10	10	10	10	6.5
1.2	Fire	Environmental Conditions Human Error / Failure System Failure	FTNS Tug SMS Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting Marine Guidelines & Port Information Notice to Mariners Crew Training & Certification Good Housekeeping Towage Guidelines	2	4	4	2	4	1	5	5	5	5	4.25
1.3	Allision	Environmental Conditions Human Error / Failure System Failure	FTNS Byelaws & General Directions Emergency Plans Weather Forecasting / Tidal Predications Marine Guidelines & Port Information Towage Guidelines Notice to Mariners Tug SMS, Crew Training/Qualifications	5	5	10	5	10	2	10	10	5	10	8.125
1.4	Collision	Environmental Conditions Human Error / Failure System Failure	FTNS Byelaws & General Directions Emergency Plans Weather Forecasting / Tidal Predications Marine Guidelines & Port Information Towage Guidelines Notice to Mariners Tug SMS, Crew Training/Qualifications	2	2	4	2	4	1	5	5	5	5	4
1.5	Grounding	Environmental Conditions Human Error / Failure System Failure	FTNS Byelaws & General Directions Emergency Plans Weather Forecasting / Tidal Predications - spelling Marine Guidelines & Port Information Towage Guidelines Notice to Mariners Tug SMS, Crew Training/Qualifications	3	6	9	3	9	2	10	10	10	10	8.375

MRF: 29/2022 (Loss ofComms)23/2022 (Contact)20/2022 Contact) 14/2022 (Contact) 13/2022 (Contact)07/2022 (Contact) 03/2022 (Contact)02/2022 (Tow line parted)064/2021 (Towrope fouled in prop) 037/2021 (Dangerous occurence) 016/2021 (Uncontrolled release of bridle)070/20(contact), 022/20(collision), 005/20(contact), 002/20(contact), 001/20(Contact), 106/19 (incorrect bridle), 082/19 (potential grounding), 080/19 (parted towline), 074/18 (Grounding), 026/19 (Contact)

Most Likely: Tug experiences girting but is able to recover with no significant consequence/damage

Worst Credible: Tug experiences girting causing the tug to capsize with total loss of life and vessel

Most Likely: Vessel suffers a minor fire which is extinguished quickly and results in no significant damage

Worst Credible: Vessel suffer an extensive fire which results in loss of life and total loss of the vessel

Most Likely: Vessel makes minor contact with pier/jetty/object resulting in no significat damage to either the vessel or object and no injuries

Worst Credible: Vessel makes heavy conact with an object resulting in significant damage to both the vessel and object with injuries/fatalities

Most Likely: Tug collides with another vessel at slow speed resulting in no significant damage to either vessel and no injuries

Worst Credible: Tug collides with another vessel at high speed resulting in possible loss of the vessels and injuries/fatalities

Most Likely: Vessel reuns aground but suffers no significant damage and is able to be refloated with the tide

Worst Credible: Vessel runs aground in the entrace to a port resulting and cannot be refloated resulting in loss of the vessel, possible injuries/fatalities and loss of business

Content Reviewed	Changes Made
General	Causes updated to match with standard causes in definitions
Grounding	Increase in likelihood - Grounding
Man Overboard / Personal injury	Removed - RA included in Towage Risk assesments
Fire	Removed - Control - Latest sounding chart availiable
Contact	Changed to Allision
Allision	

FORTH PORTS LIMITED	Document ID	Risk Assessment Team / Date
	FP PMSC RA (F&T) 2/06	MT&PV, MM, HMFO, DMM, HMD / 13th Feb 2013
Risk Assessment - Towage Operations	**Review Due**	**Revised By / Date**
	Jul-24	July 2022, MMT

FORTH PORTS LIMITED
Navigational Risk Assessment

Forth & Tay - Immobilised Vessels (at Anchor or Alongside)

MRF 015/15 (Fire) 072/19 (Fire)

