

LIST OF PMSC RISK ASSESSMENTS

Risk Assessment Number	Risk Assessment Name	Review at PMSC Liaison Meeting
FP PMSC RA (F)1	Forth River Passage - Standard Vessel	PMC 08th May 2017
FP PMSC RA (F)2	Port of Leith - Arrival / Sailing Leith Approach Buoy to Berth	PMC 08th May 2017
FP PMSC RA (F)3	Port of Rosyth - Arrival/Sailing No.1 Rosyth Channel Buoy to Berth	PMC 08th May 2017
FP PMSC RA (F)4	Port of Methil - Arrival/Sailing Methil Pilot Station to Berth	PMC 08th May 2017
FP PMSC RA (F)5	Methil SE Berth - Arrival/Sailing Methil Pilot Station to Berth	PMC 08th May 2017
FP PMSC RA (F)6	Port of Kirkcaldy - Arrival/Sailing Close Approaches of Dock to Berth	PMC 08th May 2017
FP PMSC RA (F)7	Port of Burntisland - Arrival/Sailing Close Approaches of Dock to Berth	PMC 08th May 2017
FP PMSC RA (F)8	Inverkeithing - Arrival/Sailing Saint Davids Beacon to Berth	PMC 08th May 2017
FP PMSC RA (F)9	Braefoot Jetty - Arrival/Sailing Eastern Limits to Berth	PMC 08th May 2017
FP PMSC RA (F)10	Port of Grangemouth - Arrival/Sailing Hen & Chickens to Berth	PMC 08th May 2017
FP PMSC RA (F)11	Crombie Berthing/Sailing	PMC 08th May 2017
FP PMSC RA (F)12	Hound Point - Arrival/Sailing Eastern Limits to Berth	PMC 08th May 2017
FP PMSC RA (F)13	Cruise Vessels at Anchorage	PMC 08th May 2017
FP PMSC RA (F)14	Forth - River Transit and Berthings/Sailings small commercial craft (tugs, workboats, pilot boats etc.)	PMC 08th May 2017
FP PMSC RA (F)15	Bridge Construction Operations	PMC 08th May 2017
FP PMSC RA (F)16	Cruise Vessel Tender Operations (Hound Point / Newhaven)	PMC 08th May 2017
FP PMSC RA (T)1	Tay River Passage - Standard Vessels	Dundee - May 2015
FP PMSC RA (T)2	Port of Dundee - Arrival/Sailing Port Approaches to River Berth	Dundee - May 2015
FP PMSC RA (T)4	Tay Large Vessel Movement - Arrival/Sailing	Dundee - June 2018
FP PMSC RA (T)5	Port of Dundee - Oil Rigs - Arrival/Sailing Port Limits to Berth	Dundee - Feb 2018
FP PMSC RA (T)6	Tay - River Transit and Berthings/Sailings small commercial craft (tugs, workboats, pilot boats etc.)	Dundee - May 2015
FP PMSC RA (F&T)1	Forth & Tay - Vessel at Anchor	PMC - 06th Sept 2017
FP PMSC RA (F&T)2	Forth & Tay - Towage Operations	Inner Forth - 06th Feb 2018
FP PMSC RA (F&T)3	Forth & Tay - Immobilised Vessels	PMC - 06th Sept 2017
FP PMSC RA (F&T)4	Forth & Tay - Bunkering Operations in Dock	PMC - 06th Sept 2017
FP PMSC RA (F&T)5	Forth & Tay - Bunkering Operations in Tidal Waters	PMC - 06th Sept 2017
FP PMSC RA (F&T)6	Forth & Tay - NAABSA Berths	PMC - 06th Sept 2017
FP PMSC RA (F&T)7	Forth & Tay - Diving Operations	Inner Forth - 09th Oct 2018
FP PMSC RA (F&T)8	Forth & Tay - Recreational Events	Inner Forth - 09th Oct 2018
FP PMSC RA (F&T)9	Forth & Tay - Underwater Cables & Pipelines	PMC, Fife/BF-HP/LTH/GMTH PMSC March/April 2015
FP PMSC RA (F&T)10	Forth & Tay - Marine Pollution (Tidal Waters)	(PMC 01/09) ALL PMSC's
FP PMSC RA (F&T)11	Forth & Tay - Marine Pollution (Enclosed Dock)	(PMC 01/09) ALL PMSC's
	Red indicates last Reviewed	

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
6	FP PMSC RA (F) 12 - 1.2 Contact	Contact	7.25
1	FP PMSC RA (F&T) 01 - 1.1 Dragging Anchor	Dragging Anchor	7.875
9	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
8	FP PMSC RA (T) 02 - 1.2 Contact	Contact	7
9	FP PMSC RA (T) 01 - 1.4 Sinking / Capsize	Sinking / Capsize	6.875
9	FP PMSC RA (F) 07 - 1.1 Collision	Collision	6.875
12	FP PMSC RA (F) 10 - 1.5 Fire / Explosion	Fire / Explosion	6.75
12	FP PMSC RA (F) 09 - 1.2 Contact	Contact	6.75
14	FP PMSC RA (T) 02 - 1.5 Fire / Explosion	Fire / Explosion	6.625
15	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	Collision	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) 1	Loss of Containment (Oil Product)	4
114	FP PMSC RA (F&T) 09 - 1.2 Pipeline / Cable Damage	Pipeline / Cable Damage	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

FORTH PORTS LIMITED	Document ID FP PMSC (R) 1/03	Original Date Jul-13
Risk Ranking	Review Due Ongoing	Revised By / Date MM / August 2015

