LIST OF PMSC RISK ASSESSMENTS

Risk Assessment Number	Risk Assessment Name
FP PMSC RA (F)1	Forth River Passage - Standard Vessel
FP PMSC RA (F)2	Port of Leith - Arrival / Sailing Leith Approach Buoy to Berth
FP PMSC RA (F)3	Port of Rosyth - Arrival/Sailing No.1 Rosyth Channel Buoy to Berth
FP PMSC RA (F)4	Port of Methil - Arrival/Sailing Methil Pilot Station to Berth
FP PMSC RA (F)5	Methil Energy Park - Arrival/Sailing Methil Pilot Station to Berth
FP PMSC RA (F)6	Port of Kirkcaldy - Arrival/Sailing Close Approaches of Dock to Berth
FP PMSC RA (F)7	Port of Burntisland - Arrival/Sailing Close Approaches of Dock to Berth
FP PMSC RA (F)8	Inverkeithing - Arrival/Sailing Saint Davids Beacon to Berth
FP PMSC RA (F)9	Braefoot Jetty - Arrival/Sailing Eastern Limits to Berth
FP PMSC RA (F)10	Port of Grangemouth - Arrival/Sailing Hen & Chickens to Berth
FP PMSC RA (F)11	Crombie Berthing/Sailing
FP PMSC RA (F)12	Hound Point - Arrival/Sailing Eastern Limits to Berth
FP PMSC RA (F)13	Cruise Vessels at Anchorage
FP PMSC RA (F)14	Forth - River Transit and Berthings/Sailings small comerical craft (tugs, workboats etc.)
FP PMSC RA (F)15	Cruise Vessel Tender Operations (Hound Point / Newhaven)
FP PMSC RA (T)1	Tay River Passage - Standard Vessels
FP PMSC RA (T)2	Port of Dundee - Arrival/Sailing Port Approaches to River Berth
FP PMSC RA (T)4	Tay Large Vessel Movement - Arrival/Sailing
FP PMSC RA (T)5	Port of Dundee - Oil Rigs - Arrival/Sailing Port Limits to Berth
FP PMSC RA (T)6	Tay - River Transit and Berthings/Sailings small comerical craft (tugs, workboats etc.)
FP PMSC RA (F&T)1	Forth & Tay - Vessel at Anchor
FP PMSC RA (F&T)2	Forth & Tay - Towage Operations
FP PMSC RA (F&T)3	Forth & Tay - Immobilised Vessels
FP PMSC RA (F&T)4	Forth & Tay - Bunkering Operations in Dock
FP PMSC RA (F&T)5	Forth & Tay - Bunkering Operations in Tidal Waters
FP PMSC RA (F&T)6	Forth & Tay - NAABSA Berths
FP PMSC RA (F&T)7	Forth & Tay - Diving Operations
FP PMSC RA (F&T)8	Forth & Tay - Recreational Events
FP PMSC RA (F&T)9	Forth & Tay - Underwater Cables & Pipelines
FP PMSC RA (F&T)10	Forth & Tay - Marine Pollution (Tidal Waters)
FP PMSC RA (F&T)11	Forth & Tay - Marine Pollution (Enclosed Dock)

PMSC RISK ASSESSMENT - RISK RANKING

Rank	HazardID	Hazard What can go wrong (Event leading to a consequence)	Hazard Scoring
3	FP PMSC RA (F&T) 02 - 1.3 Contact	Contact	7.75
4	FP PMSC RA (F) 10 - 1.2 Contact	Contact	7.375
14	FP PMSC RA (F) 12 - 1.2 Contact	Contact	6.5
1	FP PMSC RA (F&T) 01 - 1.1 Dragging Anchor	Dragging Anchor	7.875
8	FP PMSC RA (F&T) 06 - 1.4 Hull Damage	Hull Damage	6.875
6	FP PMSC RA (T) 01 - 1.3 Grounding	Grounding	7.25
7	FP PMSC RA (T) 02 - 1.2 Contact	Contact	7
8	FP PMSC RA (T) 01 - 1.4 Sinking / Capsize	Sinking / Capsize	6.875
8	FP PMSC RA (F) 07 - 1.1 Collision	Collision	6.875
11	FP PMSC RA (F) 10 - 1.5 Fire / Explosion	Fire / Explosion	6.75
11	FP PMSC RA (F) 09 - 1.2 Contact	Contact	6.75
13	FP PMSC RA (T) 02 - 1.5 Fire / Explosion	Fire / Explosion	6.625
14	FP PMSC RA (F) 15 - 1.5 Fire / Explosion	Fire / Explosion	6.5
16	FP PMSC RA (F&T) 02 - 1.1 Capsizing / Flooding	Capsizing / Flooding	6.375
16	FP PMSC RA (F) 04 - 1.2 Contact	Contact	6.375
16	FP PMSC RA (F) 02 - 1.1 Collision	Collision	6.375
19	FP PMSC RA (F) 02 - 1.3 Grounding	Grounding	6.25
19	FP PMSC RA (F) 03 - 1.3 Grounding	Grounding	6.25
19	FP PMSC RA (F&T) 06 - 1.3 Fire	Dundee - Feb 2018	6.25
23	FP PMSC RA (F) 07 - 1.2 Contact	Contact	6.125
23	FP PMSC RA (F&T) 05 - 1.1 Collision with bunker vessel and receiving vessel	vessel	6.125
1	FP PMSC RA (F) 02 - 1.2 Contact	Contact	7.875
25	FP PMSC RA (F) 11 - 1.2 Contact	Contact	6
25	FP PMSC RA (F) 05 - 1.2 Contact	Contact	6
25	FP PMSC RA (T) 04 - 1.5 Fire / Explosion	Fire / Explosion	6
29	FP PMSC RA (F) 05 - 1.3 Grounding	Grounding	5.875
29	FP PMSC RA (F&T) 02 - 1.2 Fire	Fire	5.875
29	FP PMSC RA (F) 12 - 1.5 Fire / Explosion	Fire / Explosion	5.875
32	FP PMSC RA (F) 10 - 1.3 Grounding	Grounding	5.75
32	FP PMSC RA (F) 14 - 1.2 Contact	Contact	5.75
32	FP PMSC RA (F) 16 - 1.2 Contact	Contact	5.75
32	FP PMSC RA (F) 15 - 1.4 Sinking / Capsize	Sinking / Capsize	5.75
32	FP PMSC RA (F) 07 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	5.75
25	FP PMSC RA (F&T) 01 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	6
37	FP PMSC RA (F) 07 - 1.3 Grounding	Grounding	5.625
39	FP PMSC RA (F) 03 - 1.2 Contact	Contact	5.5
39	FP PMSC RA (F) 15 - 1.3 Grounding	Grounding	5.5
19	FP PMSC RA (F) 13 - 1.3 Grounding	Grounding	6.25
39	FP PMSC RA (F) 13 - 1.5 Fire / Explosion	Fire / Explosion	5.5
39	FP PMSC RA (T) 06 - 1.1 Collision	Collision	5.5
39	FP PMSC RA (F&T) 05 - 1.3 Loss of Containment (Oil Products)	Loss of Containment (Oil Product)	5.5
45	FP PMSC RA (F) 14 - 1.5 Fire / Explosion	Fire / Explosion	5.375
45	FP PMSC RA (F) 14 - 1.1 Collision	Collision	5.375
45	FP PMSC RA (F) 16 - 1.1 Collision	Collision	5.375
45	FP PMSC RA (F) 16 - 1.5 Fire	Fire	5.375
45	FP PMSC RA (F&T) 10 - 1.1 Loss of Containment (Oil Product)	Loss of Containment (Oil Product)	5.375
50	FP PMSC RA (F) 04 - 1.1 Collision (Fishing/Leisure Vessel)	Collision (Fishing/Leisure Vessel)	5.25
50	FP PMSC RA (F) 06 - 1.1 Collision (Fishing/Leisure Vessel)	Collision (Fishing/Leisure Vessel)	5.25
50	FP PMSC RA (F) 03 - 1.1 Collision	Collision	5.25
50	FP PMSC RA (F) 06 - 1.3 Grounding Refer Also to: FP PMSSC RA (F&T)7	Grounding	5.25
50	FP PMSC RA (F) 13 - 1.2 Contact	Contact	5.25
50	FP PMSC RA (T) 06 - 1.2 Contact	Contact	5.25
50	FP PMSC RA (F&T) 01 - 1.5 Fire / Explosion	Fire / Explosion	5.25
39	FP PMSC RA (F) 10 - 1.1 Collision	Collision	5.5
59	FP PMSC RA (F) 05 - 1.1 Collision	Collision	5
59	FP PMSC RA (F) 06 - 1.2 Contact	Contact	5
59	FP PMSC RA (F) 09 - 1.5 Fire / Explosion	Fire / Explosion	5
59	FP PMSC RA (F) 11 - 1.1 Collision	Collsion	5
59	FP PMSC RA (F) 13 - 1.4 Sinking / Capsize	Sinking / Capsize	5
59	FP PMSC RA (T) 05 - 1.5 Fire / Explosion	Fire / Explosion	5
59	FP PMSC RA (F&T) 01 - 1.2 Contact	Contact	5
59	FP PMSC RA (F) 11 - 1.5 Fire / Explosion	Fire / Explosion	5
59	FP PMSC RA (T) 04 - 1.4 Sinking / Capsize	Sinking / Capsize	5
69	FP PMSC RA (F&T) 01 - 1.4 Sinking / Capsize	Sinking / Capsize	4.875
69	FP PMSC RA (F) 15 - 1.2 Contact	Contact	4.875
4	FP PMSC RA (F) 08 - 1.2 Contact	Contact	7.375
58	FP PMSC RA (T) 01 - 1.5 Fire / Explosion	Fire / Explosion	5.125
71	FP PMSC RA (F) 09 - 1.1 Collision	Collision	4.75
114	FP PMSC RA (F&T) 04 - 1.3 Loss of Containment (Oil Products)	Loss of Containment (Oil Product)	4
71	FP PMSC RA (F&T) 09 - 1.4 Loss of Containment / Power / Communication	Loss of Containment / Power / Communication	4.75
71	FP PMSC RA (T) 06 - 1.4 Sinking / Capsize	Sinking / Capsize	4.75
71	FP PMSC RA (T) 04 - 1.2 Contact	Contact	4.75
75	FP PMSC RA (F) 02 - 1.7 Loss of Dock Level (Lock Gate Operations)	Loss of Dock Level (Lock Gate Operations)	4.625
77	FP PMSC RA (F) 08 - 1.1 Collision (Fishing/Leisure Vessel)	Collision (Fishing/Leisure Vessel)	4.5
77	FP PMSC RA (F) 08 - 1.3 Grounding Refer Also to: FP PMSSC RA (F&T)7	Grounding	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) 09 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	4.5
77	FP PMSC RA (F) 10 - 1.4 Sinking / Capsize	Sinking / Capsize	4.5
77	FP PMSC RA (F) 12 - 1.4 Sinking / Capsize	Sinking / Capsize	4.5
77	FP PMSC RA (F) 12 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	4.5