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score	
				Likelihood	Overall Risk				Likelihood	Overall Risk					
					People	Property	Environment	Business		People	Property	Environment	Business		
1.1	Allision Refer also to FP PMSC RA (F&T) 1	Human Error Technical Failure Enviromental Conditions	Byelaws & General Directions Weather Forecasting & Monitoring Marine Guidelines & Port Information Standby Tug at Anchor FTNS Extra Moorings	2	4	6	4	2	2	6	8	8	8	5.75	Most likely: Vessel has slow speed impact with buoy resulting in minimal damage. Worst credible: Vessel has high speed impact with bridge/jetty resulting in significant damage to vessel and loss of life.
1.2	Grounding Refer also to FP PMSC RA (F&T) 1	Human Error Technical Failure Enviromental Conditions	FTNS Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting & Monitoring Marine Guidelines & Port Information Notice to Mariners Standby Tug at Anchor Extra Moorings	3	3	3	3	3	1	3	5	4	5	3.625	Most likely: Vessel grounds in soft mud and refloats on following tide with minimal damage. Worst credible: Vessel hard aground, cannot be refloated resulting in major disruption to ports, extreme damage and loss of contaminent.
1.3	Fire / Explosion Refer also to FP PMSC RA (F&T) 1	Human Error Technical Failure	Pilotage FTNS Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting	3	6	9	3	6	1	5	5	5	5	5.5	Most likely: Small fire on board which is quickly and easily extinguished. Worst credible: Uncontrollable fire, total loss of vessel, and loss of life.

Content Reviewed	Changes Made
Full review	Causes updated to match with standard causes in definitions
Contact - Changed to Allision	Most Likely Business Risk reduced
	Worst Case Likelihood and People risk increased
Grounding	Most Likeily Likelihood increased + All risks increased
	Worst Case Business risk increased
Fire/Explosion	Most Likely People Risk increased / Environmental risk decreased

FORTH PORTS LIMITED	Document ID	Risk Assessment Team / Date
	FP PMSC RA (F&T) 3/06	MM, DMM / 26th Feb 2013
Risk Assessment - Immobilised Vessels	Review Due Jul-24	Revised By / Date July 2022, MMT

FORTH PORTS LIMITED
Navigational Risk Assessment

Forth & Tay - Bunkering Operations In Dock

POLREP (Leith) 07/18 - 97/19 (Gmth bunker without permission)

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score
				Likelihood	Overall Risk				Likelihood	Overall Risk				
					People	Property	Environment	Business		People	Property	Environment	Business	
1.1	Collision with bunker vessel and receiving vessel	Human Error Technical Failure Enviromental Conditions	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS - Scheduling,VTS Bylaws & General Directions Notice To Mariners Weather Parameters Emergency Plans / OPRC Tugs Fenders Mooring/Unmooring Procedures Terminal Procedures Lock Gates Bunkering Procedures	2	6	6	2	2	1	5	5	5	5	**4.5**
1.2	Contact	Human Error Technical Failure Enviromental Conditions	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS - Scheduling,VTS Bylaws & General Directions Notice To MarinerS Weather Parameters Emergency Plans / OPRC Tugs Fenders Mooring Procedures	3	3	6	3	3	2	8	10	8	8	**6.125**
1.3	Loss of Conrainment (Oil Products)	Human Error Technical Failure Enviromental Conditions	Pilotage FTNS - Scheduling, VTS Forth Bylaws & General Directions N To M Emergency Plans / OPRC Weather Forecasting Weather Parameters Fenders either side of manifold Mooring Procedures Bunkering Procedure Vetting (Bunker Vessel) Bunkering Procedures Lock Gates Port Traffic Managment	3	3	3	3	3	1	1	4	4	5	**3.25**
1.4	Fire/Explosion	Human Error Technical Failure	Pilotage FTNS - Scheduling, VTS Bylaws & General Directions Notices To Mariners Emergency Plans / OPRC Weather Forecasting Weather Parameters Bunkering Procedure. Mooring Procedures Vetting (Bunker Vessel)	1	2	2	2	1	1	5	5	5	5	**3.375**

Most likely: Slow speed collision between both vessels resulting in minimal damage and no loss of containment

Worst credible: Heavy collision between both vessels resulting in extreme damage, loss of life and loss of containment

Most likely: Vessel has slow speed impact with buoy resulting in minimal damage.