PMSC RISK ASSESSMENT - RISK RANKING

Rank	HazardID	Hazard What can go wrong (Event leading to a consequence)	Most Likely Risk scored at Residual level				Worst credible Risk scored at Residual level				Hazard Scoring
			People	Property	Environment	Business	People	Property	Environment	Business	
3	FP PMSC RA (F&T) 02 - 1.3 Contact	Contact	5	10	5	10	6	8	8	10	7.75
4	FP PMSC RA (F) 10 - 1.2 Contact	Contact	5	10	5	5	6	10	8	10	7.375
6	FP PMSC RA (F) 12 - 1.2 Contact	Contact	4	8	4	8	6	10	8	10	7.25
1	FP PMSC RA (F&T) 01 - 1.1 Dragging Anchor	Dragging Anchor	5	10	5	5	8	10	10	10	7.875
9	FP PMSC RA (F&T) 06 - 1.4 Hull Damage	Hull Damage	5	9	6	9	4	8	8	8	6.875
8	FP PMSC RA (T) 02 - 1.2 Contact	Contact	8	8	4	8	6	6	8	8	7
6	FP PMSC RA (T) 01 - 1.3 Grounding	Grounding	2	6	4	6	10	10	10	10	7.25
9	FP PMSC RA (T) 01 - 1.4 Sinking / Capsize	Sinking / Capsize	4	5	4	4	10	10	10	8	6.875
9	FP PMSC RA (F) 07 - 1.1 Collision	Collision	4	9	6	6	8	8	6	8	6.875
12	FP PMSC RA (F) 10 - 1.5 Fire / Explosion	Fire / Explosion	4	4	4	4	10	10	8	10	6.75
12	FP PMSC RA (F) 09 - 1.2 Contact	Contact	5	6	5	6	6	10	10	10	6.75
14	FP PMSC RA (T) 02 - 1.5 Fire / Explosion	Fire / Explosion	9	9	6	6	5	5	5	8	6.625
15	FP PMSC RA (F) 15 - 1.5 Fire / Explosion	Fire / Explosion	10	10	5	10	5	5	3	4	6.5
16	FP PMSC RA (F&T) 02 - 1.1 Capsizing / Flooding	Capsizing / Flooding	8	8	8	8	5	5	4	5	6.375
16	FP PMSC RA (F) 04 - 1.2 Contact	Contact	5	10	5	5	6	8	6	6	6.375
16	FP PMSC RA (F) 02 - 1.1 Collision	Collision	6	9	6	6	6	6	6	6	6.375
19	FP PMSC RA (F) 02 - 1.3 Grounding	Grounding	5	6	6	5	6	8	8	10	6.25
19	FP PMSC RA (F) 03 - 1.3 Grounding	Grounding	5	6	6	5	6	8	8	10	6.25
19	FP PMSC RA (F&T) 06 - 1.3 Fire	Fire	4	4	2	4	10	10	6	10	6.25
23	FP PMSC RA (F) 07 - 1.2 Contact	Contact	5	10	5	5	4	8	6	6	6.125
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
25	FP PMSC RA (T) 04 - 1.5 Fire / Explosion	Fire / Explosion	8	8	6	6	5	5	5	5	6
25	FP PMSC RA (F) 11 - 1.2 Contact	Contact	6	6	2	3	6	8	8	8	6
1	FP PMSC RA (F) 02 - 1.2 Contact	Contact	5	10	10	10	6	8	6	8	7.875
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	5	6	6	6	6	6	6	8	5.875
29	FP PMSC RA (F&T) 02 - 1.2 Fire	Fire	3	3	3	6	8	8	8	8	5.875
29	FP PMSC RA (F) 12 - 1.5 Fire / Explosion	Fire / Explosion	6	9	3	9	5	5	5	5	5.875
32	FP PMSC RA (F) 10 - 1.3 Grounding	Grounding	5	6	3	6	3	10	6	10	5.75
32	FP PMSC RA (F) 14 - 1.2 Contact	Contact	5	5	5	5	8	8	4	6	5.75
32	FP PMSC RA (F) 16 - 1.2 Contact	Contact	5	5	5	5	8	8	4	6	5.75
32	FP PMSC RA (F) 15 - 1.4 Sinking / Capsize	Sinking / Capsize	9	8	4	8	5	5	3	5	5.75
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
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
37	FP PMSC RA (F) 07 - 1.3 Grounding	Grounding	5	6	6	6	6	6	6	6	5.625
39	FP PMSC RA (F) 03 - 1.2 Contact	Contact	5	5	5	5	6	6	6	6	5.5
39	FP PMSC RA (F) 15 - 1.3 Grounding	Grounding	5	10	5	10	3	4	3	4	5.5
19	FP PMSC RA (F) 13 - 1.3 Grounding	Grounding	6	9	6	9	5	5	5	5	6.25
39	FP PMSC RA (F) 13 - 1.5 Fire / Explosion	Fire / Explosion	6	6	6	6	5	5	5	5	5.5
39	FP PMSC RA (T) 06 - 1.1 Collision	Collision	3	6	6	3	8	6	4	8	5.5
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
45	FP PMSC RA (F) 14 - 1.5 Fire / Explosion	Fire / Explosion	3	3	3	6	8	8	4	8	5.375
45	FP PMSC RA (F) 14 - 1.1 Collision	Collision	6	3	3	3	8	8	4	8	5.375
45	FP PMSC RA (F) 16 - 1.1 Collision	Collision	6	3	3	3	8	8	4	8	5.38
45	FP PMSC RA (F) 16 - 1.5 Fire	Fire / Explosion	3	3	3	6	8	8	4	8	5.38
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
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
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
50	FP PMSC RA (F) 13 - 1.2 Contact	Contact	6	6	4	6	5	5	5	5	5.25
50	FP PMSC RA (F&T) 01 - 1.5 Fire / Explosion	Fire / Explosion	6	6	6	4	5	5	5	5	5.25
50	FP PMSC RA (T) 06 - 1.2 Contact	Contact	5	5	5	5	6	6	4	6	5.25
50	FP PMSC RA (F) 03 - 1.1 Collision	Collision	5	6	4	4	6	6	6	6	5.25
50	FP PMSC RA (F) 06 - 1.3 Grounding Refer Also to: FP PMSSC RA (F&T)7	Grounding	4	4	2	3	8	8	8	5.25	5.25
39	FP PMSC RA (F) 10 - 1.1 Collision	Collision	6	6	6	6	5	5	5	5	5.5
59	FP PMSC RA (T) 04 - 1.4 Sinking / Capsize	Sinking / Capsize	5	5	5	5	5	5	5	5	5
59	FP PMSC RA (F) 05 - 1.1 Collision	Collision	4	4	4	4	6	6	6	6	5
59	FP PMSC RA (F) 06 - 1.2 Contact	Contact	4	4	4	2	6	6	6	5	5
59	FP PMSC RA (F) 09 - 1.5 Fire / Explosion	Fire / Explosion	6	6	2	6	5	5	5	5	5
59	FP PMSC RA (T) 05 - 1.5 Fire / Explosion	Fire / Explosion	6	6	3	6	5	5	4	5	5
59	FP PMSC RA (F) 13 - 1.4 Sinking / Capsize	Sinking / Capsize	5	5	5	5	5	5	5	5	5
59	FP PMSC RA (F) 11 - 1.1 Collision	Collision	4	6	6	6	5	5	4	4	5
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) 11 - 1.5 Fire / Explosion	Fire / Explosion	6	6	3	6	5	5	4	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
69	FP PMSC RA (F) 15 - 1.2 Contact	Contact	5	10	5	5	4	4	3	3	4.875
4	FP PMSC RA (F) 08 - 1.2 Contact	Contact	6	9	9	9	6	8	6	6	7.375
58	FP PMSC RA (T) 01 - 1.5 Fire / Explosion	Fire / Explosion	6	6	6	3	5	5	5	5	5.125
71	FP PMSC RA (F) 09 - 1.1 Collision	Collision	6	6	2	4	5	5	5	5	4.75
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
71	FP PMSC RA (F&T) 09 - 1.4 Loss of Containment / Power / Communication	Loss of Containment / Power / Communication	0	6	4	6	4	5	4	5	4.75
71	FP PMSC RA (T) 04 - 1.2 Contact	Contact	3	9	3	6	3	5	4	5	4.75
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
77	FP PMSC RA (F) 08 - 1.1 Collision (Fishing/Leisure Vessel)	Collision (Fishing/Leisure Vessel)	5	6	4	4	5	5	4	4	4.5
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
71	FP PMSC RA (T) 06 - 1.4 Sinking / Capsize	Sinking / Capsize	6	8	4	6	3	4	3	4	4.75
77	FP PMSC RA (F) 01 - 1.4 Sinking / Capsize	Sinking / Capsize	4	5	4	4	5	5	5	4	4.5
77	FP PMSC RA (F) 09 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	4	4	6	6	3	3	5	5	4.5
77	FP PMSC RA (F) 10 - 1.4 Sinking / Capsize	Sinking / Capsize	4	3	4	5	5	5	5	5	4.5
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
37	FP PMSC RA (F&T) 02 - 1.5 Grounding	Grounding	6	6	6	9	4	5	4	5	5.625
77	FP PMSC RA (F) 09 - 1.4 Sinking / Capsize	Sinking / Capsize	3	5	5	5	3	5	5	5	4.5
77	FP PMSC RA (F) 12 - 1.4 Sinking / Capsize	Sinking / Capsize	3	5	5	5	3	5	5	5	4.5
154	FP PMSC RA (T) 06 - 1.5 Fire / Explosion	Fire / Explosion	3	3	3	3	4	4	2	3	3.125
77	FP PMSC RA (F&T) 06 - 1.2 Capsizing / Flooding	Capsizing / Flooding	3	5	3	5	5	5	5	5	4.5
77	FP PMSC RA (F) 01 - 1.6 Loss of Containment (oil product)	Loss of Containment (Oil Product)	2	4	6	6	3	5	5	5	4.5
75	FP PMSC RA (F&T) 09 - 1.3 Fire / Explosion	Fire / Explosion	4	5	4	5	4	5	5	5	4.625
77	FP PMSC RA (F) 07 - 1.4 Sinking / Capsize	Sinking / Capsize	4	6	4	6	5	4	3	4	4.5
77	FP PMSC RA (T) 05 - 1.2 Contact	Contact	3	9	3	6	3	5	3	4	4.5
89	FP PMSC RA (T) 02 - 1.4 Sinking / Capsize	Sinking / Capsize	4	4	3	4	5	5	5	5	4.375
89	FP PMSC RA (F) 14 - 1.4 Sinking / Capsize	Sinking / Capsize	5	5	2	5	5	5	3	5	4.375
89	FP PMSC RA (F) 16 - 1.4 Sinking / Capsize	Sinking / Capsize	5	5	2	5	5	5	3	5	4.38
89	FP PMSC RA (F&T) 06 - 1.1 Contact	Contact	6	3	3	6	4	5	3	5	4.375

89	FP PMSC RA (F) 02 - 1.4 Sinking / Capsize	Sinking / Capsize	4	4	5	4	4	4	5	5	4.375
89	FP PMSC RA (F) 03 - 1.4 Sinking / Capsize	Sinking / Capsize	4	4	5	4	4	4	5	5	4.375
89	FP PMSC RA (F) 05 - 1.4 Sinking / Capsize	Sinking / Capsize	4	4	5	4	4	4	5	5	4.375
89	FP PMSC RA (F&T) 05 - 1.4 Fire/Explosion	Fire / Explosion	4	4	3	4	5	5	5	5	4.375
110	FP PMSC RA (T) 05 - 1.4 Sinking / Capsize	Sinking / Capsize	4	4	3	4	4	4	5	5	4.125
89	FP PMSC RA (F&T) 09 - 1.1 Contact	Contact	4	6	2	6	3	5	4	5	4.375
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
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
89	FP PMSC RA (F) 08 - 1.5 Fire / Explosion	Fire / Explosion	6	6	4	4	4	4	3	4	4.375
150	FP PMSC RA (T) 04 - 1.7 Allision	Allision	4	3	1	2	5	5	5	5	3.375
101	FP PMSC RA (F) 04 - 1.3 Grounding	Grounding	2	4	4	2	4	6	6	6	4.25
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
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
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
101	FP PMSC RA (F) 11 - 1.4 Sinking / Capsize	Sinking / Capsize	4	5	3	5	4	5	3	5	4.25
101	FP PMSC RA (F&T) 04 - 1.4 Fire/Explosion	Fire / Explosion	4	4	2	4	5	5	4	5	4.25
101	FP PMSC RA (F) 12 - 1.1 Collision	Collision	2	6	2	6	3	5	5	5	4.25
59	FP PMSC RA (F&T) 01 - 1.3 Grounding	Grounding	4	6	4	6	5	5	5	5	5
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
101	FP PMSC RA (F&T) 02 - 1.4 Collision	Collision	3	6	6	3	4	4	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
110	FP PMSC RA (F) 15 - 1.1 Collision	Collision	4	6	4	4	4	4	3	4	4.125
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
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
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
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
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
114	FP PMSC RA (F) 01 - 1.2 Contact	Contact	2	6	4	2	5	5	4	4	4
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
114	FP PMSC RA (F) 12 - 1.3 Grounding	Grounding	2	8	2	6	1	5	3	5	4
114	FP PMSC RA (F&T) 09 - 1.2 Pipeline / Cable Damage	Pipeline / Cable Damage	2	6	2	6	2	5	4	5	4
114	FP PMSC RA (F) 14 - 1.3 Grounding	Grounding	4	4	4	4	4	4	4	4	4
114	FP PMSC RA (F) 16 - 1.3 Grounding	Grounding	4	4	4	4	4	4	4	4	4.00
50	FP PMSC RA (T) 04 - 1.1 Collision	Collision	4	8	4	6	5	5	5	5	5.25
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
125	FP PMSC RA (F&T) 04 - 1.2 Contact	Contact	2	6	3	3	3	5	4	4	3.875
125	FP PMSC RA (F&T) 05 - 1.2 Contact	Contact	3	6	3	3	3	5	4	4	3.875
125	FP PMSC RA (F) 01 - 1.5 Fire / Explosion	Fire / Explosion	3	4	3	3	5	5	3	5	3.875
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
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
125	FP PMSC RA (F) 09 - 1.3 Grounding	Grounding	2	6	2	6	1	5	4	5	3.875
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
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
125	FP PMSC RA (F&T) 08 - 1.1 - Collision / contact	Collision / Contact	6	4	2	6	5	3	1	4	3.875
136	FP PMSC RA (T) 04 - 1.3 Grounding	Grounding	2	4	4	4	2	4	5	5	3.75
136	FP PMSC RA (T) 02 - 1.1 Collision	Collision	4	6	2	4	3	4	3	4	3.75
125	FP PMSC RA (T) 05 - 1.1 Collision	Collision	4	4	4	4	4	5	2	4	3.875
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
136	FP PMSC RA (F) 07 - 1.5 Fire / Explosion	Fire / Explosion	4	4	4	4	4	4	3	3	3.75
141	FP PMSC RA (F) 01 - 1.1 Collision	Collision	2	4	2	2	5	5	5	4	3.625
141	FP PMSC RA (T) 01 - 1.1 Collision	Collision	2	4	2	2	5	5	5	4	3.625
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
145	FP PMSC RA (F) 04 - 1.4 Sinking / Capsize	Sinking / Capsize	4	3	2	3	5	3	4	4	3.5
145	FP PMSC RA (F) 06 - 1.4 Sinking / Capsize	Sinking / Capsize	3	2	3	1	3	4	4	3.5	3.5
145	FP PMSC RA (F) 08 - 1.4 Sinking / Capsize	Sinking / Capsize	4	3	2	3	5	3	4	4	3.5
145	FP PMSC RA (F) 01 - 1.3 Grounding	Grounding	1	3	2	3	5	5	5	4	3.5
145	FP PMSC RA (T) 02 - 1.3 Grounding	Grounding	3	3	3	6	2	4	3	4	3.5
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
152	FP PMSC RA (F) 02 - 1.5 Fire / Explosion	Fire / Explosion	3	3	3	2	4	4	3	4	3.25
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
154	FP PMSC RA (F) 03 - 1.5 Fire / Explosion	Fire / Explosion	3	3	3	2	4	4	3	3	3.125
154	FP PMSC RA (F) 04 - 1.5 Fire / Explosion	Fire / Explosion	3	3	3	2	4	4	3	3	3.125
154	FP PMSC RA (F) 06 - 1.5 Fire / Explosion	Fire / Explosion	3	3	2	1	4	4	3	3	3.125
154	FP PMSC RA (F) 11 - 1.3 Grounding	Grounding	2	4	2	2	3	4	4	4	3.125
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) 01 - 1.2 Contact	Contact	2	6	2	3	5	5	4	4	4.125
154	FP PMSC RA (F&T) 07 - 1.2 - Collision / contact	Collision / Contact	3	2	1	1	5	5	3	5	3.125
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
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
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
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
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
163	FP PMSC RA (T) 06 - 1.3 Grounding	Grounding	3	3	3	3	3	4	2	3	3
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