154	FP PMSC RA (T) 06 - 1.5 Fire / Explosion	Fire / Explosion	3.125
37	FP PMSC RA (F&T) 02 - 1.5 Grounding	Grounding	5.625
77	FP PMSC RA (F&T) 06 - 1.2 Capsize / Flooding	Capsizing / Flooding	4.5
75	FP PMSC RA (F&T) 09 - 1.3 Fire / Explosion	Fire / Explosion	4.625
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
89	FP PMSC RA (T) 02 - 1.4 Sinking / Capsize	Sinking / Capsize	4.375
89	FP PMSC RA (F) 14 - 1.4 Sinking / Capsize	Sinking / Capsize	4.375
89	FP PMSC RA (F) 16 - 1.4 Sinking / Capsize	Sinking / Capsize	4.375
89	FP PMSC RA (F) 02 - 1.4 Sinking / Capsize	Sinking / Capsize	4.375
89	FP PMSC RA (F) 03 - 1.4 Sinking / Capsize	Sinking / Capsize	4.375
89	FP PMSC RA (F) 05 - 1.4 Sinking / Capsize	Sinking / Capsize	4.375
110	FP PMSC RA (T) 05 - 1.4 Sinking / Capsize	Sinking / Capsize	4.125
89	FP PMSC RA (F&T) 05 - 1.4 Fire/Explosion	Fire / Explosion	4.375
89	FP PMSC RA (F&T) 06 - 1.1 Contact	Contact	4.375
89	FP PMSC RA (F&T) 09 - 1.1 Contact	Contact	4.375
89	FP PMSC RA (F&T) 10 - 1.1 Loss of Containment (Oil Product)	Loss of Containment (Oil Product)	4.375
89	FP PMSC RA (F) 15 - 1.6 Loss of Containment (Oil Products)	Loss of Containment (Oil Product)	4.375
89	FP PMSC RA (F) 08 - 1.5 Fire / Explosion	Fire / Explosion	4.375
101	FP PMSC RA (F) 04 - 1.3 Grounding	Grounding	4.25
101	FP PMSC RA (F&T) 04 - 1.1 Collision with bunker vessel and receiving vessel	vessel	4.25
101	FP PMSC RA (F) 14 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	4.25
101	FP PMSC RA (F) 16 - 1.6 Loss of Containment (Oil Products)	Loss of Containment (Oil Product)	4.25
101	FP PMSC RA (F) 11 - 1.4 Sinking / Capsize	Sinking / Capsize	4.25
101	FP PMSC RA (F) 12 - 1.1 Collision	Collision	4.25
59	FP PMSC RA (F&T) 01 - 1.3 Grounding	Grounding	5
101	FP PMSC RA (F&T) 03 - 1.2 Grounding Refer Also to FP PMSC RA (F&T) 1	Grounding	4.25
101	FP PMSC RA (F&T) 04 - 1.4 Fire/Explosion	Fire / Explosion	4.25
101	FP PMSC RA (F&T) 02 - 1.4 Collision	Collision	4.25
150	FP PMSC RA (T) 04 - 1.7 Allision	Allision	3.375
110	FP PMSC RA (F&T) 03 - 1.1 Contact Refer Also to FP PMSC RA (F&T) 1	Contact	4.125
110	FP PMSC RA (F) 15 - 1.1 Collision	Collision	4.125
114	FP PMSC RA (F) 07 - 1.7 Loss of Dock Level (Lock Gate Operations)	Loss of Dock Level (Lock Gate Operations)	4
114	FP PMSC RA (F) 04 - 1.7 Loss of Dock Level (Lock Gate Operations)	Loss of Dock Level (Lock Gate Operations)	4
114	FP PMSC RA (F) 01 - 1.2 Contact	Contact	4
114	FP PMSC RA (F) 10 - 1.7 Loss of Dock Level	Loss of Dock Level	4
114	FP PMSC RA (F) 11 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	4
114	FP PMSC RA (F) 12 - 1.3 Grounding	Grounding	4
114	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
114	FP PMSC RA (F&T) 09 - 1.2 Pipeline / Cable Damage	Pipeline / Cable Damange	4
114	FP PMSC RA (F) 14 - 1.3 Grounding	Grounding	4
114	FP PMSC RA (F) 16 - 1.3 Grounding	Grounding	4
125	FP PMSC RA (F&T) 04 - 1.2 Contact	Contact	3.875
125	FP PMSC RA (F&T) 05 - 1.2 Contact	Contact	3.875
125	FP PMSC RA (F) 01 - 1.5 Fire / Explosion	Fire / Explosion	3.875
125	FP PMSC RA (F) 02 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3.875
125	FP PMSC RA (F) 03 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3.875
125	FP PMSC RA (F) 09 - 1.3 Grounding	Grounding	3.875
125	FP PMSC RA (F&T) 06 - 1.5 Loss of Containment	Loss of Containment	3.875
125	FP PMSC RA (F) 10 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3.875
50	FP PMSC RA (T) 04 - 1.1 Collision	Collision	5.25
125	FP PMSC RA (T) 04 - 1.6 Loss of Containment (Oil Products)	Loss of Containment (Oil Products)	3.875
136	FP PMSC RA (T) 02 - 1.1 Collision	Collision	3.75
125	FP PMSC RA (T) 05 - 1.1 Collision	Collision	3.875
136	FP PMSC RA (T) 02 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3.75
136	FP PMSC RA (F) 07 - 1.5 Fire / Explosion	Fire / Explosion	3.75
136	FP PMSC RA (T) 04 - 1.3 Grounding	Grounding	3.75
141	FP PMSC RA (F) 01 - 1.1 Collision	Collision	3.625
141	FP PMSC RA (T) 01 - 1.1 Collision	Collision	3.625
141	FP PMSC RA (F) 04 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3.625
145	FP PMSC RA (F) 01 - 1.3 Grounding	Grounding	3.5
145	FP PMSC RA (F) 04 - 1.4 Sinking / Capsize	Sinking / Capsize	3.5
145	FP PMSC RA (F) 06 - 1.4 Sinking / Capsize	Sinking / Capsize	3.5
145	FP PMSC RA (F) 08 - 1.4 Sinking / Capsize	Sinking / Capsize	3.5
145	FP PMSC RA (T) 02 - 1.3 Grounding	Grounding	3.5
150	FP PMSC RA (T) 01 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3.375
152	FP PMSC RA (F) 02 - 1.5 Fire / Explosion	Fire / Explosion	3.25
152	FP PMSC RA (F) 05 - 1.5 Fire / Explosion	Fire / Explosion	3.25
154	FP PMSC RA (F) 05 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3.125
154	FP PMSC RA (F) 03 - 1.5 Fire / Explosion	Fire / Explosion	3.125
154	FP PMSC RA (F) 04 - 1.5 Fire / Explosion	Fire / Explosion	3.125
154	FP PMSC RA (F) 06 - 1.5 Fire / Explosion	Fire / Explosion	3.125
154	FP PMSC RA (F) 11 - 1.3 Grounding	Grounding	3.125
110	FP PMSC RA (T) 01 - 1.2 Contact	Contact	4.125
154	FP PMSC RA (T) 05 - 1.3 Grounding	Grounding	3.125
154	FP PMSC RA (F&T) 07 - 1.2 - Collision / contact	Collision / Contact	3.125
136	FP PMSC RA (F&T) 07 - 1.1 - Swamping / turbulence / interaction	Swamping / interaction / turbulence	3.75
163	FP PMSC RA (F&T) 02 - 1.6 Man Overboard / Personal Injury	Man Overboard / Personal Injury	3
163	FP PMSC RA (F) 06 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3
163	FP PMSC RA (F) 08 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3
154	FP PMSC RA (T) 05 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3.125
141	FP PMSC RA (T) 06 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3.625
125	FP PMSC RA (F&T) 08 - 1.1 - Collision / contact	Collision / Contact	3.875
163	FP PMSC RA (T) 06 - 1.3 Grounding	Grounding	3
167	FP PMSC RA (F&T) 08 - 1.2 - Swamping / interaction / turbulence	Swamping / interaction / turbulence	2.625