Worst credible: Vessel has high speed impact with quayside resulting in significant damage to vessel and loss of life.

Most likely: Small spill of non-persistant product that dissipates naturally.

Worst credible: Large scale spill which cannot be contained resulting in port closures and extensive environmental impact.

Most likely: Small fire on board which is quickly and easily extinguished.

Worst credible: Uncontrollable fire, total loss of vessel, and loss of life.

Content Reviewed	Changes Made
General	Causes updated to match with standard causes in definitions
Collision	Worst Case - Env risk increased
Contact - Changed to Allision	Most Likelihood increased
	Worst Case People Risk increased
Loss of containment	Most Likely Environ / Business increased
	Worst Case People/ property risk decreased + Business risk decreased
Fire/Explosion	Most likely All risks decreased

FORTH PORTS LIMITED	Document ID	Risk Assessment Team / Date
	FP PMSC RA (F&T) 4/06	HMFO, HMFI, MM, HMD, DMM 20th Feb 2013
Risk Assessment - Bunkering Operations In Dock	**Review Due**	**Revised By / Date**
	Jul-24	July 2022, MMT

FORTH PORTS LIMITED
Navigational Risk Assessment

Forth & Tay - Bunkering Operations Tidal Waters

MRF: 05/2022 (Mooring Line Parting) 04/2022 (Mechanical fail

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score
				Likelihood	Overall Risk				Likelihood	Overall Risk				
					People	Property	Environment	Business		People	Property	Environment	Business	
1.1	Collision with bunker vessel and receiving vessel	Human Error Technical Failure Enviromental Conditions	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS - Scheduling,VTS Bylaws & General Directions Notice To Mariners Weather Parameters Emergency Plans / OPRC Tugs Fenders Mooring/Unmooring Procedures Bunkering Procedure	3	6	6	3	3	1	4	5	5	5	4.625
1.2	Contact	Human Error Technical Failure Enviromental Conditions	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS - Scheduling,VTS Bylaws & General Directions Notice To Mariners Weather Parameters Emergency Plans / OPRC Tugs Fenders Mooring Procedures Bunkering Procedure	2	4	2	2	2	1	5	5	5	5	3.75
1.3	Loss of Containment (Oil Products)	Human Error Technical Failure	Pilotage FTNS - Scheduling, VTS Bylaws & General Directions N To M Emergency Plans / OPRC Weather Forecasting Weather Parameters Fenders either side of manifold Mooring Procedures Bunkering Procedure Vetting (Bunker Vessel) Oil Pollution response standby vessel	3	3	3	3	6	1	1	4	5	5	3.75
1.4	Fire/Explosion	Human Error Technical Failure	Pilotage FTNS - Scheduling, VTS Bylaws & General Directions Notices To Mariners Emergency Plans / OPRC Weather Forecasting Weather Parameters Tugs Bunkering Procedure. Mooring Procedures Vetting (Bunker Vessel) Bunkering Procedure	1	2	2	2	1	1	5	5	5	5	3.375

Most likely: Slow speed collision between both vessels resulting in minimal damage and no loss of containment

Worst credible: Heavy collision between both vessels resulting in extreme damage, loss of life and loss of containment

Most likely: Vessel has slow speed impact with buoy resulting in minimal damage.

Worst credible: Vessel has high speed impact with quayside resulting in significant damage to vessel and loss of life.

Most likely: Small spill of non-persistant product that dissipates naturally.

Worst credible: Large scale spill which cannot be contained resulting in port closures and extensive environmental impact.

Most likely: Small fire on board which is quickly and easily extinguished.

Worst credible: Uncontrollable fire, total loss of vessel, and loss of life.