FORTH PORTS LIMITED

Risk Ranking - Category

Document ID
FP PMSC (R) 2/03
Review Due
Ongoing

Original Date
Jul-15
Revised By / Date
MM / August 2015



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.



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
				Likelihood	Overall Risk				Likelihood	Overall Risk				
					People	Property	Environment	Business		People	Property	Environment	Business	
1.1	Collision / Allision	Technical Failure Bridge Team Error Environmental Conditions Transitting FCBC Contruction Zone	Pilotage FTNS Forth Byelaw & General Directions Weather Forecasting / Tidal Predictions Emergency Plans / OPRC Marine Guidelines & Port Information FCBC Exclusion Zones FCBC SMS & Procedures Towage	3	9	9	9	9	2	10	10	10	8	9.25
1.2	Contact	Technical Failure Bridge Team Error Environmental Conditions Transitting FCBC Contruction Zone	Pilotage FTNS Forth Byelaw & General Directions (Specifically those relevant to the bridges) Emergency Plans / OPRC Weather Forecasting / Tidal Predictions Marine Guidelines & Port Information FCBC Exclusion Zones FCBC SMS & Procedures Aids to Navigation	3	3	6	3	6	1	5	5	4	5	4.625
1.3	Grounding	Technical Failure Bridge Team Error Environmental Conditions Surveying Omission Failure of Aids to Navigation Transitting FCBC Contruction Zone	Pilotage FTNS Aids to Navigation Maintenance & Verification Programme Weather Forecasting / Tidal Predictions Emergency Plans / OPRC Notice to Mariners Survey / dredging Programme / Schedule Marine Guidelines & Port Information FCBC Exclusion Zones FCBC SMS & Procedures	3	3	9	9	6	1	5	5	5	5	5.875
1.4	Sinking / Capsize	Collision Contact Grounding Technical Failure Failure of Vessel Stability Human Error Environmental Conditions	Pilotage FTNS Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting / Tidal Predictions Aids to Navigation Maintenance & Verification Programme Notice to Mariners Survey Programme / Schedule	1	5	5	4	4	1	5	5	5	4	4.625
1.5	Fire / Explosion	Collision Contact Grounding Human Error Technical Failure Loss of Containment	Pilotage FTNS Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting Marine Guidelines & Port Information	3	6	9	6	9	2	10	10	10	10	8.75
1.6	Loss of Containment (oil products)	Collision Grounding Human Error Contact Technical Failure Sinking / Capsizing Fire / Explosion Environmental Conditions Damage to Pipeline	Pilotage FTNS Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting Aids to Navigation Maintenance & Verification Programme Notice to Mariners Survey Programme / Schedule Vetting (Tankers) Marine Guidelines & Port Information	4	8	8	8	8	1	3	5	5	5	6.25

MRFs: 058/18 (collision), 019/18 (contact), 028/17 (grounding), POLREPs: 17.05.17, 20.10.17, 13.01.18, 25.06.18

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.	Most likely scoring changed due to number of POLREPS and MRFs - loss of containment, collision, grounding, contact.

FORTH PORTS LIMITED	Document ID FP PMSC RA (F) 1/06	Risk Assessment Team / Date CHM, MM, HMFO, HMFI, HMDD, Man Tow&PV / Oct 2012
Risk Assessment - Forth River Passage (Standard Vessel)	Review Due Apr-21	Revised By / Date MMT / April 2019



FORTH PORTS LIMITED
Navigational Risk Assessment

Port of Leith - Arrival / Sailing Leith Approach Buoy to Berth										MRFs: 058/17, 081/18, 005/19 (Contact), 041/19 (Contact), 081/19 (Contact), 084/19 (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	Technical Failure Bridge Team Error Environmental Conditions	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS Console Controller Tugs, use of; minimum towage requirements Forth Byelaw & General Directions Weather Forecasting / Tidal Predictions Emergency Plans / OPRC Marine Guidelines & Port Information Towage Guidelines	3	6	9	6	6	2	6	6	6	6	6.375	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.
1.2	Contact	Technical Failure Bridge Team Error Environmental Conditions Failure of Aids to Navigation Quayside Obstruction	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS Console Controller Tugs, use of; minimum towage requirements Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting / Tidal Predictions Marine Guidelines & Port Information Fendering Quay edge 'cargo clear' demarkation Restricted Air Draft Procedures Cranes properly stowed on quayside Swing Bridge Procedure Forth Ports H&S Procedures Towage Guidelines Aids to Navigation Maintenance & Verification Programme	5	5	10	10	10	2	6	8	6	8	7.875	Most Likely: Slow speed impact with quay resulting in minimal damage to vessel or jetty. Worst Credible: Large impact resulting in extreme damage to vessel and infrastructure. Quayside no longer able to operate and vessel requiring repair possible death / loss of containment.
1.3	Grounding	Technical Failure Bridge Team Error Environmental Conditions Surveying Omission Failure of Aids to Navigation Loss of containment (Dock Level)	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS Console Controller Tidal Monitoring Tugs, use of; minimum towage requirements Aids to Navigation Maintenance & Verification Programme Weather Forecasting / Tidal Predictions Emergency Plans / OPRC Notice to Mariners Survey / dredging Programme / Schedule Marine Guidelines & Port Information Cargo operations procedures (Including MCA Bulk-handling Regulations) PVM Document ammended (Extreme Breadth) Towage Guidelines	3	3	6	6	3	2	6	8	8	10	6.25	Most Likely: Vessel grounded in soft mud and floats on following tide without damage. Worst Credible: Vessel hard aground, cannot be refloated at the Port entrance. Port is closed indefinitely and major damage to vessel.
1.4	Sinking / Capsize	Collision Contact Grounding Technical Failure Failure of Vessel Stability Human Error Environmental Conditions	Pilotage FTNS Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting / Tidal Predictions Aids to Navigation Maintenance & Verification Programme Notice to Mariners Survey Programme / Schedule Marine Guidelines & Port Information Towage Guidelines	1	4	4	5	4	1	4	4	5	5	4.375	Most Likely: Vessel sinks in approach to port, total loss of ship, and crew abandon ship. Worst Credible: Vessel sinks in approach to port, total loss of ship and crew.
1.5	Fire / Explosion	Collision Contact Grounding Human Error Technical Failure Loss of Containment	Pilotage FTNS Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting Marine Guidelines & Port Information	1	3	3	3	2	1	4	4	3	4	3.25	Most Likely: Small fire on-board quickly extinguished. Worst Credible: Uncontrollable fire, total loss of vessel , crew and cargo.
1.6	Loss of Containment (Oil Products)	Collision Grounding Human Error Contact Technical Failure Sinking / Capsizing Fire / Explosion Environmental Conditions	Pilotage FTNS Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting Aids to Navigation Maintenance & Verification Programme Notice to Mariners Survey Programme / Schedule Marine Guidelines & Port Information	3	3	3	6	6	1	2	3	4	4	3.875	Most Likely: Small spill of non-persistent product. Worst Credible: Large scale spill which cannot be contained resulting in port closure and extensive environmental impact.
1.7	Loss of Dock Level (Lock Gate Operations)	Technical Failure Human Error Environmental Conditions Structural Failure	Lockgate operational procedures Port Planned Maintenance system Lock Gates - Interlocks to prevent opening all lock gates simultaneously Training / Auditing of Port Staff	3	3	3	3	9	1	5	5	4	5	4.625	Most Likely: Loss of containment but does not result in significant loss of dock level. Possible impact to large draft movements. Worst Credible: Large loss of dock level. Deep drafted vessel take the bottom of dock. Possible large scale damage to vessels and infrastructure.