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&T) 01 - 1.1 Dragging Anchor	Dragging Anchor	5	10	5	5	8	10	10	10	7.875
59	FP PMSC RA (F&T) 01 - 1.2 Contact	Contact	4	6	4	6	5	5	5	5	5
59	FP PMSC RA (F&T) 01 - 1.3 Grounding	Grounding	4	6	4	6	5	5	5	5	5
69	FP PMSC RA (F&T) 01 - 1.4 Sinking / Capsize	Sinking / Capsize	4	5	5	5	5	5	5	5	4.875
50	FP PMSC RA (F&T) 01 - 1.5 Fire / Explosion	Fire / Explosion	6	6	6	4	5	5	5	5	5.25
25	FP PMSC RA (F&T) 01 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	6	6	9	9	3	5	5	5	6
16	FP PMSC RA (F&T) 02 - 1.1 Capsizing / Flooding	Capsizing / Flooding	8	8	8	8	5	5	4	5	6.375
29	FP PMSC RA (F&T) 02 - 1.2 Fire	Fire	3	3	3	6	8	8	8	8	5.875
3	FP PMSC RA (F&T) 02 - 1.3 Contact	Contact	5	10	5	10	6	8	8	10	7.75
101	FP PMSC RA (F&T) 02 - 1.4 Collision	Collision	3	6	6	3	4	4	4	4	4.25
37	FP PMSC RA (F&T) 02 - 1.5 Grounding	Grounding	6	6	6	9	4	5	4	5	5.625
163	FP PMSC RA (F&T) 02 - 1.6 Man Overboard / Personal Injury	Man Overboard / Personal Injury	4	2	2	4	5	1	1	5	3
101	FP PMSC RA (F&T) 03 - 1.1 Contact Refer Also to FP PMSC RA (F&T) 1	Contact	2	6	6	4	3	5	4	4	4.25
110	FP PMSC RA (F&T) 03 - 1.2 Grounding Refer Also to FP PMSC RA (F&T) 1	Grounding	4	6	4	4	3	4	4	4	4.125
101	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	4	5	4	5	4.25
125	FP PMSC RA (F&T) 04 - 1.2 Contact	Contact	3	6	3	3	3	5	4	4	3.875
114	FP PMSC RA (F&T) 04 - 1.3 Loss of Containment (Oil Products)	Loss of Containment (Oil Product)	3	3	6	6	3	3	4	4	4
101	FP PMSC RA (F&T) 04 - 1.4 Fire/Explosion	Fire / Explosion	4	4	3	4	5	5	4	5	4.25
23	FP PMSC RA (F&T) 05 - 1.1 Collision with bunker vessel and receiving vessel	Collision with bunker vessel and receiving vessel	9	9	6	6	4	5	5	5	6.125
125	FP PMSC RA (F&T) 05 - 1.2 Contact	Contact	3	6	3	3	3	5	4	4	3.875
39	FP PMSC RA (F&T) 05 - 1.3 Loss of Containment (Oil Products)	Loss of Containment (Oil Product)	6	6	9	9	3	3	4	4	5.5
89	FP PMSC RA (F&T) 05 - 1.4 Fire/Explosion	Fire / Explosion	4	4	3	4	5	5	5	5	4.375
89	FP PMSC RA (F&T) 06 - 1.1 Contact	Contact	6	3	3	6	4	5	3	5	4.375
77	FP PMSC RA (F&T) 06 - 1.2 Capsize / Flooding	Capsizing / Flooding	3	5	3	5	5	5	5	5	4.5
19	FP PMSC RA (F&T) 06 - 1.3 Fire	Fire	4	4	2	4	10	10	6	10	6.25
8	FP PMSC RA (F&T) 06 - 1.4 Hull Damage	Hull Damage	3	9	6	9	4	8	8	8	6.875
125	FP PMSC RA (F&T) 06 - 1.5 Loss of Containment	Loss of Containment	2	4	6	6	2	3	4	4	3.875
136	FP PMSC RA (F&T) 07 - 1.1 - Swamping / turbulence / interaction	Swamping / interaction / turbulence	6	3	3	3	5	4	2	4	3.75
154	FP PMSC RA (F&T) 07 - 1.2 - Collision / contact	Collision / Contact	3	2	1	1	5	5	3	5	3.125
125	FP PMSC RA (F&T) 08 - 1.1 - Collision / contact	Collision / Contact	6	4	2	6	5	3	1	4	3.875
167	FP PMSC RA (F&T) 08 - 1.2 - Swamping / interaction / turbulence	Swamping / interaction / turbulence	4	2	2	2	5	1	1	4	2.625
89	FP PMSC RA (F&T) 09 - 1.1 Contact	Contact	4	6	2	6	3	5	4	5	4.375
114	FP PMSC RA (F&T) 09 - 1.2 Pipeline / Cable Damage	Pipeline / Cable Damange	2	6	2	6	2	5	4	5	4
75	FP PMSC RA (F&T) 09 - 1.3 Fire / Explosion	Fire / Explosion	4	5	4	5	4	5	5	5	4.625
71	FP PMSC RA (F&T) 09 - 1.4 Loss of Containment / Power / Communication	Loss of Containment / Power / Communication	4	6	4	6	4	5	4	5	4.75
45	FP PMSC RA (F&T) 10 - 1.1 Loss of Containment (Oil Product)	Loss of Containment (Oil Product)	5	5	10	5	3	5	5	5	5.375
89	FP PMSC RA (F&T) 11 - 1.1 Loss of Containment (Oil Product)	Loss of Containment (Oil Product)	5	5	5	5	3	4	4	4	4.375
141	FP PMSC RA (F) 01 - 1.1 Collision	Collision	2	4	2	2	5	5	5	4	3.625
114	FP PMSC RA (F) 01 - 1.2 Contact	Contact	2	6	4	2	5	5	4	4	4
145	FP PMSC RA (F) 01 - 1.3 Grounding	Grounding	1	3	2	3	5	5	5	4	3.5
77	FP PMSC RA (F) 01 - 1.4 Sinking / Capsize	Sinking / Capsize	4	5	4	4	5	5	5	4	4.5
125	FP PMSC RA (F) 01 - 1.5 Fire / Explosion	Fire / Explosion	3	4	3	3	5	5	3	5	3.875
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
16	FP PMSC RA (F) 02 - 1.1 Collision	Collision	6	9	6	6	6	6	6	6	6.375
1	FP PMSC RA (F) 02 - 1.2 Contact	Contact	5	10	10	10	6	8	6	8	7.875
19	FP PMSC RA (F) 02 - 1.3 Grounding	Grounding	3	6	6	3	6	8	8	10	6.25
89	FP PMSC RA (F) 02 - 1.4 Sinking / Capsize	Sinking / Capsize	4	4	5	4	4	4	5	5	4.375
152	FP PMSC RA (F) 02 - 1.5 Fire / Explosion	Fire / Explosion	3	3	3	2	4	4	3	4	3.25
125	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
75	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	5	5	4	5	4.625
50	FP PMSC RA (F) 03 - 1.1 Collision	Collision	4	6	4	4	6	6	6	6	5.25
39	FP PMSC RA (F) 03 - 1.2 Contact	Contact	5	5	5	5	6	6	6	6	5.5
19	FP PMSC RA (F) 03 - 1.3 Grounding	Grounding	3	6	6	3	6	8	8	10	6.25
89	FP PMSC RA (F) 03 - 1.4 Sinking / Capsize	Sinking / Capsize	4	4	5	4	4	4	5	5	4.375
154	FP PMSC RA (F) 03 - 1.5 Fire / Explosion	Fire / Explosion	3	3	3	2	4	4	3	3	3.125
125	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
50	FP PMSC RA (F) 04 - 1.1 Collision (Fishing/Leisure Vessel)	Collision (Fishing/Leisure Vessel)	4	4	2	4	10	6	6	6	5.25
16	FP PMSC RA (F) 04 - 1.2 Contact	Contact	5	10	5	5	6	8	6	6	6.375
101	FP PMSC RA (F) 04 - 1.3 Grounding	Grounding	2	4	4	2	4	6	6	6	4.25
145	FP PMSC RA (F) 04 - 1.4 Sinking / Capsize	Sinking / Capsize	4	3	2	3	5	3	4	4	3.5
154	FP PMSC RA (F) 04 - 1.5 Fire / Explosion	Fire / Explosion	3	3	3	2	4	4	3	3	3.125
141	FP PMSC RA (F) 04 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3	3	6	6	2	3	3	3	3.625
114	FP PMSC RA (F) 04 - 1.7 Loss of Dock Level (Lock Gate Operations)	Loss of Dock Level (Lock Gate Operations)	3	3	3	3	2	6	6	6	4
59	FP PMSC RA (F) 05 - 1.1 Collision	Collision	4	4	4	4	6	6	6	6	5
25	FP PMSC RA (F) 05 - 1.2 Contact	Contact	8	8	4	4	6	6	6	6	6
29	FP PMSC RA (F) 05 - 1.3 Grounding	Grounding	3	6	6	6	6	6	6	8	5.875
89	FP PMSC RA (F) 05 - 1.4 Sinking / Capsize	Sinking / Capsize	4	4	5	4	4	4	5	5	4.375
152	FP PMSC RA (F) 05 - 1.5 Fire / Explosion	Fire / Explosion	4	4	2	2	4	4	3	3	3.25
154	FP PMSC RA (F) 05 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	2	4	4	4	2	3	3	3	3.125
50	FP PMSC RA (F) 06 - 1.1 Collision (Fishing/Leisure Vessel)	Collision (Fishing/Leisure Vessel)	4	2	4	2	6	6	6	5.25	5.25
59	FP PMSC RA (F) 06 - 1.2 Contact	Contact	4	4	4	2	6	6	6	5	5
50	FP PMSC RA (F) 06 - 1.3 Grounding Refer Also to: FP PMSSC RA (F&T)7	Grounding	4	4	2	2	8	8	8	5.25	5.25
145	FP PMSC RA (F) 06 - 1.4 Sinking / Capsize	Sinking / Capsize	3	2	3	1	3	4	4	3.5	3.5
154	FP PMSC RA (F) 06 - 1.5 Fire / Explosion	Fire / Explosion	3	3	2	1	4	4	3	3	3.125
163	FP PMSC RA (F) 06 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	2	2	4	1	3	3	4	3	3
8	FP PMSC RA (F) 07 - 1.1 Collision	Collision	3	9	6	6	8	8	6	8	6.875
23	FP PMSC RA (F) 07 - 1.2 Contact	Contact	5	10	5	5	4	8	6	6	6.125
37	FP PMSC RA (F) 07 - 1.3 Grounding	Grounding	3	6	6	6	6	6	6	6	5.625
77	FP PMSC RA (F) 07 - 1.4 Sinking / Capsize	Sinking / Capsize	4	6	4	6	5	4	3	4	4.5
136	FP PMSC RA (F) 07 - 1.5 Fire / Explosion	Fire / Explosion	4	4	4	4	4	4	3	3	3.75
32	FP PMSC RA (F) 07 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	4	4	8	8	4	6	6	6	5.75
114	FP PMSC RA (F) 07 - 1.7 Loss of Dock Level (Lock Gate Operations)	Loss of Dock Level (Lock Gate Operations)	3	3	3	3	2	6	6	6	4
77	FP PMSC RA (F) 08 - 1.1 Collision (Fishing/Leisure Vessel)	Collision (Fishing/Leisure Vessel)	4	6	4	4	5	5	4	4	4.5
4	FP PMSC RA (F) 08 - 1.2 Contact	Contact	6	9	9	9	6	8	6	6	7.375
77	FP PMSC RA (F) 08 - 1.3 Grounding Refer Also to: FP PMSSC RA (F&T)7	Grounding	2	4	4	2	4	6	6	8	4.5
145	FP PMSC RA (F) 08 - 1.4 Sinking / Capsize	Sinking / Capsize	4	3	2	3	5	3	4	4	3.5
89	FP PMSC RA (F) 08 - 1.5 Fire / Explosion	Fire / Explosion	6	6	4	4	4	4	3	4	4.375
163	FP PMSC RA (F) 08 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	2	2	4	4	2	3	3	4	3
71	FP PMSC RA (F) 09 - 1.1 Collision	Collision	6	6	2	4	5	5	5	5	4.75
11	FP PMSC RA (F) 09 - 1.2 Contact	Contact	3	6	3	6	6	10	10	10	6.75
125	FP PMSC RA (F) 09 - 1.3 Grounding	Grounding	2	6	2	6	1	5	4	5	3.875
77	FP PMSC RA (F) 09 - 1.4 Sinking / Capsize	Sinking / Capsize	3	5	5	5	3	5	5	5	4.5