Content Reviewed	Changes Made
General	Causes updated to match with standard causes in definitions
Collision	Most Likely All Risks decreased
Contact - Changed to Allision	Most Likely - Likelihood decreased and people / property decreased Worst Case - People/ Env / Business risk increased
Loss of Containment	Most Likely - All risks increased Worst Case - People / Env / Business Risks increased Property risk decreased
Fire / Explosion	Most Likely All Riskd increased

FORTH PORTS LIMITED	Document ID	Risk Assessment Team / Date
	FP PMSC RA (F&T) 5/06	HMFO, HMFI, MM, HMD, DMM 20th Feb 2013
Risk Assessment - Bunkering Operations Tidal Waters	Review Due Jul-24	Revised By / Date July 2022, MMT

FORTH PORTS LIMITED
Navigational Risk Assessment

Forth & Tay - NAABSA Berths

No relevant MRF's since previous review

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score	
				Likelihood	Overall Risk				Likelihood	Overall Risk					
					People	Property	Environment	Business		People	Property	Environment	Business		
1.2	Capsize/Flooding	Human Error Technical Failure Enviromental Conditions	FTNS Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting / Tidal Predictions NAABSA Berth Procedure NAABSA Berth Inspections Survey Programme	2	2	2	4	2	1	5	5	5	5	3.75	Most likely: Vessel takes on water which is contained resulting in no long term damage to the vessel and no injury Worst credible: Vessel capsizes resulting in total loss of vessel and multiple fatalities
1.3	Fire	Human Error Technical Failure Enviromental Conditions	NAABSA Berth Procedures Emergency Procedures Welcome Pack	3	6	9	3	6	1	5	5	5	5	5.5	Most likely: Small fire on board which is quickly and easily extinguished. Worst credible: Uncontrollable fire, total loss of vessel, and loss of life.
1.4	Hull Damage	Human Error Enviromental Conditions	NAABSA Berth Procedures Emergency Procedures Welcome Pack NAABSA Inspections Survey Programme Weather Forecasting / Tidal Predictions & Monitoring Byelaws & General Directions	1	1	2	1	3	1	5	5	5	5	3.375	Most likely: Vessel suffers minor hull damage which can be easily repiaired and no injuries occur. Worst credible: Vessel suffers extensive hull damage resulting in flooding and loss of life

Content Reviewed	Changes Made
General	Causes updated to match with standard causes in definitions
Lack of Containment	Removed
Contact	Removed
Capsize / Flooding	Most Likely - Likelihood and Risks reduced
Fire	Most Likely - Likelihood increased and Property risk reduced
	Worst Case - Likelihood decreased, Environment Risk increased
Hull Damaged	Most Likely - Likelihood decreased, Property and env risk decreased
	Worst Case - Likelihood decreased, all risks increased

FORTH PORTS LIMITED	**Document ID**	**Risk Assessment Team / Date**
	FP PMSC RA (F&T) 06/06	DMM, HMFO, HMFI, HMD, MT&PV / 11th Jan 2013
Risk Assessment - NAABSA Berths	**Review Due**	**Revised By / Date**
	Jul-24	July 2022, MMT

FORTH PORTS LIMITED
Navigational Risk Assessment

Forth & Tay - Diving Operations

No relevant MRFs since previous review

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score	
				Likelihood	Overall Risk				Likelihood	Overall Risk					
					People	Property	Environment	Business		People	Property	Environment	Business		
1.1	Swamping / turbulence / interaction	Human Error Enviromental Conditions	Forth Ports Dive Procedure (Permit) Dive Signals displayed Established Communications FTNS Exclusion Zones Speed Restrictions Notice to Mariners Dive Supervisor Local Monitoring	3	9	6	3	6	2	10	4	2	10	6.25	Most Likely: Passing vessel comes too close or passes at speed which will alarm divers and possibly result in minor injury. Worst Credible: Passing vessel comes too close or passes at speed which results in fatality to diver.
1.2	Contact / Collision	Human Error Enviromental Conditions	Forth Ports Dive Procedure (Permit) Established Communications FTNS Exclusion Zones Notice to Mariners	1	3	2	1	2	1	5	5	3	5	3.25	Most Likely: Vessel makes contact with diver / dive boat resulting in minor injuries. Worst Credible: Vessel makes contact with diver / dive boat resulting in fatalities and loss of dive boat.