Content Reviewed	Changes Made
MRFs reviewed - all contact. Vessel traffic and type including size.	Most likely likelihood scoring updated due to MRFs- contact

FORTH PORTS LIMITED	Document ID FP_PMSC.RA (F) 2/04	Risk Assessment Team / Date MM, HMFO / 3rd Dec2012
Risk Assessment - Port of Leith	Review Due Apr-21	Revised By / Date MMT, April 2019



FORTH PORTS LIMITED
Navigational Risk Assessment

	Port of Rosyth - Arrival / Sailing No1 Rosyth Channel Buoy to Berth													MRFs: 066/18 (contact), 024/19 (technical failure), 077/19 (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	People	Property	Environment	Business	Likelihood	People	Property	Environment	Business			
1.1	Collision / Allision	Technical Failure Bridge Team Error Environmental Conditions Transitting FCBC Contruction Zone	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS Tugs, use of; minimum towage requirements Forth Byelaw & General Directions Weather Forecasting / Tidal Predictions Emergency Plans / OPRC Marine Guidelines & Port Information FCBC Exclusion Zones FCBC SMS & Procedures	2	4	6	4	4	1	5	5	4	4	4.5	Most likely: Collision between small workboat and larger vessel at slow speed resulting in minimal damage and no injuries. Worst credible: Collision between two cruise vessels resulting in loss of vessels and loss of life.	
1.2	Contact	Technical Failure Bridge Team Error Environmental Conditions Failure of Aids to Navigation Quayside Obstruction Transitting FCBC Contruction Zone	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS Tugs, use of; minimum towage requirements Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting / Tidal Predictions Marine Guidelines & Port Information Fendering Restricted Air Draft Procedures Cranes / cargo properly stowed on quayside Forth Ports H&S Procedures FCBC Exclusion Zones FCBC SMS & Procedures	3	6	9	6	3	1	5	5	4	4	5.25	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.	
1.3	Grounding	Technical Failure Bridge Team Error Environmental Conditions Surveying Omission Failure of Aids to Navigation Transitting FCBC Contruction Zone	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS Tidal Monitoring Tugs, use of; minimum towage requirements Aids to Navigation Maintenance & Verification Programme Weather Forecasting / Tidal Predictions Emergency Plans / OPRC Notice to Mariners Survey / dredging Programme / Schedule Marine Guidelines & Port Information Cargo operations procedures (Including MCA Bulk-handling Regulations) FCBC Exclusion Zones FCBC SMS & Procedures Ruling Depth & UKC document	2	2	6	4	6	1	4	4	4	4	4.25	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	Collision Contact Grounding Technical Failure Failure of Vessel Stability Human Error Environmental Conditions	Pilotage FTNS Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting / Tidal Predictions Aids to Navigation Maintenance & Verification Programme Notice to Mariners Survey Programme / Schedule Marine Guidelines & Port Information	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 resulting in total loss of vessel, and loss of life.	
1.5	Fire / Explosion	Collision Contact Grounding Human Error Technical Failure Loss of Containment	Pilotage FTNS Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting Marine Guidelines & Port Information	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)	Collision Grounding Human Error Contact Technical Failure Sinking / Capsizing Fire / Explosion Environmental Conditions	Pilotage FTNS Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting Aids to Navigation Maintenance & Verification Programme Notice to Mariners Survey Programme / Schedule Marine Guidelines & Port Information Bunkering Procedure	3	3	3	6	6	2	4	6	8	8	5.5	Most likely: Small spill of non-persistant product that dissipates naturally. Worst credible: Large scale spill which cannot be contained resulting in port closures and extensive environmental impact.	

Content Reviewed	Changes Made
MRFs reviewed - contact. Vessel numbers, size, and type in the area. Ongoing projects that have an impact.	Contact Most Likely likelihood scoring updated due to MRFs.

FORTH PORTS LIMITED	Document ID FP PMSC RA (F) 03/05	Risk Assessment Team / Date MM, HMFO / 9th Jan 2013
Risk Assessment - Port of Rosyth	Review Due Apr-21	Revised By / Date MMT, April 2019



FORTH PORTS LIMITED
Navigational Risk Assessment

Port of Methil - Arrival / Sailing Methil Pilot Station to Berth														
Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score
				Likelihood	Overall Risk				Likelihood	Overall Risk				
					People	Property	Environment	Business		People	Property	Environment	Business	
1.1	Collision with Small Commercial Vessel / Leisure vessel	Technical Failure Bridge Team Error Environmental Conditions	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS Tugs, use of; minimum towage requirements Forth Byelaw & General Directions Weather Forecasting / Tidal Predictions Emergency Plans / OPRC Marine Guidelines & Port Information	2	4	4	2	4	2	10	6	6	6	5.25
1.2	Contact	Technical Failure Bridge Team Error Environmental Conditions Failure of Aids to Navigation Quayside Obstruction	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS Tugs, use of; minimum towage requirements Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting / Tidal Predictions Marine Guidelines & Port Information Fendering Cranes properly stowed on quayside Forth Ports H&S Procedures Dock Gatemmen Procedures Barge proforma	5	5	10	5	5	2	6	8	6	6	6.375
1.3	Grounding	Technical Failure Bridge Team Error Environmental Conditions Surveying Omission Failure of Aids to Navigation	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS Tidal Monitoring Tugs, use of; minimum towage requirements Aids to Navigation Maintenance & Verification Programme Weather Forecasting / Tidal Predictions Emergency Plans / OPRC Notice to Mariners Survey / dredging Programme / Schedule Marine Guidelines & Port Information Cargo operations procedures (Including MCA Bulk-handling Regulations) Dock gate procedure	2	2	4	4	2	2	4	6	6	6	4.25
1.4	Sinking / Capsize	Collision Contact Grounding Technical Failure Failure of Vessel Stability Human Error Environmental Conditions	Dockgate operational procedures Port Planned Maintenance system Training / Auditing of Port Staff Dock gate procedure	1	4	3	2	3	1	5	3	4	4	3.5
1.5	Fire / Explosion	Collision Contact Grounding Human Error Technical Failure Loss of Containment	Pilotage FTNS Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting Marine Guidelines & Port Information	1	3	3	3	2	1	4	4	3	3	3.125
1.6	Loss of Containment (Oil Products)	Collision Grounding Human Error Contact Technical Failure Sinking / Capsizing Fire / Explosion Environmental Conditions	Pilotage FTNS Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting Aids to Navigation Maintenance & Verification Programme Notice to Mariners Survey Programme / Schedule Marine Guidelines & Port Information	3	3	3	6	6	1	2	3	3	3	3.625
1.7	Loss of Dock Level (Lock Gate Operations)	Technical 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

MRF 026/2017 (Contact), 033/2019 (Contact), 040 (personal injury - MOB), 059/17 (Contact), 063/17 (Contact), 003/18 (Tow line parted), 033/19 (Collision/allision)

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

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

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

Most likely: Vessel sinks/capsizes outwith entrance of harbour with everyone safely evacuated and no loss of life

Worst credible: Vessel sinks/capsizes in entrance of harbour with multiple fatalities and total loss of vessel

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-persistent product that dissipates naturally.

Worst credible: Large scale spill which cannot be contained resulting in port closures 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; 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.	Contact likelihood for most likely already at maximum of 5, Outcome means that risk remains the same.

FORTH PORTS LIMITED	Document ID FP.PMSC RA (F) 4/03	Risk Assessment Team / Date HMFO, HMDD, MM / 16th Jan 2013
Risk Assessment - Port of Methil	Review Due Apr-21	Revised By / Date MMT April 2019



FORTH PORTS LIMITED
Navigational Risk Assessment

	Methil SE Berth - Arrival/Sailing Methil Pilot Station to Berth														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 / Allision	Technical Failure Bridge Team Error Environmental Conditions	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS Tugs, use of; minimum towage requirements Forth Byelaw & General Directions Weather Forecasting / Tidal Predictions Emergency Plans / OPRC Marine Guidelines & Port Information 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	Technical Failure Human Error Environmental Conditions Failure of Aids to Navigation Quayside / Seabed Obstruction	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS Tugs, use of; minimum towage requirements Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting / Tidal Predictions Marine Guidelines & Port Information 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	Technical Failure Bridge Team Error Environmental Conditions Surveying Omission Failure of Aids to Navigation	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS Tidal Monitoring Tugs, use of; minimum towage requirements Aids to Navigation Maintenance & Verification Programme Weather Forecasting / Tidal Predictions Emergency Plans / OPRC Notice to Mariners Survey / dredging Programme / Schedule (By Operator) Marine Guidelines & Port Information 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 contaminant.	
1.4	Sinking / Capsize	Collision Contact Grounding Technical Failure Failure of Vessel Stability Human Error Environmental Conditions	Pilotage FTNS Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting / Tidal Predictions Aids to Navigation Maintenance & Verification Programme Notice to Mariners Survey Programme / Schedule (By Operator) Marine Guidelines & Port Information 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	Collision Contact Grounding Human Error Technical Failure Loss of Containment	Pilotage FTNS Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting Marine Guidelines & Port Information	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)	Collision Grounding Human Error Contact Technical Failure Sinking / Capsizing Fire / Explosion Environmental Conditions	Pilotage FTNS Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting Aids to Navigation Maintenance & Verification Programme Notice to Mariners Survey Programme / Schedule (By Operator) Marine Guidelines & Port Information	2	2	4	4	4	1	2	3	3	3	3.125	Most likely: Small spill of non-persistent 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
Changes to guidelines or procedures affecting Methil Number of vessels calling, other traffic in the vicinity, and vessel type calling.	No changes required.