59	FP PMSC RA (F) 09 - 1.5 Fire / Explosion	Fire / Explosion	6	6	2	6	5	5	5	5	5
77	FP PMSC RA (F) 09 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	4	4	6	6	3	3	5	5	4.5
39	FP PMSC RA (F) 10 - 1.1 Collision	Collision	6	6	6	6	5	5	5	5	5.5
4	FP PMSC RA (F) 10 - 1.2 Contact	Contact	5	10	5	5	6	10	8	10	7.375
32	FP PMSC RA (F) 10 - 1.3 Grounding	Grounding	3	6	3	6	2	10	6	10	5.75
77	FP PMSC RA (F) 10 - 1.4 Sinking / Capsize	Sinking / Capsize	4	3	4	5	5	5	5	5	4.5
11	FP PMSC RA (F) 10 - 1.5 Fire / Explosion	Fire / Explosion	4	4	4	4	10	10	8	10	6.75
125	FP PMSC RA (F) 10 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3	3	6	3	3	3	5	5	3.875
114	FP PMSC RA (F) 10 - 1.7 Loss of Dock Level	Loss of Dock Level	4	4	4	4	3	5	3	5	4
59	FP PMSC RA (F) 11 - 1.1 Collision	Collsion	4	6	6	6	5	5	4	4	5
25	FP PMSC RA (F) 11 - 1.2 Contact	Contact	6	6	3	3	6	8	8	8	6
154	FP PMSC RA (F) 11 - 1.3 Grounding	Grounding	2	4	2	2	3	4	4	4	3.125
101	FP PMSC RA (F) 11 - 1.4 Sinking / Capsize	Sinking / Capsize	4	5	3	5	4	5	3	5	4.25
59	FP PMSC RA (F) 11 - 1.5 Fire / Explosion	Fire / Explosion	6	6	3	6	5	5	4	5	5
114	FP PMSC RA (F) 11 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	2	4	6	6	3	3	4	4	4
101	FP PMSC RA (F) 12 - 1.1 Collision	Collision	2	6	2	6	3	5	5	5	4.25
14	FP PMSC RA (F) 12 - 1.2 Contact	Contact	3	6	3	6	6	10	8	10	6.5
114	FP PMSC RA (F) 12 - 1.3 Grounding	Grounding	2	8	2	6	1	5	3	5	4
77	FP PMSC RA (F) 12 - 1.4 Sinking / Capsize	Sinking / Capsize	3	5	5	5	3	5	5	5	4.5
29	FP PMSC RA (F) 12 - 1.5 Fire / Explosion	Fire / Explosion	6	9	3	9	5	5	5	5	5.875
77	FP PMSC RA (F) 12 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	4	4	6	6	3	3	5	5	4.5
50	FP PMSC RA (F) 13 - 1.2 Contact	Contact	6	6	4	6	5	5	5	5	5.25
19	FP PMSC RA (F) 13 - 1.3 Grounding	Grounding	6	9	6	9	5	5	5	5	6.25
59	FP PMSC RA (F) 13 - 1.4 Sinking / Capsize	Sinking / Capsize	5	5	5	5	5	5	5	5	5
39	FP PMSC RA (F) 13 - 1.5 Fire / Explosion	Fire / Explosion	6	6	6	6	5	5	5	5	5.5
114	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	6	6	3	2	4	4	4	4
45	FP PMSC RA (F) 14 - 1.1 Collision	Collision	6	3	3	3	8	8	4	8	5.375
32	FP PMSC RA (F) 14 - 1.2 Contact	Contact	5	5	5	5	8	8	4	6	5.75
114	FP PMSC RA (F) 14 - 1.3 Grounding	Grounding	4	4	4	4	4	4	4	4	4
89	FP PMSC RA (F) 14 - 1.4 Sinking / Capsize	Sinking / Capsize	5	5	2	5	5	5	3	5	4.375
45	FP PMSC RA (F) 14 - 1.5 Fire / Explosion	Fire / Explosion	3	3	3	6	8	8	4	8	5.375
101	FP PMSC RA (F) 14 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	3	3	3	3	6	6	6	4	4.25
110	FP PMSC RA (F) 15 - 1.1 Collision	Collision	4	6	4	4	4	4	3	4	4.125
69	FP PMSC RA (F) 15 - 1.2 Contact	Contact	5	10	5	5	4	4	3	3	4.875
39	FP PMSC RA (F) 15 - 1.3 Grounding	Grounding	5	10	5	10	3	4	3	4	5.5
32	FP PMSC RA (F) 15 - 1.4 Sinking / Capsize	Sinking / Capsize	8	8	4	8	5	5	3	5	5.75
14	FP PMSC RA (F) 15 - 1.5 Fire / Explosion	Fire / Explosion	10	10	5	10	5	5	3	4	6.5
89	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
45	FP PMSC RA (F) 16 - 1.1 Collision	Collision	6	3	3	3	8	8	4	8	5.38
32	FP PMSC RA (F) 16 - 1.2 Contact	Contact	5	5	5	5	8	8	4	6	5.75
114	FP PMSC RA (F) 16 - 1.3 Grounding	Grounding	4	4	4	4	4	4	4	4	4.00
89	FP PMSC RA (F) 16 - 1.4 Sinking / Capsize	Sinking / Capsize	5	5	2	5	5	5	3	5	4.38
45	FP PMSC RA (F) 16 - 1.5 Fire	Fire / Explosion	3	3	3	6	8	8	4	8	5.38
101	FP PMSC RA (F) 16 - 1.6 Loss of Containment (Oil Product)	Loss of Containment (Oil Product)	3	3	3	3	6	6	6	4	4.25
141	FP PMSC RA (T) 01 - 1.1 Collision	Collision	2	4	2	2	5	5	5	4	3.625
110	FP PMSC RA (T) 01 - 1.2 Contact	Contact	3	6	3	3	5	5	4	4	4.125
6	FP PMSC RA (T) 01 - 1.3 Grounding	Grounding	2	6	4	6	10	10	10	10	7.25
8	FP PMSC RA (T) 01 - 1.4 Sinking / Capsize	Sinking / Capsize	4	5	4	4	10	10	10	8	6.875
58	FP PMSC RA (T) 01 - 1.5 Fire / Explosion	Fire / Explosion	6	6	6	3	5	5	5	5	5.125
150	FP PMSC RA (T) 01 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	1	2	3	3	3	5	5	5	3.375
136	FP PMSC RA (T) 02 - 1.1 Collision	Collision	4	6	2	4	3	4	3	4	3.75
7	FP PMSC RA (T) 02 - 1.2 Contact	Contact	8	8	4	8	6	6	8	8	7
145	FP PMSC RA (T) 02 - 1.3 Grounding	Grounding	3	3	3	6	2	4	3	4	3.5
89	FP PMSC RA (T) 02 - 1.4 Sinking / Capsize	Sinking / Capsize	4	4	3	4	5	5	5	5	4.375
13	FP PMSC RA (T) 02 - 1.5 Fire / Explosion	Fire / Explosion	9	9	6	6	5	5	5	8	6.625
136	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
50	FP PMSC RA (T) 04 - 1.1 Collision	Collision	4	8	4	6	5	5	5	5	5.25
71	FP PMSC RA (T) 04 - 1.2 Contact	Contact	3	9	3	6	3	5	4	5	4.75
136	FP PMSC RA (T) 04 - 1.3 Grounding	Grounding	2	4	4	4	2	4	5	5	3.75
59	FP PMSC RA (T) 04 - 1.4 Sinking / Capsize	Sinking / Capsize	5	5	5	5	5	5	5	5	5
25	FP PMSC RA (T) 04 - 1.5 Fire / Explosion	Fire / Explosion	8	8	6	6	5	5	5	5	6
125	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
150	FP PMSC RA (T) 04 - 1.7 Allision	Allision	1	3	1	2	5	5	5	5	3.375
125	FP PMSC RA (T) 05 - 1.1 Collision	Collision	4	4	4	4	4	5	2	4	3.875
77	FP PMSC RA (T) 05 - 1.2 Contact	Contact	3	9	3	6	3	5	3	4	4.5
154	FP PMSC RA (T) 05 - 1.3 Grounding	Grounding	2	2	4	6	1	1	4	5	3.125
110	FP PMSC RA (T) 05 - 1.4 Sinking / Capsize	Sinking / Capsize	4	4	3	4	4	4	5	5	4.125
59	FP PMSC RA (T) 05 - 1.5 Fire / Explosion	Fire / Explosion	6	6	3	6	5	5	4	5	5
154	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
39	FP PMSC RA (T) 06 - 1.1 Collision	Collision	3	6	6	3	8	6	4	8	5.5
50	FP PMSC RA (T) 06 - 1.2 Contact	Contact	5	5	5	5	6	6	4	6	5.25
163	FP PMSC RA (T) 06 - 1.3 Grounding	Grounding	3	3	3	3	3	4	2	3	3
71	FP PMSC RA (T) 06 - 1.4 Sinking / Capsize	Sinking / Capsize	6	8	4	6	3	4	3	4	4.75
154	FP PMSC RA (T) 06 - 1.5 Fire / Explosion	Fire / Explosion	3	3	3	3	4	4	2	3	3.125
141	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

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 < £2000
2 = Minor > £2000
3 = Moderate >£20,000
4 = Serious, > £200,000
5 = major, > £2,000,000

ENVIRONMENT:
1 = localised spill < £2000,
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 < £2000
2 = Minor impact > £2000
3 = Moderate impact > £20,000, bad local publicity, short term reduction of activity.
4 = Serious Impact, >£200,000, 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 indicates last Reviewed

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
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 / Allision	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage	3	9	9	9	9	2	10	10	10	8	9.25
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	6	1	5	5	4	5	4.625
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	9	9	6	1	5	5	5	5	5.875
1.4	Sinking / Capsize	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Emergency Plans Weather Forecasting / Tidal Predictions Aids to Navigation Conservancy Notice to Mariners	1	5	5	4	4	1	5	5	5	4	4.625
1.5	Fire / Explosion	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Emergency Plans Weather Forecasting	3	6	9	6	9	2	10	10	10	10	8.75
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	8	8	8	8	1	3	5	5	5	6.25

MRFs: 064/19 (engine failure), 051/19 (Technical failure), 034/19 (blackout), 091/19 (non compliance with VTS), 094/19(Close quarters), POLREPs: 15.11.20,

Most likely: Collision between small vessel and larger vessel 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: High speed impact with bridge resulting in extreme damage to vessel and bridge, and loss of life.