Content Reviewed	Changes Made
General	Causes updated to match with standard causes in definitions
Swamping	Most Likely - People, Property and Buisness Risks increased Worst Credible Likelihood and buisness risk increased, Property and Environment Risk increased
Contact	Most Likely - Business Risk increased

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F&T) 7/04	**Risk Assessment Team / Date** HMFI/HMFO/HMD/MM/CHM 03rd Sep 14
Risk Assessment - Diving Operations	**Review Due** Jul-24	**Revised By / Date** July 2022 MMT

FORTH PORTS LIMITED
Navigational Risk Assessment

Forth & Tay - Recreational Events (e.g.swim events)

MRF 068/2018 - Swim Event

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score	
				Likelihood	Overall Risk				Likelihood	Overall Risk					
					People	Property	Environment	Business		People	Property	Environment	Business		
1.1	Collision / contact	Human Error Enviromental Conditions	Event Notification Form Notice to Mariners Exclusion Zones (as considered appropriate) FTNS Planning Meetings (Where appropriate) Appropriate Safety Craft Established Communications Localised monitoring by Event Organisers	2	6	2	2	6	1	5	2	3	5	**3.875**	Most Likely: Contact between participant and other water user resulting in alarm or minor inury. Worst Credible: Contact between participant and other water user resulting in fatality.
1.2	Swamping / interaction / turbulence	Human Error Enviromental Conditions	Event Notification Form Notice to Mariners Exclusion Zones (as considered appropriate) FTNS Planning Meetings (Where appropriate) Appropriate Safety Craft Established Communications Localised monitoring by Event Organisers	2	6	2	2	2	1	5	5	3	5	**3.75**	Most Likely: Passing vessel comes too close or passes at speed causing alarm and possibly result in minor injury. Worst Credible: Passing vessel comes too close or passes at speed which results in falality.

Content Reviewed	Changes Made
General	Causes updated to match with standard causes in definitions
Collision	Most Likely - Property Risk increased Worst Credible - Property and Environment Risk decreased / Buisness risk increased
Swamping	Most Likely - People Risk increased Worst Credible - Property, Environment and business risk increased

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F&T) 8/04	**Risk Assessment Team / Date** HMFI/HMFO/HMD/MM/CHM 03rd Sep 14
Risk Assessment - Recreational Events	**Review Due** Jul-24	**Revised By / Date** July 2022, MMT

FORTH PORTS LIMITED
Navigational Risk Assessment

Forth & Tay - Underwater Cables & Pipelines

No relevant MRFs since previous review

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score	
				Likelihood	Overall Risk				Likelihood	Overall Risk					
					People	Property	Environment	Business		People	Property	Environment	Business		
1.1	Contact	Human Error Technical Failure Enviromental Conditions	FTNS Emergency Procedures (Pipeline Damage Procedure) Pilotage Marine Guidelines & Port Information Byelaws & General Directions Exclusion Zone Survey Programme and Schedule Weather Forecast / Tidal Information & Monitoring Aids to Navigation	2	2	2	2	2	1	2	5	5	5	3.125	Most Likely: Minor contact is made with a pipeline/cable resulting in no significant damage Worst Credible: Pipleine/Cable receives heavy contact resulting in substantial damage causing widespread pollution or major loss of supply from cables
1.2	Fire / Explosion	Human Error Technical Failure Enviromental Conditions	FTNS Emergency Procedures (Pipeline Damage Procedure) Pilotage Marine Guidelines & Port Information Byelaws & General Directions Exclusion Zone Survey Programme and Schedule Weather Forecast / Tidal Information & Monitoring Aids to Navigation	1	1	1	1	1	1	3	5	5	5	2.75	Most Likely: Small fire at production end resulting in minimal impact to pipeline Worst Credible: Major fire/explosion at production end resulting in severe damage to a pipeline and extensive widespread pollution
1.3	Loss of Containment / Power / Communication	Human Error Technical Failure Enviromental Conditions	FTNS Emergency Procedures (Pipeline Damage Procedure) Pilotage Marine Guidelines & Port Information Byelaws & General Directions Exclusion Zone Survey Programme and Schedule Weather Forecast / Tidal Information & Monitoring Aids to Navigation	2	2	2	2	2	1	2	5	5	5	3.125	Most Likely: Minor loss of containment/supply which is rectified quickly and results in no widespread pollution/effects Worst Credible: Major loss of containment resulting in extensive and widespread pollution/loss of powere, data