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 Apr-21	Revised By / Date MMT April 2019



FORTH PORTS LIMITED
Navigational Risk Assessment

	Port of Kirkcaldy - Arrival / Sailing Close Approaches of Dock to Berth														MRF: 048/18 (technical failure)	
Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score		
				Likelihood	Overall Risk				Likelihood	Overall Risk						
					People	Property	Environment	Business		People	Property	Environment	Business			
1.1	Collision / Allision with Small Commercial Vessel / Leisure vessel / other Kirkcaldy vessel	Technical Failure Bridge Team Error Environmental Conditions	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS Tugs, use of; minimum towage requirements Forth Byelaw & General Directions Weather Forecasting / Tidal Predictions Emergency Plans / OPRC Marine Guidelines & Port Information	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	Technical Failure Bridge Team Error Environmental Conditions Failure of Aids to Navigation Quayside Obstruction	Pilotage Passage plan / berthing plan – Master / Pilot information exchange FTNS Tugs, use of Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting / Tidal Predictions Marine Guidelines & Port Information 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	Technical Failure Bridge Team Error Environmental Conditions Surveying Omission Failure of Aids to Navigation	Pilotage (Pilot briefed with latest survey) Passage plan / berthing plan – master / pilot information exchange FTNS Tidal Monitoring Tugs, use of; minimum towage requirements Aids to Navigation Maintenance & Verification Programme Weather Forecasting / Tidal Predictions Emergency Plans / OPRC Notice to Mariners Survey / dredging Programme / Schedule Marine Guidelines & Port Information Cargo operations procedures (Including MCA Bulk-handling Regulations) Fixed Lighting on East Pier	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	Collision Contact Grounding Technical Failure Failure of Vessel Stability Human Error Environmental Conditions	Pilotage FTNS Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting / Tidal Predictions Aids to Navigation Maintenance & Verification Programme Notice to Mariners Survey Programme / Schedule Marine Guidelines & Port Information	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	Collision Contact Grounding Human Error Technical Failure Loss of Containment	Pilotage FTNS Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting Marine Guidelines & Port Information	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)	Collision Grounding Human Error Contact Technical Failure Sinking / Capsizing Fire / Explosion Environmental Conditions	Pilotage FTNS Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting Aids to Navigation Maintenance & Verification Programme Notice to Mariners Survey Programme / Schedule Marine Guidelines & Port Information	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.	No changes made.

FORTH PORTS LIMITED	Document ID FP PMSC RA (F) 6/05	Risk Assessment Team / Date HMFO, HMDD, MM / 23rd Jan 2013
Risk Assessment - Port of Kirkcaldy	Review Due Apr-21	Revised By / Date MMT / April 19



FORTH PORTS LIMITED
Navigational Risk Assessment

Port of Burntisland - Arrival / Sailing Close Approaches of Dock 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	Technical Failure Bridge Team Error Environmental Conditions Location of Yacht Club	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS Tugs, use of Forth Byelaw & General Directions Weather Forecasting / Tidal Predictions Emergency Plans / OPRC Marine Guidelines & Port Information Dockgate Procedures	3	4	9	6	6	2	8	8	6	8	6.875
1.2	Contact	Technical Failure Bridge Team Error Environmental Conditions Failure of Aids to Navigation Quayside Obstruction	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS Tugs, use of; Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting / Tidal Predictions Marine Guidelines & Port Information Fendering Cranes properly stowed on quayside Forth Ports H&S Procedures	5	5	10	5	5	2	4	8	6	6	6.125
1.3	Grounding	Technical Failure Bridge Team Error Environmental Conditions Surveying Omission Failure of Aids to Navigation	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS Tidal Monitoring Tugs, use of Aids to Navigation Maintenance & Verification Programme Weather Forecasting / Tidal Predictions Emergency Plans / OPRC Notice to Mariners Survey / dredging Programme / Schedule Marine Guidelines & Port Information Cargo operations procedures (Including MCA Bulk-handling Regulations)	3	3	6	6	6	2	6	6	6	6	5.625
1.4	Sinking / Capsize	Collision Contact Grounding Technical Failure Failure of Vessel Stability Human Error Environmental Conditions	Pilotage FTNS Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting / Tidal Predictions Aids to Navigation Maintenance & Verification Programme Notice to Mariners Survey Programme / Schedule Marine Guidelines & Port Information Dock Gate Procedure	2	4	6	4	6	1	5	4	3	4	4.5
1.5	Fire / Explosion	Collision Contact Grounding Human Error Technical Failure Loss of Containment	Pilotage FTNS Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting Marine Guidelines & Port Information	2	4	4	4	4	1	4	4	3	3	3.75
1.6	Loss of Containment (Oil Products)	Collision Grounding Human Error Contact Technical Failure Sinking / Capsizing Fire / Explosion Environmental Conditions	Pilotage FTNS Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting Aids to Navigation Maintenance & Verification Programme Notice to Mariners Survey Programme / Schedule Marine Guidelines & Port Information	4	4	4	8	8	2	4	6	6	6	5.75
1.7	Loss of Dock Level (Lock Gate Operations)	Technical 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

MRFs: 013/17, 027/17 (contact). 001/19 (contact)

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.

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.

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 safely abandon ship

Worst credible: Vessel sinks resulting in total loss of vessel, cargo, 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-persistent product that dissipates naturally.

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

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 operations in the area i.e. rigs.	No changes made

FORTH PORTS LIMITED	Document ID FP PMSC RA (F) 7/04	Risk Assessment Team / Date HMFO, MM / 16th Jan 2013
Risk Assessment - Port of Burntisland	Review Due Apr-21	Revised By / Date MMT, Apr 2019



FORTH PORTS LIMITED
Navigational Risk Assessment

	Inverkeithing - Arrival / Sailing Saint David's Beacon to Berth													MRF: 045/17 (Non-approved bunkering), 001/18 (parted mooring rope), 060/18 (cargo lashing snapped during ops), 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	Technical Failure Bridge Team Error Environmental Conditions	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS Tugs, use of; minimum towage requirements Forth Byelaw & General Directions Weather Forecasting / Tidal Predictions Emergency Plans / OPRC Marine Guidelines & Port Information	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	Technical Failure Bridge Team Error Environmental Conditions Failure of Aids to Navigation Quayside Obstruction	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS Tugs, use of; minimum towage requirements Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting / Tidal Predictions Marine Guidelines & Port Information 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	Technical Failure Bridge Team Error Environmental Conditions Surveying Omission Failure of Aids to Navigation	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS Tidal Monitoring Tugs, use of; minimum towage requirements Aids to Navigation Maintenance & Verification Programme Weather Forecasting / Tidal Predictions Emergency Plans / OPRC Notice to Mariners Survey / dredging Programme / Schedule Marine Guidelines & Port Information Cargo operations procedures (Including MCA Bulk-handling Regulations) NABSA 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	Collision Contact Grounding Technical Failure Failure of Vessel Stability Human Error Environmental Conditions	Pilotage FTNS Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting / Tidal Predictions Aids to Navigation Maintenance & Verification Programme Notice to Mariners Survey Programme / Schedule Marine Guidelines & Port Information	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	Collision Contact Grounding Human Error Technical Failure Loss of Containment	Pilotage FTNS Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting Marine Guidelines & Port Information	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)	Collision Grounding Human Error Contact Technical Failure Sinking / Capsizing Fire / Explosion Environmental Conditions	Pilotage FTNS Forth Byelaw & General Directions Emergency Plans / OPRC Weather Forecasting Aids to Navigation Maintenance & Verification Programme Notice to Mariners Survey Programme / Schedule Marine Guidelines & Port Information	2	2	2	4	4	1	2	3	3	4	3	Most likely: Small spill of non-persistent 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 considered; contact, unapproved bunkering - could result in loss of containment of oil products, parted mooring line could cause contact or result in more severe hazards occurring. Traffic numbers and vessel type, as well as other movements in the vicinity of Inverkeithing.	Contact - Most likely likelihood changed from 2 to 3 due to MRF.

FORTH PORTS LIMITED	Document ID FP PMSC RA (F) 8/03	Risk Assessment Team / Date HMFO, HMDD, MM / 23rd Jan 2013
Risk Assessment - Inverkeithing	Review Due Apr-21	Revised By / Date MMT, Apr 2019



FORTH PORTS LIMITED
Navigational Risk Assessment

	Braefoot Jetty - Arrival / Sailing Eastern 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)	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	Technical Failure Human Error Environmental Conditions	Pilotage (Within compulsory pilotage Area) Passage plan / berthing plan – master / pilot information exchange FTNS Forth Ports Byelaws & General Directions for Navigation Weather Forecasting / Tidal Predictions Emergency Plans / OPRC Marine Guidelines & Port Information Towage Guidelines Jetty Regulations Notice to Mariners Marine Safety Alerts	2	6	6	2	4	1	5	5	5	5	4.75
1.2	Contact	Technical Failure Human Error Environmental Conditions Failure of Aids to Navigation Jetty Obstruction	Pilotage (Within compulsory pilotage Area) Passage plan / berthing plan – master / pilot information exchange FTNS Towage Guidelines Forth Ports Byelaws & General Directions for Navigation Emergency Plans / OPRC Weather Forecasting / Monitoring and Tidal Predictions / Monitoring Marine Guidelines & Port Information Fendering Jetty Regulations Jetty Supervisor Marine Safety Alerts Notice to Mariners	3	3	6	3	6	2	6	10	10	10	6.75
1.3	Grounding	Technical Failure Human Error Environmental Conditions Surveying Omission Failure of Aids to Navigation	Pilotage (Within compulsory pilotage Area) Passage plan / berthing plan – master / pilot information exchange FTNS Forth Ports Byelaws & General Directions for Navigation Towage Guidelines Aids to Navigation Maintenance & Verification Programme Weather Forecasting / Monitoring and Tidal Predictions / Monitoring Emergency Plans / OPRC Notice to Mariners Survey / dredging programme / Schedule Marine Guidelines & Port Information Jetty Regulations	2	2	6	2	6	1	1	5	4	5	3.875
1.4	Sinking / Capsize	Collision Contact Grounding Technical Failure Failure of Vessel Stability Human Error Environmental Conditions	Pilotage (Within compulsory pilotage Area) FTNS Forth Ports Byelaws & General Directions for Navigation Emergency Plans / OPRC Weather Forecasting / Tidal Predictions Notice to Mariners Survey Programme / Schedule Marine Guidelines & Port Information Jetty Regulations	1	3	5	5	5	1	3	5	5	5	4.5
1.5	Fire / Explosion	Collision Contact Grounding Human Error Technical Failure Loss of Containment	Pilotage (Within compulsory pilotage Area) FTNS Forth Ports Byelaws & General Directions for Navigation Emergency Plans / OPRC Weather Forecasting Marine Guidelines & Port Information Jetty Regulations	2	6	6	2	6	1	5	5	5	5	5
1.6	Loss of Containment (Oil Products)	Collision Grounding Human Error Contact Technical Failure Sinking / Capsizing Fire / Explosion 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

MRFs reviewed: 024/17 (Parted mooring line - high winds), 067/17 (weighted heaving line), 013/18 (tug engine shut down), 024/18 (tug - winchbrake and clutch failure), 056/18 (regulation infringement)

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

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.