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.

Most likely: 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.	**References to FCBC removed.** **Causes simplified - definitions tab added for greater detail.**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F) 1/07	**Revised Bv / Date** CHM, MM, HMFO, HMFI, HMDD, Man Tow&PV / Oct 2012
Risk Assessment - Forth River Passage (Standard Vessel)	**Review Due** Jan-23	**Revised By / Date** AMM / August 2021

FORTH PORTS LIMITED
Navigational Risk Assessment

Port of Leith - Arrival / Sailing Leith Approach 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 / Allision	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	4	6	9	6	6	2	6	6	6	6	6.375
1.2	Contact	System Failure Human Error Environmental Conditions Quayside Obstruction	Pilotage Console Controller 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 Swing Bridge Procedure Forth Ports H&S Procedures Aids to Navigation	5	5	10	10	10	2	6	8	6	8	7.875
1.3	Grounding	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 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	4	4	5	5	4.375
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
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
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

MRFs: 23/21 (Contact), 12/21 (contact), 081/20 (Contact), 075/20(Allision), 044/20 (Contact), 043/20 (Contact), 031/20 (Contact), 020/20 *(Contact), 21/20 (Contact), 41/19 (Allision), 74/19 (technical malfunction), 81/19 (contact), 084/19 (contact)

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.	**Causes simplified - definitions tab added for greater detail.**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F) 2/05	**Risk Assessment Team / Date** MM, HMFO / 3rd Dec2012
Risk Assessment - Port of Leith	**Review Due** Aug-23	**Revised By / Date** AMM, August 2021

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 / Allision	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	2	4	6	4	4	1	5	5	4	4	4.5
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 Swing Bridge Procedure Forth Ports H&S Procedures Aids to Navigation	3	6	9	6	3	1	5	5	4	4	5.25
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	2	2	6	4	6	1	4	4	4	4	4.25
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	4	4	5	4	1	4	4	5	5	4.375
1.5	Fire / Explosion	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Weather Forecasting / Tidal Predictions 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: 077/19 (Contact) 065/19 (potential contact),

Most likely: Collision between small workboat and larger vessel 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 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.	**Causes simplified - definitions tab added for greater detail.** **References to FCBC removed.**

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-23	**Revised By / Date** AMM, August 2021

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	MRF 01/21 (contact),021/20 (Contact),
				Likelihood	Overall Risk				Likelihood	Overall Risk					
					People	Property	Environment	Business		People	Property	Environment	Business		
1.1	Collision with Small Commercial Vessel / Leisure vessel	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	4	2	10	6	6	6	5.25	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 Towage Aids to Navigation Conservancy Fendering Cranes properly stowed on quayside Forth Ports H&S Procedures Dock Gatemen Procedures Barge proforma	5	5	10	5	5	2	6	8	6	6	6.375	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 Towage Aids to Navigation Conservancy Cargo operations procedures (Including MCA Bulk-handling Regulations) Dock gate procedure	2	2	4	4	2	2	4	6	6	6	4.25	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	Dockgate operational procedures Port Planned Maintenance system Training / Auditing of Port Staff Dock gate procedure Aids to Navigation	1	4	3	2	3	1	5	3	4	4	3.5	Most likely: Vessel sinks/capsizes outwith entrance of 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 Aids to Navigation Conservancy	3	3	3	6	6	1	2	3	3	3	3.625	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	Dockgate operational procedures Port Planned Maintenance system Training / Auditing of Port Staff Dock gate procedure	3	3	3	3	3	2	2	6	6	6	4	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; likelihood of contact in light of submitted MRF, other MRF types considered. Changes to guidelines or procedures affecting Methil Number of vessels calling, other traffic in the vicinity, and vessel type calling.	**Causes simplified - definitions tab added for greater detail.**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F) 4/04	**Risk Assessment Team / Date** HMFO, HMDD, MM / 16th Jan 2013
Risk Assessment - Port of Methil	**Review Due** Aug-23	**Revised By / Date** AMM, August 2021

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 / Allision	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	4	4	2	6	6	6	6	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 / Seabed Obstruction	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.	4	8	8	4	4	2	6	6	6	6	6	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.
1.3	Grounding	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Aids to Navigation Conservancy Survey / dredging Programme / Schedule (By Operator) SE Quayside Regulations & Risk Assessment	3	3	6	6	6	2	6	6	6	8	5.875	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 Aids to Navigation Conservancy Fendering SE Quayside Regulations & Risk Assessment External standby tugs audited and issued with restricted towage licence for emergencies.	1	4	4	5	4	1	4	4	5	5	4.375	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.
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	2	4	4	2	2	1	4	4	3	3	3.25	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 Survey Programme / Schedule (By Operator)	2	2	4	4	4	1	2	3	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.

No relevant MRFs since previous review

Content Reviewed	Changes Made
Changes to guidelines or procedures affecting Methil Number of vessels calling, other traffic in the vicinity, and vessel type calling.	**Causes simplified - definitions tab added for greater detail.**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F) 5/03	**Risk Assessment Team / Date** HMFO, HMDD, MM / 23rd Jan 2013
Risk Assessment - Methil SE Berth	**Review Due** Aug-23	**Revised By / Date** AMM, August 2021

FORTH PORTS LIMITED
Navigational Risk Assessment

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

MRF: 083/20 (Near Miss grounding),

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 / Allision with Small Commercial Vessel / Leisure vessel / other Kirkcaldy vessel	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	4	2	10	6	6	6	5.25	Most likely: Collision between Kirkcaldy vessel and small commercial, leisure, or fishing 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 Aids to Navigation Conservancy Fendering Cranes properly stowed on quayside Forth Ports H&S Procedures Additional fenders on West breakwater Fixed Lighting on East Pier	4	4	4	4	4	2	6	6	6	6	5	Most likely: Vessel has slow speed impact with quayside whilst berthing resulting in minimal damage. Worst credible: High speed impact with quayside whilst berthing resulting in extreme damage to vessel and quayside, and loss of life.
1.3	Grounding Refer also to: 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 Cargo operations procedures (Including MCA Bulk-handling Regulations)	2	2	4	4	2	2	6	8	8	8	5.25	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 Aids to Navigation Conservancy	1	4	3	2	3	1	5	3	4	4	3.5	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	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 Aids to Navigation Conservancy	3	2	2	4	4	1	2	3	3	4	3	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 change to vessel traffic and only one MRF.	**Causes simplified - definitions tab added for greater detail.**

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-23	**Revised By / Date** AMM, August 2021

FORTH PORTS LIMITED
Navigational Risk Assessment

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

MRFs: 04/21 (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	
				Likelihood	Overall Risk				Likelihood	Overall Risk					
					People	Property	Environment	Business		People	Property	Environment	Business		
1.1	Collision / Allision	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	3	4	9	6	6	2	8	8	6	8	6.875	Most likely: Collision at slow speed between large vessel and small commercial, leisure, or fishing vessel resulting in minimal damage Worst credible: Collision and high speed between two large vessesl 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	5	5	10	5	5	2	4	8	6	6	6.125	Most likely: Vessel has slow speed impact with quayside whilst berthing resulting in minimal damage. Worst credible: High speed 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 Aids to Navigation Conservancy Cargo operations procedures (Including MCA Bulk-handling Regulations) Dock Gate Procedure	3	3	6	6	6	2	6	6	6	6	5.625	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 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 Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans	2	4	4	4	4	1	4	4	3	3	3.75	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	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Aids to Navigation Conservancy	4	4	4	8	8	2	4	6	6	6	5.75	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.
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	3	3	3	3	3	2	2	6	6	6	4	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 i.e. rigs.	**Causes simplified - definitions tab added for greater detail.**

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-23	**Revised By / Date** AMM, August 2021

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	
				Likelihood	Overall Risk				Likelihood	Overall Risk					
					People	Property	Environment	Business		People	Property	Environment	Business		
1.1	Collision / allision	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	6	4	4	1	5	5	4	4	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 Aids to Navigation Conservancy Fendering Cranes properly stowed on quayside Forth Ports H&S Procedures	3	6	9	9	9	2	6	8	6	6	7.375	Most likely: Vessel has slow speed impact with buoy or quay 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.
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 Cargo operations procedures (Including MCA Bulk-handling Regulations) [illegible] Procedure	2	2	4	4	2	2	4	6	6	8	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 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	1	4	3	2	3	1	5	3	4	4	3.5	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.
1.5	Fire / Explosion	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Weather Forecasting / Tidal Predictions Emergency Plans	2	6	6	4	4	1	4	4	3	4	4.375	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	1	2	3	3	4	3	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 submitted consiered; increase in amount of contact related MRF's. Traffic numbers and vessel type, as well as other movements in the vacinity of Inverkeithing.	**Causes / controls simplified - definitions tab added for greater detail.**

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-23	**Revised By / Date** AMM, August 2021