Content Reviewed	Changes Made
General	Causes updated to match with standard causes in definitions
Pipeline Damage	Removed as similar to other hazards
Contact - changed to Allision	Most Likely - Property and Business risk increased Worst Credible - People risk decreased / Environment risk increased
Fire / Explosion	Most Likely - All risks reduced Worst Credible People Risk Reduced
Loss of Containment	Most Likely All risks reduced Worst Credible People risk reduced / Environment risk increased

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F&T) 9/03	**Risk Assessment Team / Date** CHM/MM 18th Feb 2015
Risk Assessment - Underwater Cables & Pipelines	**Review Due** Jul-24	**Revised By / Date** July 2022, MMT

FORTH PORTS LIMITED
Navigational Risk Assessment

Marine Pollution (Tidal Waters)

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score
				Likelihood	Overall Risk				Likelihood	Overall Risk				
					People	Property	Environment	Business		People	Property	Environment	Business	
1.1	Loss of Containment (oil product)	Human Error Technical Failure	FTNS Bunkering Procedure Byelaws & General Directions Pilotage Survey Programme / Schedule Marine Guidelines & Port Information Emergency Plans - OPRC Towage Guidelines Oil Terminal Guidelines Weather / tidal Forecasting & Monitoring Oil Spill Prediction Software Notice to Mariners	5	5	5	5	5	1	3	5	5	5	4.75

POLREP: 05/2022 (Leaking Gangway Seal) 08/2021 (Cruise Tender)07/2021 (Oil sheen) 05/21 (Oil Sheen) 02/2021 (Cruise tender) Limekilns (19/2/19), N. Queensferry (12/8/19), Bridges (09/3/20), Pittenweem(15.11.20),

Most Likely: Minor pollution consisting of a light product which has no adverse effects on the marine environment and dissipates naturally

Worst Credible: Major widespread pollution consisting of a heavy product which results in extensive adverse effects to the marine environment/wildlife requiring significant resources to tackle

Content Reviewed	Changes Made
General Loss of Containment	Causes updated to match with standard causes in definitions Most Likely EnvironmentRisk Decreased

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F&T) 10/03	**Risk Assessment Team / Date** CHM, MM, DMM, HMD / 12th August 2015
Risk Assessment - Marine Pollution (Tidal Waters)	**Review Due** Jul-24	**Revised By / Date** July 2022, MMT

FORTH PORTS LIMITED
Navigational Risk Assessment

Marine Pollution (Enclosed Dock)

Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score
				Likelihood	Overall Risk				Likelihood	Overall Risk				
					People	Property	Environment	Business		People	Property	Environment	Business	
1.1	Loss of Containment (oil product)	Human Error Technical Failure	FTNS Bunkering Procedure Byelaws & General Directions Pilotage Survey Programme / Schedule Marine Guidelines & Port Information Emergency Plans - OPRC Towage Guidelines Oil Terminal Guidelines Notice to Mariners Lock Gates	5	5	5	5	5	1	5	5	5	5	**5**

01/2021 (Oil Sheen) 03/2021 (Oil Sheen) 04/2021 (Black Soot)06/2021 (Oil sheen) Leith (19/2/19) (1/9/19), (07.04.20), (21.10.20) (27.1.21) Gmth - (17.6.20), (21.7.20), (9.12.20), (15.1.21)(18.3.21) Burntisland - (27.1.21)

Most Likely: Small scale pollution consisting of a light product which is contained within a dock and dissipates naturally

Worst Credible: Major pollution consisting of a heavy product which cannot be contained with the dock and results in extensive damage to the marine environment requiring extensive resources to tackle

Content Reviewed	Changes Made
General	Causes updated to match with standard causes in definitions

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F) 11/03	**Risk Assessment Team / Date** CHM, MM, DMM, HMD / 12th August 2015
Risk Assessment - Marine Pollution (Enclosed Docks)	**Review Due** Jul-24	**Revised By / Date** July 2022, MMT