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.

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.

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

Most likely: Small spill of non-persistent 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 - tug mechanical issues, mooring lines parting. Vessel numbers consulted, as well as type and size.	No changes required.

FORTH PORTS LIMITED	Document ID FP PMSC RA (F) 9/04	Risk Assessment Team / Date HMFO, HMD, MM / 23rd Jan 2013
Risk Assessment - Braefoot Jetty	Review Due Mar-21	Revised By / Date MMT March 2019



FORTH PORTS LIMITED
Navigational Risk Assessment

	Port of Grangemouth - Arrival/Sailing Hen & Chickens to Berth											MRFs: 072/17 (contact), 073/17 (contact), 075/19 (contact), 079/17, 005/18 (contact), 007/18 (tug winch lost power), 018/18 (contact), 021/18 (contact), 029/18 (towline parted), 041/18 (potential grounding), 080/18 (BT failure), 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)			
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	Technical Failure Human Error Enviornmental Conditions	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS Forth Ports Byelaws & General Directions Weather Forecasting / Tidal Predictions Emergency Plans / OPRC Marine Guidelines & Port Information Towage Guidelines Diversionary Channel Ship Specific Towage Requirements (IPOS Entries) Notice to Mariners Jetty / Terminal Guidelines STS Operations Manual	2	6	6	6	6	1	5	5	5	5.5	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	Technical Failure Human Error Enviornmental Conditions Failure of Aids to Navigation Quayside Obstruction	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS Towage Guidelines Forth Ports Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting / Tidal Predictions Marine Guidelines & Port Information Fendering Restricted Air Draft Procedures Cranes properly stowed on quayside Dockhead Staff Aids to Navigation Maintenance & Verification Programme Ship Specific Towage Requirements (IPOS Entries) Notice to Mariners STS Operations Manual Jetty / Terminal Guidelines	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 Passage plan / berthing plan – master / pilot information exchange FTNS Forth Ports Byelaws & General Directions Towage Guidelines Aids to Navigation Maintenance & Verification Programme Weather Forecasting / Tidal Monitoring & Predictions Emergency Plans / OPRC Notice to Mariners Survey / dredging programme / Schedule Marine Guidelines & Port Information Cargo operations procedures (Including MCA Bulk-handling Regulations) Ship Specific Towage Requirements (IPOS Entries)	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 refloatoed resulting in major disruption to ports, extreme damage and loss of contaminant.
1.4	Sinking / Capsize	Collision Contact Grounding Technical Failure Failure of Vessel Stability Human Error Enviornmental Conditions	Pilotage FTNS Forth Ports Byelaws & General Directions for Navigation Emergency Plans / OPRC Weather Forecasting / Tidal Predictions Notice to Mariners Survey Programme / Schedule Marine Guidelines & Port Information Cargo operations procedures (Including MCA Bulk-handling Regulations) Jetty / Terminal Guidelines Ruling Depth and UKC document	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	Collision Contact Grounding Human Error Technical Failure Loss of Containment	Pilotage FTNS Forth Ports Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting Marine Guidelines & Port Information Jetty/Terminal Guidelines Vessel Location (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)	Collision Grounding Human Error Contact Technical Failure Sinking / Capsizing Fire / Explosion Enviornmental Conditions	Pilotage FTNS Forth Ports Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting Notice to Mariners Marine Guidelines & Port Information 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-persistent 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	Technical 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.

MRFs: 072/17 (contact), 073/17 (contact), 075/19 (contact), 079/17, 005/18 (contact), 007/18 (tug winch lost power), 018/18 (contact), 021/18 (contact), 029/18 (towline parted), 041/18 (potential grounding), 080/18 (BT failure), 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)

Content Reviewed	Changes Made
MRFs reviewed - significant number of contacts but have not resulted in any major negative impact (most likely likelihood score already a 5). One potential grounding, new procedures put in place.	No changes made as scoring still applicable.

FORTH PORTS LIMITED	Document ID FP PMSC RA (F) 10/05	Risk Assessment Team / Date DMM, HMF / 19th Dec 2012
Risk Assessment - Port of Grangemouth Hen & Chickens to Berth	Review Due Apr-21	Revised By / Date MMT, Apr 2019



FORTH PORTS LIMITED
Navigational Risk Assessment

	Crombie Berthing/Sailing														No significant MRFs during time from previous review.
Ref.	Hazard What can go wrong (Event leading to a consequence)	Causes How can it go wrong	Controls Preventative & Reactive (What action & how frequent)	Risk scored at Residual level (Most Likely)					Risk scored at Residual level (Worst Credible)					Hazard Risk Score	
				Likelihood	Overall Risk				Likelihood	Overall Risk					
					People	Property	Environment	Business		People	Property	Environment	Business		
1.1	Collision / Allision	Technical Failure Human Error Enviornmental Conditions	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS Forth Ports Byelaws & General Directions for Navigation Weather Forecasting / Tidal Predications Emergency Plans / OPRC Marine Guidelines & Port Information Towage Guidelines Ship Specific Towage Requirements (IPOS Entries)	2	4	6	6	6	1	5	5	4	4	5	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.
1.2	Contact	Technical Failure Human Error Enviornmental Conditions Failure of Aids to Navigation Jetty Obstruction	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS Towage Guidelines Forth Ports Byelaws & General Directions for Navigation Emergency Plans / OPRC Weather Forecasting / Tidal Predications Marine Guidelines & Port Information Fendering Restricted Air Draft Procedures Cranes properly stowed on quayside Ship Specific Towage Requirements (IPOS Entries)	3	6	6	3	3	2	6	8	8	8	6	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.
1.3	Grounding	Technical Failure Human Error Enviornmental Conditions Surveying Omission Failure of Aids to Navigation Unknown Underwater Obstruction	Pilotage Passage plan / berthing plan – master / pilot information exchange FTNS Forth Ports Byelaws & General Directions for Navigation Towage Guidelines Aids to Navigation Maintenance & Verification Programme Weather Forecasting / Tidal Monitoring & Predictions Emergency Plans / OPRC Notice to Mariners Survey / dredging programme / Schedule Marine Guidelines & Port Information Ship Specific Towage Requirements (IPOS Entries) Ruling Depths and UKC document	2	2	4	2	2	1	3	4	4	4	3.125	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	Collision Contact Grounding Technical Failure Failure of Vessel Stability Human Error Enviornmental Conditions	Pilotage FTNS Forth Ports Byelaws & General Directions for Navigation Emergency Plans / OPRC Weather Forecasting / Tidal Predictions Notice to Mariners Survey Programe / Schedule Marine Guidelines & Port Information	1	4	5	3	5	1	4	5	3	5	4.25	Most likely: Vessel sinks outwith main shipping areas, all crew safely abandon ship Worst credible: Vessel sinks in main channel near Crombie resulting in total loss of vessel, channel closure, and loss of life.
1.5	Fire / Explosion	Collision Contact Grounding Human Error Technical Failure Loss of Containment	Pilotage FTNS Forth Ports Byelaws & General Directions for Navigation Emergency Plans / OPRC Weather Forecasting Marine Guidelines & Port Information Jetty/Terminal Guidelines	3	6	6	3	6	1	5	5	4	5	5	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)	Collision Grounding Human Error Contact Technical Failure Sinking / Capsizing Fire / Explosion Enviornmental Conditions	Pilotage FTNS Forth Ports Byelaws & General Directions for Navigation Emergency Plans / OPRC Weather Forecasting Notice to Mariners Marine Guidelines & Port Information Bunkering Procedure Standby vessel for bunkering operations	2	2	4	6	6	1	3	3	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.

Content Reviewed	Changes Made
No MRFs since pervious review. Fendering has been repaired. Number of vessels calling at Crombie, as well as type and size.	No changes made.

FORTH PORTS LIMITED	Document ID FP PMSC RA (F) 11/04	Risk Assessment Team / Date DMM, HMF1 / 19th Dec2012
Risk Assessment - Crombie	Review Due Mar-21	Revised By / Date MMT March 2019



FORTH PORTS LIMITED
Navigational Risk Assessment

	Hound Point - Arrival/Sailing Eastern Limits to Berth													MRFs since previous review: 076/17 (failure of good practice - weighted heaving line), 040/18 (Infringement - pleasure craft), 065/18 (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 / Allison	Technical Failure Human Error Environmental Conditions	Pilotage (Within compulsory pilotage Area) - 2 Pilots Passage plan / berthing plan – master / pilot information exchange FTNS Forth Ports Byelaws & General Directions for Navigation Weather Forecasting / Tidal Predictions Emergency Plans / OPRC Marine Guidelines & Port Information Towage Guidelines Hound Point Marine Guidelines Notice to Mariners Marine Safety Alerts	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	Technical Failure Human Error Environmental Conditions Failure of Aids to Navigation Jetty Obstruction	Pilotage (Within compulsory pilotage Area) - 2 Pilots and PPU Passage plan / berthing plan – master / pilot information exchange FTNS Towage Guidelines Forth Ports Byelaws & General Directions for Navigation Emergency Plans / OPRC Weather Forecasting / Monitoring and Tidal Predictions / Monitoring Marine Guidelines & Port Information Fendering Hound Point Marine Guidelines Notice to Mariners Marine Safety Alert	4	4	8	4	8	2	6	10	8	10	7.25	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	Technical Failure Human Error Environmental Conditions Surveying Omission Failure of Aids to Navigation Unknown Underwater Obstruction	Pilotage (Within compulsory pilotage Area) - 2 Pilots Passage plan / berthing plan – master / pilot information exchange FTNS Forth Ports Byelaws & General Directions for Navigation Towage Guidelines Aids to Navigation Maintenance & Verification Programme Weather Forecasting / Monitoring and Tidal Predictions / Monitoring Emergency Plans / OPRC Notice to Mariners Survey / dredging programme / Schedule Marine Guidelines & Port Information 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 contaminant.
1.4	Sinking / Capsize	Collision Contact Grounding Technical Failure Failure of Vessel Stability Human Error Environmental Conditions	Pilotage (Within compulsory pilotage Area) -2 Pilots FTNS Forth Ports Byelaws & General Directions for Navigation Emergency Plans / OPRC Weather Forecasting / Tidal Predictions Notice to Mariners Survey Programme / Schedule Marine Guidelines & Port Information 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	Collision Contact Grounding Human Error Technical Failure Loss of Containment	Pilotage (Within compulsory pilotage Area) - 2 Pilots FTNS Forth Ports Byelaws & General Directions for Navigation Emergency Plans / OPRC Weather Forecasting Marine Guidelines & Port Information 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)	Collision Grounding Human Error Contact Technical Failure Sinking / Capsizing Fire / Explosion 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-persistent 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; likelihood of contact in light of submitted MRF. Changes to guidelines or procedures affecting HP. Number of vessels calling, and other traffic in the vicinity.	No changes required.