FORTH PORTS LIMITED
Navigational Risk Assessment

Braefoot Jetty - Arrival / Sailing Eastern Limits to Berth

MRFs reviewed: No relevant MRF since last 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 / Allision	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	2	6	6	2	4	1	5	5	5	5	4.75	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 FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Jetty Regulations Jetty Supervisor	3	3	6	3	6	2	6	10	10	10	6.75	Most likely: Vessel has slow speed impact with buoy resulting in minimal damage. Worst credible: Large vessel contacts jetty at high speed resulting in significant damage to vessel, 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	6	2	6	1	1	5	4	5	3.875	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 FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Jetty Regulations	1	3	5	5	5	1	3	5	5	5	4.5	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 FTNS Legislation & Guidance Weather Forecasting / Tidal Predictions Emergency Plans Conservancy Jetty Regulations	2	6	6	2	6	1	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 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	2	4	4	6	6	1	3	3	5	5	4.5	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 reviewed -bow thruster failure for a vessel calling the Jetty Vessel numbers consulted, as well as type and size.	**Causes / controls simplified - definitions tab added for greater detail.**

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-23	**Revised By / Date** AMM, August 2021

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	
					Overall Risk					Overall Risk					
				Likelihood	People	Property	Environment	Business	Likelihood	People	Property	Environment	Business		
1.1	Collision / Allision	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)	2	6	6	6	6	1	5	5	5	5	5.5	MRFs: 18/21 (steering failure), 086/20 (Contact), 071/20(Contact), 068/20(Contact), 065/20 (Contact), 062/20 (Contact), 060/20 (Contact), 051/20 (Contact), 040/20(Contact), 039/20 (contact), 033/20(contact), 027/20 (blackout), 026/20 (contact), 024/20 (engine failure), 012/20 (contact), 002/20(contact), 001/20(contact), [009/19, 011/19, 012/19, 029/19, 044/19, 048/19, 052/19, 055/19, 073/19, 079/19, 102/19, 103/19 (Contact)] Most likely: Collision between inbound / outbound vessel and small vessel at slow speed resulting in minimal damage. Worst credible: Collision between inbound/outbound Grangemouth tankers 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 Restricted Air Draft Procedures Cranes properly stowed on quayside Dockhead Staff Ship Specific Towage Requirements (IPOS Entries) 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 high speed 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 Cargo operations procedures (Including MCA Bulk-handling Regulations)	3	3	6	3	6	2	2	10	6	10	5.75	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	4	3	4	5	1	5	5	5	5	4.5	Most likely: Vessel 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)	2	4	4	4	4	2	10	10	8	10	6.75	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	3	1	3	3	5	5	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	2	4	4	4	4	1	3	5	3	5	4	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 reviewed - significant number of contacts - one major contact,	**Causes / controls simplified - definitions tab added for greater detail.**

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-23	**Revised By / Date** AMM, August 2021

FORTH PORTS LIMITED
Navigational Risk Assessment

Crombie Berthing/Sailing

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 / Allision	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	2	4	6	6	6	1	5	5	4	4	5
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 Restricted Air Draft Procedures Cranes properly stowed on quayside	3	6	6	3	3	2	6	8	8	8	6
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	2	2	4	2	2	1	3	4	4	4	3.125
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	4	5	3	5	1	4	5	3	5	4.25
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	6	6	3	6	1	5	5	4	5	5
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	2	2	4	6	6	1	3	3	4	4	4

No significant MRFs during time from previous review.

Most likely: Collision between Crombie 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.

Most likely: Vessel has slow speed impact with jetty whilst berthing resulting in minimal damage.

Worst credible: High speed impact with jetty whilst berthing resulting in extreme damage to vessel and jetty, and loss of life.

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.

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.

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.

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.	**Causes / controls simplified - definitions tab added for greater detail.**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F) 11/06	**Risk Assessment Team / Date** DMM, HMFI / 19th Dec2012
Risk Assessment - Crombie	**Review Due** Aug-23	**Revised By / Date** AMM, August 2021

FORTH PORTS LIMITED
Navigational Risk Assessment

Hound Point - Arrival/Sailing Eastern Limits to Berth

MRFs since previous review: 0

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 / Allison	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	2	2	6	2	6	1	3	5	5	5	4.25	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	3	3	6	3	6	2	6	10	8	10	6.5	Most likely: Vessel has slow speed impact with buoy resulting in minimal damage. Worst credible: Large vessel contacts jetty at high speed resulting in significant damage to vessel, jetty, 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	2	2	8	2	6	1	1	5	3	5	4	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	3	5	5	5	4.5	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	6	9	3	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	2	4	4	6	6	1	3	3	5	5	4.5	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; No contacts since last review Changes to guidelines or procedures affecting HP. Number of vessels calling, and other traffic in the vicinity.	**Causes / controls simplified - definitions tab added for greater detail.**

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-23	**Revised By / Date** AMM, August 2021

FORTH PORTS LIMITED
Navigational Risk Assessment

Cruise Vessels at Anchorage (Hound Point / Newhaven)

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	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	10	5	5	1	4	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	2	6	6	4	6	1	5	5	5	5	5.25	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.
1.3	Grounding	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Tender pack	3	6	9	6	9	1	5	5	5	5	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	1	5	5	5	5	1	5	5	5	5	5	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	3	6	6	6	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.
1.5	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	6	6	3	1	2	4	4	4	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.

MRF: 050/20(Fouled anchor), 057/20 (fouled anchor), 043/19 (fouled anchor), 76/19 (engine failure),

Content Reviewed	Changes Made
MRFs review -3 fouled anchor incidents, subject anchorage area has since been dredged. Other traffic in the vicinity - type, size, density Cruise specific procedures, forms and guidelines.	**Causes / controls simplified - definitions tab added for greater detail.**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F) 13/06	**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-23	**Revised By / Date** AMM, August 2021

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 / Allision	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	5	5	10	10	5	2	8	8	6	8	7.5	MRFs: 045/19 (engine failure), 22/21 (grounding), 10/21(contact), 09/21 (contact), 08/21 (contact), 070/20 (contact), 059/20(blackout), 058/20 (contact), 052/20 (collision with buoy), 023/20 (towline parted), 022/20 (collision), 005/20 (contact), 002/20(contact), 001/20 (contact), 101/19 (engine failure) 086/19 (technical failure), 78/19 technical failuire), 033/19 (collision), Most likely: Collision between two small workboats 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.
1.2	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	6	7.125	Most likely: Small workboat slow speed impact with floating debris resulting in minimal damage. Worst credible: Contact with bridge, quayside, jetty at high speed resulting in significant damage 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	6	6	6	6	2	6	8	6	8	6.5	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	FTNS Legislation & Guidance General Directions (GD19) Weather Forecasting / Tidal Predictions Emergency Plans Conservancy Liaison with Local Authorities & Boat Clubs Audit and license procedure	1	5	5	4	5	1	5	5	4	5	4.75	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	4	4	8	2	6	6	4	6	5.25	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	5	5	5	5	5	2	6	4	6	6	5.25	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	**Causes / controls simplified - definitions tab added for greater detail.** **Pilot Vessels removed as they have own SMS & Ras**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F) 14/06	**Risk Assessment Team / Date** MT&PV, HMFO, MM, DMM, HMD / 13TH Feb 2013
Risk Assessment - Forth - River Transit + Berthing/Sailing Small	**Review Due** Aug-23	**Revised By / Date** AMM, August 2021

FORTH PORTS LIMITED
Navigational Risk Assessment

Cruise Vessel Tender Operations (Newhaven / Hound Point)

MRF: 067/19 (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	
				Likelihood	Overall Risk				Likelihood	Overall Risk					
					People	Property	Environment	Business		People	Property	Environment	Business		
1.1	Collision / Allision	System Failure Human Error Environmental Conditions	Legislation & Guidance FTNS Weather Forecasting, Tidal Predictions & Monitoring Tender Pro-forma & Passage Planning Tender Pack Ruling Depth and UKC document	3	6	3	3	3	2	8	8	4	8	5.375	Most likely: Collision between two tenders at slow speed resulting in minimal damage and no injuries. Worst credible: Collision between large vessel and tender carrying passengers resulting in loss of tender and loss of life.
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	8	8	4	6	5.75	Most likely: Tender has slow speed impact with buoy resulting in minimal damage. Worst credible: Tender has high speed impact with pontoon resulting in significant damage to tender and loss of life.
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	4	4	4	4	4	2	4	4	4	4	4	Most likely: Tender grounds in soft mud and refloats on following tide with damage. Worst credible: Tender 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	FTNS Weather Forecasting / Tidal Predictions Legislation & Guidance Emergency Plans Conservancy Tender Proforma and Passage Planning Tender Pack	1	5	5	2	5	1	5	5	3	5	4.375	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.
1.5	Fire	System Failure Human Error Environmental Conditions	FTNS Weather Forecasting / Tidal Predictions Legislation & Guidance Emergency Plans	3	3	3	3	6	2	8	8	4	8	5.375	Most likely: Small fire on board which is quickly and easily extinguished. Worst credible: Uncontrollable fire, total loss of vessel, and loss of life.
1.6	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	3	3	3	3	3	2	6	6	6	4	4.25	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
Greatly reduced amount of cruise traffic due to COVID which has impacted the amount of incidents.	**Causes / controls simplified - definitions tab added for greater detail.**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F) 15/05	**Risk Assessment Team / Date** MM, DMM, HMFO March 2014
Risk Assessment - Cruise Vessel Tender Operations (Hound Point /	**Review Due** Aug-23	**Revised By / Date** AMM, August 2021

FORTH PORTS LIMITED
Navigational Risk Assessment

Tay 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	
				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	4	2	2	1	5	5	5	4	3.625	Most Likely: Collision with small lesuire craft. Worst Credible: Collision with cruise vessel.
1.2	Contact	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	3	3	6	3	3	1	5	5	4	4	4.125	Most Likely: Contact with ATON's while underway in fairway. 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	4	6	2	10	10	10	10	7.25	Most Likely : Grounding on soft material, no loss of containment and vessel able to float off on following tide 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	1	4	5	4	4	2	10	10	10	8	6.875	Most Likely : slow sinking Worst Credible: fast sinking
1.5	Fire / Explosion	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Weather Forecasting / Tidal Predictions Emergency Plans	3	6	6	6	3	1	5	5	5	5	5.125	Most Likely : Small fire onboard, quickly extinguished . Worst Credible: Tanker 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)	1	1	2	3	3	1	3	5	5	5	3.375	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.
1.7	Allision	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	1	1	3	1	2	1	5	5	5	5	3.375	Most Likely: Allsion with small leisure vessel. Worst Credible: Allision with large cruise vessel.

Content Reviewed	Changes Made
All content reviewed	**Causes / controls simplified - definitions tab added for greater detail.**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (T) 1/05	**Risk Assessment Team / Date** DMM, HMD 13th Dec 2012
Risk Assessment - River Passage Tay (General)	**Review Due** Aug-23	**Revised By / Date** AMM, August 2021

FORTH PORTS LIMITED
Navigational Risk Assessment

Port of Dundee - Arrival/Sailing Close Approaches to River Berths

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	4	1	3	4	3	4	3.75	Most Likely: Collision with small lesuire craft. Worst Credible: Collision with berthed cruise vessel
1.2	Contact	System Failure Human Error Environmental Conditions Change to Shore Infrastructure / Obstruction on the Quay	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy Quayside Clear from Obstructions Port Assistant AIS Beacon on Horseshoe Buoy	4	8	8	4	8	2	6	6	8	8	7	Most Likely: Heavy landing on Quay with minor damage 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	3	3	3	3	6	1	2	4	3	4	3.5	Most Likely : Grounding on soft material, no loss of containment and vessel able to float off on following tide 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	1	4	4	3	4	1	5	5	5	5	4.375	Most Likely : slow sinking Worst Credible: fast sinking
1.5	Fire / Explosion	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	3	9	9	6	6	1	5	5	5	8	6.625	Most Likely : Small fire onboard, quickly extinguished . Worst Credible: Tanker uncontrolable fire, vessel total loss.
1.7	Allision	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	1	1	3	1	2	1	5	5	5	5	3.375	Most Likely: Allsion with berthed vessel or rig with minor damage. Worst Credible: Allision with berthed cruise vessel significant damage.
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	3	1	2	4	4	5	3.75	Most Likely : Ballast water contaminated and discharged causing minimal pollution. Worst Credible: Full loss of cargo .

Content Reviewed	Changes Made
All content reviewed	**Causes / controls simplified - definitions tab added for greater detail.**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA(T) 2/05	**Risk Assessment Team / Date** DMM, HMD 13th Dec 2012
Risk Assessment - Dundee Arrival/Sailing Port Approaches to	**Review Due** Aug-23	**Revised By / Date** AMM, August 2021

FORTH PORTS LIMITED
Navigational Risk Assessment

Port of Dundee - Large Vessel - Arrival/Sailing Port Limits 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)	Overall Risk					Overall Risk					Hazard Risk Score	
				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	4	8	4	6	1	5	5	5	5	5.25	Most Likely: Collision with small lesuire craft. Worst Credible: Collision with berthed cruise vessel.
1.2	Contact	System Failure Human Error Environmental Conditions Change to Shore Infrastructure / Obstruction on the Quay	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	3	3	9	3	6	1	3	5	4	5	4.75	Most Likely: Heavy landing on Quay with minor damage 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	4	4	4	1	2	4	5	5	3.75	Most Likely : Grounding on soft material, no loss of containment and vessel able to float off on following tide 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	1	5	5	5	5	1	5	5	5	5	5	Most Likely : Slow sinking Worst Credible: Fast sinking
1.5	Fire / Explosion	Collision/Allision Contact Grounding Human Error Technical Failure Loss of Containment	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	2	8	8	6	6	1	5	5	5	5	6	Most Likely : Small fire onboard, quickly extinguished . Worst Credible: Tanker 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	4	4	4	1	3	4	5	5	3.875	Most Likely : Ballast water contaminated and discharged causing minimal pollution. Worst Credible: Full loss of cargo.
1.7	Allision	System Failure Human Error Environmental Conditions	Pilotage FTNS Legislation & Guidance Aids to Navigation Weather Forecasting / Tidal Predictions Emergency Plans Towage Conservancy	1	1	3	1	2	1	5	5	5	5	3.375	Most Likely: contact with anchored vessel causing minimal damage. Worst Credible: Allision with berthed cruise vessel causing signicant damage.

Content Reviewed	Changes Made
All content reviewed	**Causes / controls simplified - definitions tab added for greater detail.**

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (T) 4/05	**Risk Assessment Team / Date** DMM, HMD 13th Dec 2012
Risk Assessment - Large Tanker Arrival/Sailing Port Limits to Berth	**Review Due** Aug-23	**Revised Bv / Date** AMM, August 2021

FORTH PORTS LIMITED
Navigational Risk Assessment

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

MRF: 048/20 (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	
				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	2	4	4	4	4	1	4	5	2	4	3.875	Most Likely: Collision with small leisure craft while underway. Worst Credible: Collision with standard vessel 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	3	3	9	3	6	1	3	5	3	4	4.5	Most Likely: Contact with navigational buoy Worst Credible: 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 Horshoe Buoy Identifid by AIS Unit Port Entry Light/Virtual Buoys	2	2	2	4	6	1	1	1	4	5	3.125	Most Likely : Grounding on soft material, no loss of containment and vessel able to float off on following tide Worst Credible: 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	4	4	3	4	1	4	4	5	5	4.125	Most Likely: Sinking of rig outside of navigational channel no loss of containment. 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 Conservancy Towage Audit Declaration / Tug Vetting	3	6	6	3	6	1	5	5	4	5	5	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	6	4	1	1	1	4	5	3.125	Most Likely: Small loss of non-persistant oil product Worst Credible: Large spill of persistant product

Content Reviewed	Changes Made
All content reviewed	**Causes / controls simplified - definitions tab added for greater detail.**

FORTH PORTS LIMITED	Document ID	Risk Assessment Team / Date
	FP PMSC RA (T) 5/05	DMM, HMD 09th January 2013
Risk Assessment - Port of Dundee - Oil Rigs - Arrival/Sailing Port	**Review Due** Aug-23	**Revised By / Date** AMM, August 2021

FORTH PORTS LIMITED
Navigational Risk Assessment

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

MRF:

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	3	3	6	6	3	2	8	6	4	8	5.5	Most Likely: Collission with leisure user 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	5	5	5	2	6	6	4	6	5.25	Most Likely: Light contact with the quayside while berthing. Worst Credible: Contact with another berthed small vessel.
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	3	3	3	3	3	1	3	4	2	3	3	Most Likely: Grounding of smalll vessel on soft silt, refloated on same tide (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	6	8	4	6	1	3	4	3	4	4.75	Most Likely: sinking o small vessel outside of navigational channel, no 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	3	3	3	1	4	4	2	3	3.125	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	4	4	4	8	4	1	1	2	3	3	3.625	Most Likely: Small loss of non-persistant oil product. Worst Credible: Large spill of persistant product.

Content Reviewed	Changes Made
All content reviewed	**Causes / controls simplified - definitions tab added for greater detail.** **Pilot Vessels removed as they have own SMS & Ras**

FORTH PORTS LIMITED	Document ID FP PMSC RA (T) 6/04	Risk Assessment Team / Date DMM, HMD 09th January 2013
Risk Assessment - River Tay Transit + Berthing/Sailing Small	Review Due Aug-23	Revised Bv / Date AMM, August 2021

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 Bridge Team Error Technical Failure	Designated and Proven Anchorages FTNS Weather Forecasting / Tidal Predictions Towage Byelaws & General Directions Pilotage Emergency Plans / OPRC	5	5	10	5	5	2	8	10	10	10	7.875
1.2	Contact	Technical Failure Bridge Team Error Environmental Conditions	Pilotage FTNS Towage Byelaws & General Directions Weather Forecasting / Tidal Predictions Designated and Proven Anchorages Notice to Mariners Emergency Plans / OPRC	2	4	6	4	6	1	5	5	5	5	5
1.3	Grounding	Technical Failure Bridge Team Error Environmental Conditions Surveying Omission Dragging Anchor	Pilotage Passage plan – master / pilot information exchange FTNS Towage Weather Forecasting / Tidal Predictions & Tidal Monitoring Designated and Proven Anchorages Emergency Plans / OPRC	2	4	6	4	6	1	5	5	5	5	5
1.4	Sinking / Capsize	Contact Grounding Technical Failure Failure of Vessel Stability Human Error Environmental Conditions	Pilotage FTNS Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting / Tidal Predictions	1	4	5	5	5	1	5	5	5	5	4.875
1.5	Fire / Explosion	Contact Grounding Human Error Technical Failure Loss of Containment	Pilotage FTNS Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting	2	6	6	6	4	1	5	5	5	5	5.25
1.6	Loss of Containment (Oil Products)	Grounding Human Error Contact Technical Failure Sinking / Capsizing Fire / Explosion Environmental Conditions	Pilotage FTNS Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting Notice to Mariners Marine Guidelines & Port Information Bunkering Procedure	3	6	6	9	9	1	3	5	5	5	6

MRF: 050/20 (fouled anchor), 049/20(fouled anchor), 017/18 (Dragging Anchor)

1.1 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.

1.2 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.

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

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

1.6 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
Dragging Anchor Grounding Loss of Containment MRF 017/18 (Dragging Anchor)	Increase in Likelihood - Dragging Anchor Increased risk to people , property and business - Grounding Increase risk to business - Loss of Containment

FORTH PORTS LIMITED	Document ID	Risk Assessment Team / Date
	FP PMSC RA (F&T) 1/05	DMM, HMFO, HMFI, HMD, MT&PV / 11th Jan 2013
Risk Assessment - Vessels at Anchor	Review Due Jul-22	Revised By / Date July 2020, 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	Girting Loss of Stability Grounding Technical Failure Human Error Environmental Conditions Tug Positioning Speed	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	2	8	8	8	8	1	5	5	4	5	6.375
1.2	Fire	Loss of Containment Grounding Technical Failure Human Error Environmental Conditions	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 Latest Grounding Charts Available	3	3	3	3	6	2	8	8	8	8	5.875
1.3	Contact	Technical Failure Loss of Tow / Towline Failure Bridge Team Error Environmental Conditions Change to Shore Infrastructure / Obstruction on the Quay Floating Debris Tug Positioning Speed	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	6	8	8	10	7.75
1.4	Collision	Technical Failure Loss of Tow / Towline Failure Bridge Team Error Environmental Conditions	FTNS Byelaws & General Directions Emergency Plans Weather Forecasting / Tidal Predications Marine Guidelines & Port Information Towage Guidelines Notice to Mariners Tug SMS, Crew Training/Qualifications	3	3	6	6	3	1	4	4	4	4	4.25
1.5	Grounding	Technical Failure Bridge Team Error Environmental Conditions	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	6	6	9	1	4	5	4	5	5.625
1.6	Man Overboard / Personal Injury	Human Error Technical Failure Enviromental Conditions	Crew Training Tug SMS Tug Design Towage Guidelines	2	4	2	2	4	1	5	1	1	5	3