FORTH PORTS LIMITED	Document ID FP PMSC RA (F) 12/04	Risk Assessment Team / Date DMM, HMF1 / 19th Dec 2012
Risk Assessment - Houndpoint Arrival / Sailing Eastern Limits to	Review Due Mar-21	Revised By / Date MMT March 2019



FORTH PORTS LIMITED
Navigational Risk Assessment

	Cruise Vessels at Anchorage (Hound Point / Newhaven)													MRF: 028/17 (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	Dragging Anchor	Environmental Conditions Bridge Team Error Technical Failure	Designated and proven anchorages FTNS Weather Forecasting / Tidal Predictions Byelaws & General Directions Towage Pilot onboard. Emergency Plans / OPRC Standby Tug or Demonstrated manoeuvrability as per NtM (Hound Point)	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 possibilty of loss of life.
1.2	Contact	Technical Failure Bridge Team Error Environmental Conditions Dragging Anchor	Pilot onboard FTNS Towage Byelaws & General Directions Weather Forecasting / Tidal Predictions Designated and Proven Anchorages Notice to Mariners Emergency Plans / OPRC Standby Tug or Demonstrated manoeuvrability as per NtM (Hound Point)	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	Technical Failure Bridge Team Error Environmental Conditions Surveying Omission Dragging Anchor	Pilot onboard Master / pilot information exchange FTNS Towage Weather Forecasting / Tidal Predictions & Tidal Monitoring Designated Anchorages Emergency Plans / OPRC Standby Tug or Demonstrated manoeuvrability as per NtM (Hound Point) Surveying Schedule Tender pack Ruling Depth and UKC document	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	Contact Grounding Technical Failure Failure of Vessel Stability Human Error Environmental Conditions	Pilot onboard FTNS Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting / Tidal Predictions Standby Tug or Demonstrated manoeuvrability as per NtM (Hound Point) Ruling Depth and UKC document	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	Contact Grounding Human Error Technical Failure Loss of Containment	Pilot onboard FTNS Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting Local Standby Tug (Hound Point)	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	Grounding Human Error Contact Technical Failure Sinking / Capsizing Fire / Explosion Environmental Conditions	Pilot Onboard FTNS Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting Notice to Mariners Marine Guidelines & Port Information	3	3	6	6	3	1	2	4	4	4	4	Most likely: Small spill of non-persistent product that dissipates naturally. Worst credible: Large scale spill which cannot be contained resulting in port closures and extensive environmental impact.	

Content Reviewed	Changes Made
MRFs review - 1 grounding (tender - Newhaven) Number of cruise calls for both anchorages reviewed Other traffic in the vicinity - type, size, density Cruise specific procedures, forms and guidelines.	Grounding most likely likelihood scoring updated due to MRF.

FORTH PORTS LIMITED	Document ID FP PMSC RA (F) 13/05	Risk Assessment Team / Date HMFO, MM, DMM, HMD, MT&PV / 13th Feb 2013
Risk Assessment - Cruise Vessels at Anchorage (Hound Point / Newhaven)	Review Due Mar-21	Revised By / Date MMT March 2019



FORTH PORTS LIMITED
Navigational Risk Assessment

Forth - River Transit + Berthing/Sailing Small Commercial Craft (Tugs, Workboats, Pilot Vessels etc)											MRFs: 002/19 (collision), 022/17, 041/17, 052/17, 053/17, 062/17, 074/17 (contact), 026/19, 028/19 (Contact), 053/19 (Contact), 033/19 (Collision)				
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	Technical Failure Bridge Team Error Environmental Conditions	Byelaws & General Directions (GD19) FTNS Weather Forecasting and Tidal Predictions Marine Guidelines & Port Information Crew training & Certification Towage Guidelines Notice to Mariners Linkage with Local Authorities & Boat Clubs	3	3	6	6	3	2	8	8	6	8	6	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	Technical Failure Bridge Team Error Environmental Conditions Change to Shore Infrastructure / Obstruction on the Quay Floating Debris	FTNS Byelaws & General Directions (GD19) Emergency Plans Weather Forecasting / Tidal Predications Marine Guidelines & Port Information Towage Guidelines Notice to Mariners Crew training & Certification 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	Technical Failure Bridge Team Error Environmental Conditions Uncharted Object	FTNS Weather Forecasting / Tidal Predictions Byelaws & General Directions (GD19) Emergency Plans / OPRC Notice to Mariners Survey / dredging Programme / Schedule Marine Guidelines & Port Information Towage Guidelines Crew training & Certification Audit and license procedure Linkage with Local Authorities & Boat Clubs	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	Collision Contact Grounding Technical Failure Bridge Team Error	Pilotage FTNS Weather Forecasting / Tidal Predictions Emergency Plans Notice to Mariners Survey / dredging Programme / Schedule Byelaws & General Directions Marine Guidelines & Port Information Crew training & Certification Towage Guidelines 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	Collision Contact Grounding Human Error Technical Failure Loss of Containment	FTNS Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting Marine Guidelines & Port Information Notice to Mariners Crew training & Certification Good Housekeeping Towage Guidelines Bunkering Procedures Hot Work Permits 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)	Collision Grounding Human Error Contact Technical Failure Sinking / Capsizing Fire / Explosion Environmental Conditions	FTNS Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting Notice to Mariners Survey Programme / Schedule Marine Guidelines & Port Information Bunkering Procedures Crew training & Certification Towage Guidelines 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

FORTH PORTS LIMITED	Document ID FP PMSC RA (F) 14/05	Risk Assessment Team / Date MT&PV, HMFO, MM, DMM, HMD / 13TH Feb 2013
Risk Assessment - Forth - River Transit + Berthing/Sailing Small	Review Due Apr-21	Revised By / Date MMT Apr 2019



FORTH PORTS LIMITED
Navigational Risk Assessment

Forth Bridge Construction 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	Collision / Allision	Technical Failure Bridge Team Error Environmental Conditions Dragging Anchor	Byelaws & General Directions FTNS Weather Forecasting and Tidal Predictions Reduced Visibility Procedure - FCBC Marine Guidelines & Port Information Crew training & Certification Towage Guidelines Notice to Mariners Construction Exclusion Zones FCBC SMS FCBC Barge Method Statements	2	4	6	4	4	1	4	4	3	4	4.125
1.2	Contact	Technical Failure Bridge Team Error Environmental Conditions Change to Shore Infrastructure & Offshore/Shore Obstructions on the Quay Floating Debris Dragging Anchor	FTNS Byelaws & General Directions Emergency Plans Weather Forecasting / Tidal Predications Marine Guidelines & Port Information Towage Guidelines Notice to Mariners Crew training & Certification Marine Controller –FCBC Reduced Visibility Procedure - FCBC FCBC SMS Towage audit and license procedure	5	5	10	5	5	1	4	4	3	3	4.875
1.3	Grounding	Technical Failure Bridge Team Error Environmental Conditions Uncharted Object Dragging Anchor	FTNS Weather Forecasting / Tidal Predictions Byelaws & General Directions Emergency Plans Notice to Mariners Survey / dredging Programme / Schedule Marine Guidelines & Port Information Towage Guidelines Crew training & Certification FCBC SMS Towage audit and license procedure	5	5	10	5	10	1	3	4	3	4	5.5
1.4	Sinking / Capsize	Collision Contact Grounding Technical Failure Bridge Team Error	Pilotage FTNS Weather Forecasting / Tidal Predictions Emergency Plans Notice to Mariners Survey / dredging Programme / Schedule Byelaws & General Directions Marine Guidelines & Port Information Crew training & Certification Towage Guidelines FCBC SMS Towage audit and license procedure	2	8	8	4	8	1	5	5	3	5	5.75
1.5	Fire / Explosion	Collision Contact Grounding Human Error Technical Failure Loss of Containment	FTNS Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting Marine Guidelines & Port Information Notice to Mariners Crew training & Certification Good Housekeeping Towage Guidelines Bunkering Procedures Hot Work Permits FCBC SMS Towage audit and license procedure	5	10	10	5	10	1	5	5	3	4	6.5
1.6	Loss of Containment	Collision Grounding Human Error Contact Technical Failure Sinking / Capsizing Fire / Explosion Environmental Conditions	FTNS Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting Notice to Mariners Survey Programme / Schedule Marine Guidelines & Port Information Crew training & Certification Towage Guidelines Bunkering Procedure	5	5	5	10	5	1	2	2	3	3	4.375

No significant MRFs during time from previous review.

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

Worst credible: Collision between tug & barge and large vessel passing under bridges resulting in loss of vessels and loss of life.

Most likely: Small workboat slow speed impact with buoy resulting in minimal damage.

Worst credible: Contact with bridge by workboat at high speed resulting in significant damage loss of life, and closure of main channel.