MRF: 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

Most Likely: Crew member suffers a minor injury which can be treated on board and does not result in lost time

Worst Credible: Crew member falls overboard/suffers extensive injuries resulting in loss of life

Content Reviewed	Changes Made
Grounding MRF 074/18 (Grounding) MRF 026/19 (Contact)	Increase in likelihood - Grounding

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F&T) 2/05	**Risk Assessment Team / Date** MT&PV, MM, HMFO, DMM, HMD / 13th Feb 2013
Risk Assessment - Towage Operations	**Review Due** Jul-22	**Revised By / Date** July 2020, MMT

FORTH PORTS LIMITED
Navigational Risk Assessment

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

MRF 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	Contact Refer also to FP PMSC RA (F&T) 1	Technical Failure Human Error Environmental Conditions Dragging Anchor Breaking Away from Moorings	Byelaws & General Directions Weather Forecasting & Monitoring Marine Guidelines & Port Information Standby Tug at Anchor FTNS Extra Moorings	2	4	6	4	4	1	3	4	4	4	4.125	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	Technical Failure Human Error Environmental Conditions Dragging Anchor Breaking Away from Moorings	FTNS Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting & Monitoring Marine Guidelines & Port Information Notice to Mariners Standby Tug at Anchor Extra Moorings	2	2	6	6	4	1	3	5	4	4	4.25	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	Contact Grounding Human Error Technical Failure Loss of Containment	Pilotage FTNS Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting	3	9	9	9	6	1	5	5	5	5	6.625	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 MRF 072/19 (Fire) - - Immobilisation form to be added 2021	Added hazard for Fire/Explosion as a result of MRF 072/19 (Fire on an immobilized vessel) - Immobilisation form to be added 2021

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F&T) 3/05	**Risk Assessment Team / Date** MM, DMM / 26th Feb 2013
Risk Assessment - Immobilised Vessels	**Review Due** Jul-22	**Revised By / Date** July 2020, 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	Technical Failure Bridge Team Error Environmental 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	4	5	4	5	4.25
1.2	Contact	Technical Failure Bridge Team Error Environmental Conditions Mooring Failure	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	1	3	5	4	4	3.875
1.3	Loss of Conrainment (Oil Products)	Technical Failure Human Error Collision Grounding Mooring Failure Sinking Fie/Expolsion Contact	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	6	6	1	3	3	4	4	4
1.4	Fire/Explosion	Technical Failure Human Error Collision Grounding Mooring Failure Sinking Fie/Expolsion Contact	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	4	4	3	4	1	5	5	4	5	4.25

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
Loss of Containment POLREP (Leith) 07/18	Decrease most likely impact to Environment and Business

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F&T) 4/05	**Risk Assessment Team / Date** HMFO, HMFI, MM, HMD, DMM 20th Feb 2013
Risk Assessment - Bunkering Operations In Dock	**Review Due** Jul-22	**Revised By / Date** July 2020, MMT

FORTH PORTS LIMITED
Navigational Risk Assessment

Forth & Tay - Bunkering Operations Tidal Waters

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	Collision with bunker vessel and receiving vessel	Technical Failure Bridge Team Error Environmental 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	9	9	6	6	1	4	5	5	5	6.125
1.2	Contact	Technical Failure Bridge Team Error Environmental Conditions Mooring Failure	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	3	3	6	3	3	1	3	5	4	4	3.875
1.3	Loss of Containment (Oil Products)	Technical Failure Human Error Collision Grounding Mooring Failure Sinking Fie/Expolsion Contact	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	6	6	9	9	1	3	3	4	4	5.5
1.4	Fire/Explosion	Technical Failure Human Error Collision Grounding Mooring Failure Sinking Fie/Expolsion Contact	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	4	4	3	4	1	5	5	5	5	4.375

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
All content reviewed	No changes made

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F&T) 5/05	**Risk Assessment Team / Date** HMFO, HMFI, MM, HMD, DMM 20th Feb 2013
Risk Assessment - Bunkering Operations Tidal Waters	**Review Due** Jul-22	**Revised By / Date** July 2020, MMT

FORTH PORTS LIMITED
Navigational Risk Assessment

Forth & Tay - NAABSA Berths

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	
				Likelihood	Overall Risk				Likelihood	Overall Risk					
					People	Property	Environment	Business		People	Property	Environment	Business		
1.1	Contact	Technical Failure Human Error Environmental Conditions	Byelaws & General Directions Weather Forecasting / Tidal Predictions & Monitoring Marine Guidelines & Port Information NAABSA Berth Procedure Welcome Pack	3	6	3	3	6	1	4	5	3	5	4.375	Most likely: Vessel has slow speed impact with quayside resulting in minimal damage. Worst credible: Vessel has high speed impact with quayside resulting in etxreme damage to vessel, quayside, and loss of business due to potential port closure.
1.2	Capsize/Flooding	Contact Technical Failure Failure of Vessel Stability Human Error Environmental Conditions Changes to seabed conditions / Obstructions	FTNS Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting / Tidal Predictions NAABSA Berth Procedure NAABSA Berth Inspections Survey Programme	1	3	5	3	5	1	5	5	5	5	4.5	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	Reduced Fire Fighting Capability Due to lack of dock water	NAABSA Berth Procedures Emergency Procedures Welcome Pack	2	4	4	2	4	2	10	10	6	10	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.
1.4	Hull Damage	Debris Obstruction on seabed Changes to seabed gradient Contact	NAABSA Berth Procedures Emergency Procedures Welcome Pack NAABSA Inspections Survey Programme Weather Forecasting / Tidal Predictions & Monitoring Byelaws & General Directions	3	3	9	6	9	2	4	8	8	8	6.875	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
1.5	Loss of Containment	Human Error Contact Technical Failure Capsizing / Flooding Fire Environmental Conditions Mud Suction	FTNS Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting / Tidal Predictions & Monitoring Notice to Mariners Bunkering Procedure NAABSA Berth Procedures NAABSA Berth Inspections	2	2	4	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.

Content Reviewed	Changes Made
Fire Hull Damage MRF 020/19 (Contact)	Amended incorrect figure for most likely impact toenvironment (1 > 2) (Fire) Reduced most likely impact to environment (Hull Damage)

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F&T) 06/05	**Risk Assessment Team / Date** DMM, HMFO, HMFI, HMD, MT&PV / 11th Jan 2013
Risk Assessment - NAABSA Berths	**Review Due** Jul-22	**Revised By / Date** July 2020, 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	Proximity and/or speed of Passing Traffic	Forth Ports Dive Procedure (Permit) Dive Signals displayed Established Communications FTNS Exclusion Zones Speed Restrictions Notice to Mariners Dive Supervisor Local Monitoring	3	6	**3**	**3**	**3**	1	5	4	2	4	3.75	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	Proximity and/or Speed of Passing Traffic	Forth Ports Dive Procedure (Permit) Established Communications FTNS Exclusion Zones Notice to Mariners	1	3	2	1	1	1	5	5	3	5	3.125	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
Swamping/Turbulence/Interaction	Amended incorrect values for property, evironment and business - Swamping (4 > 3)

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F&T) 7/03	**Risk Assessment Team / Date** HMFI/HMFO/HMD/MM/CHM 03rd Sep 14
Risk Assessment - Diving Operations	**Review Due** Jul-22	**Revised By / Date** July 2020 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	Proximity of non participating craft / vessel	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	4	2	6	1	5	3	1	4	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	Proximity of non participating craft / vessel	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	4	2	2	2	1	5	1	1	4	2.625	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
All content reviewed MRF 068/2018	No changes made

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F&T) 8/03	**Risk Assessment Team / Date** HMFI/HMFO/HMD/MM/CHM 03rd Sep 14
Risk Assessment - Recreational Events	**Review Due** Jul-22	**Revised By / Date** July 2020, 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	Technical Failure Bridge Team Error Environmental Conditions Dragging Anchor Mooring Failure	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	4	6	2	6	1	3	5	4	5	4.375	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	Pipeline / Cable Damange	Technical Failure Bridge Team Error Environmental Conditions Dragging Anchor Mooring Failure Contact	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	6	2	6	1	2	5	4	5	4	Most Likely: Pipeline/cable suffers minor damage resulting in no adverse effects 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	Technical Failure Bridge Team Error Environmental Conditions Dragging Anchor Mooring Failure Contact Loss of Containment	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	4	5	4	5	1	4	5	5	5	4.625	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	Technical Failure Bridge Team Error Environmental Conditions Dragging Anchor Mooring Failure Contact	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	4	6	4	6	1	4	5	4	5	4.75	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
Fire/Explosion	Increased worst credible impact to environment - Fire/Explosion

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F&T) 9/02	**Risk Assessment Team / Date** CHM/MM 18th Feb 2015
Risk Assessment - Underwater Cables & Pipelines	**Review Due** Jul-22	**Revised By / Date** July 2020, MMT

FORTH PORTS LIMITED
Navigational Risk Assessment

Marine Pollution (Tidal Waters)

POLREP: Limekilns (19/2/19), N. Queensferry (12/8/19), Bridges (09/3/20), Pittenweem(15.11.20),

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)	Collision Contact Grounding Poor Decision Making 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	10	5	1	3	5	5	5	5.375

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
All content reviewed Various POLREPS	No changes made

FORTH PORTS LIMITED	**Document ID** FP PMSC RA (F&T) 10/02	**Risk Assessment Team / Date** CHM, MM, DMM, HMD / 12th August 2015
Risk Assessment - Marine Pollution (Tidal Waters)	**Review Due** Jul-22	**Revised By / Date** July 2020, MMT

FORTH PORTS LIMITED
Navigational Risk Assessment

Marine Pollution (Enclosed Dock)

POLREP - 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)

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)	Collision Contact Grounding Poor Decision Making 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	3	4	4	4	4.375

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
All content reviewed	No changes made

FORTH PORTS LIMITED	Document ID	Risk Assessment Team / Date
	FP PMSC RA (F) 11/02	CHM, MM, DMM, HMD / 12th August 2015
Risk Assessment - Marine Pollution (Enclosed Docks)	Review Due Jul-22	Revised By / Date July 2020, MMT