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 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-persistent 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

FORTH PORTS LIMITED	Document ID FP PMSC RA (F) 15/03	Risk Assessment Team / Date MM, HMFI, CHM / December 2013
Risk Assessment - Forth Bridge Construction Operations	Review Due Apr-21	Revised By / Date MMT April 2019



FORTH PORTS LIMITED
Navigational Risk Assessment

Cruise Vessel Tender Operations (Newhaven / Hound Point)															MRF: 028/17 (grounding), 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	Technical Failure Bridge Team Error Environmental Conditions	Byelaws & General Directions FTNS Weather Forecasting, Tidal Predictions & Monitoring Marine Guidelines & Port Information Crew training & Certification Notice to Mariners Approved & Certificated tender vessels 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	Technical Failure Bridge Team Error Environmental Conditions Change to Shore Infrastructure / Obstruction on the Quay Floating Debris	FTNS Byelaws & General Directions Weather Forecasting / Tidal Predications & Monitoring Marine Guidelines & Port Information Notice to Mariners Crew training & Certification Fendering Approved & Certificated Tender vessels Tender Traffic Control Procedures Tender Proforma and Passage Planning	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	Technical Failure Bridge Team Error Environmental Conditions Uncharted Object	FTNS Weather Forecasting / Tidal Predictions Byelaws & General Directions Emergency Plans Notice to Mariners Survey / Programme / Schedule Marine Guidelines & Port Information Crew training & Certification Tender Proforma and Passage Planning Approved & Certificated Tender vessels Tender Pack Ruling Depth and UKC document	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	Collision Contact Grounding Technical Failure Bridge Team Error	FTNS Weather Forecasting / Tidal Predictions Emergency Plans Notice to Mariners Survey / Programme / Schedule Byelaws & General Directions Marine Guidelines & Port Information Crew training & Certification Tender Pack Ruling Depth and UKC document	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	Collision Contact Grounding Human Error Technical Failure Loss of Containment	FTNS Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting Marine Guidelines & Port Information Crew training & Certification Good Housekeeping Bunkering Procedures	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)	Collision Grounding Human Error Contact Technical Failure Sinking / Capsizing Fire / Explosion Environmental Conditions	FTNS Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting Notice to Mariners Survey Programme / Schedule Marine Guidelines & Port Information Bunkering Procedures Crew training & Certification Tender Proforma	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

FORTH PORTS LIMITED	Document ID FP PMSC RA (F) 16/03	Risk Assessment Team / Date MM, DMM, HMFO March 2014
Risk Assessment - Cruise Vessel Tender Operations (Hound Point)	Review Due Apr-21	Revised By / Date MMT / April 2019



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	Technical Failure Bridge Team Error Environmental Conditions	Pilotage FTNS Tay Byelaws & General Directions Weather Forecasting / Tidal Predictions Emergency Plans / OPRC Marine Guidelines & Port Information	1	2	4	2	2	1	5	5	5	4	3.625	Most Likely: Collision with small leisure craft. Worst Credible: Collision with cruise vessel.
1.2	Contact	Technical Failure Bridge Team Error Environmental Conditions	Pilotage FTNS Tay Byelaws & General Directions (Specifically those relevant to the bridges) Emergency Plans / OPRC Weather Forecasting / Tidal Predictions Marine Guidelines & Port Information AIS Beacon on Horseshoe Buoy Port Entry Light/Virtual Buoy	3	3	6	3	3	1	5	5	4	4	4.125	Most Likely: Contact with ATON's while underway in fairway. Worst Credible: Extremely heavy landing structural damage to Quay and vessel
1.3	Grounding	Technical Failure Bridge Team Error Environmental Conditions Surveying Omission Failure of Aids to Navigation	Pilotage FTNS Aids to Navigation Maintenance & Verification Programme Weather Forecasting / Tidal Predictions Emergency Plans / OPRC Notice to Mariners Survey / dredging Programme / Schedule Marine Guidelines & Port Information AIS Beacon on Horseshore Buoy Port Entry Light/Virtual Buoy	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	Collision Contact Grounding Technical Failure Failure of Vessel Stability Human Error Environmental Conditions	Pilotage FTNS Tay Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting / Tidal Predictions Aids to Navigation Maintenance & Verification Programme Notice to Mariners Survey Programme / Schedule Marine Guidelines & Port Information	1	4	5	4	4	2	10	10	10	8	6.875	Most Likely : slow sinking Worst Credible: fast sinking
1.5	Fire / Explosion	Collision Contact Grounding Human Error Technical Failure Loss of Containment	Pilotage FTNS Tay Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting Marine Guidelines & Port Information	3	6	6	6	3	1	5	5	5	5	5.125	Most Likely : Small fire onboard, quickly extinguished . Worst Credible: Tanker uncontrollable fire, vessel total loss.
1.6	Loss of Containment (oil products)	Collision Grounding Human Error Contact Technical Failure Sinking / Capsizing Fire / Explosion Environmental Conditions	Pilotage FTNS Tay Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting Aids to Navigation Maintenance & Verification Programme Notice to Mariners Survey Programme / Schedule Vetting (Tankers) Marine Guidelines & Port Information	1	1	2	3	3	1	3	5	5	5	3.375	Most likely: Small spill of non-persistent product that dissipates naturally. Worst credible: Large scale spill which cannot be contained resulting in port closure and extensive environmental impact.
1.7	Allision	Technical Failure Bridge Team Error Environmental Conditions	Pilotage Byelaws & General Directions FTNS Weather Forecasting and Tidal Predictions Licenced Towage Marine Guidelines & Port Information Large Vessel Guidelines Towage Guidelines	1	1	3	1	2	1	5	5	5	5	3.375	Most Likely: Allision with small leisure vessel. Worst Credible: Allision with large cruise vessel.

Content Reviewed	Changes Made
Routine Review 02/06/2020 Reviewed by HMD,MOD, MOL All content reviewed	Allision added as a hazard. In line with other risk assessments. Port Entry Light/Virtual Buoy added as a Control. Addition of Worst Credible and Most Likely Scenarios Scoring Changed to Reflect.

FORTH PORTS LIMITED	Document ID FP PMSC RA (T) 1/04	Risk Assessment Team / Date DMM, HMD 13th Dec 2012
Risk Assessment - River Passage Tay (General)	Review Due Jun-22	Revised By / Date June 2020 MMT



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	Technical Failure Bridge Team Error Environmental Conditions	Pilotage Byelaws & General Directions FTNS Weather Forecasting and Tidal Predictions Marine Guidelines & Port Information Towage Guidelines	2	4	6	2	4	1	3	4	3	4	3.75	Most Likely: Collision with small leisure craft. Worst Credible: Collision with berthed cruise vessel
1.2	Contact	Technical Failure Bridge Team Error Environmental Conditions Change to Shore Infrastructure / Obstruction on the Quay	Pilotage FTNS Tay Byelaws & General Directions Emergency Plans Weather Forecasting / Tidal Predictions Marine Guidelines & Port Information 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: Extremely heavy landing structural damage to Quay and vessel
1.3	Grounding	Technical Failure Bridge Team Error Environmental Conditions Surveying Omission	Pilotage FTNS Weather Forecasting / Tidal Predictions Emergency Plans Notice to Mariners Survey / dredging Programme / Schedule Marine Guidelines & Port Information	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	Collision Contact Grounding Technical Failure Bridge Team Error	Pilotage FTNS Weather Forecasting / Tidal Predictions Emergency Plans Notice to Mariners Survey / dredging Programme / Schedule Tay Byelaws & General Directions Marine Guidelines & Port Information	1	4	4	3	4	1	5	5	5	5	4.375	Most Likely : slow sinking Worst Credible: fast sinking
1.5	Fire / Explosion	Collision Contact Grounding Human Error Technical Failure Loss of Containment	Pilotage FTNS Tay Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting Marine Guidelines & Port Information Notice to Mariners Survey / dredging Programme / Schedule	3	9	9	6	6	1	5	5	5	8	6.625	Most Likely : Small fire onboard, quickly extinguished . Worst Credible: Tanker uncontrollable fire, vessel total loss.
1.7	Allision	Technical Failure Bridge Team Error Environmental Conditions	Pilotage Byelaws & General Directions FTNS Weather Forecasting and Tidal Predictions Licenced Towage Marine Guidelines & Port Information Large Vessel Guidelines Towage Guidelines	1	1	3	1	2	1	5	5	5	5	3.375	Most Likely: Allision with berthed vessel or rig with minor damage. Worst Credible: Allision with berthed cruise vessel significant damage.
1.6	Loss of Containment (oil products)	Collision Grounding Human Error Contact Technical Failure Sinking / Capsizing Fire / Explosion Environmental Conditions	Pilotage FTNS Tay Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting Aids to Navigation Maintenance & Verification Programme Notice to Mariners Survey Programme / Schedule Marine Guidelines & Port Information	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
Routine Review 02/06/2020 Reviewed by HMD,MOD, MOL All content reviewed	Allision added as a hazard. In line with the rest of the risk assessments. Controls updated for Collision. Addition of Worst Credible and Most Likely Scenarios Scoring Changed to Reflect.

FORTH PORTS LIMITED	Document ID FP PMSC RA(T) 2/03	Risk Assessment Team / Date DMM, HMD 13th Dec 2012
Risk Assessment - Dundee	Review Due Jun 22	Revised By / Date June 2020 MMT



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)	Likelihood	Overall Risk					Likelihood	Overall Risk					Hazard Risk Score
					People	Property	Environment	Business	People		Property	Environment	Business			
1.1	Collision	Technical Failure Bridge Team Error Environmental Conditions	Pilotage Byelaws & General Directions FTNS Weather Forecasting and Tidal Predictions Licensed Towing Marine Guidelines & Port Information Large Vessel Guidelines Towage Guidelines	2	4	8	4	6	1	5	5	5	5	5.25	Most Likely: Collision with small leisure craft. Worst Credible: Collision with berthed cruise vessel.	
1.2	Contact	Technical Failure Bridge Team Error Environmental Conditions Change to Shore Infrastructure / Obstruction on the Quay	Licensed Towing Pilotage FTNS Tay Byelaws & General Directions Emergency Plans Weather Forecasting / Tidal Predictions Marine Guidelines & Port information	3	3	9	3	6	1	3	5	4	5	4.75	Most Likely: Heavy landing on Quay with minor damage Worst Credible: Extremely heavy landing structural damage to Quay and vessel	
1.3	Grounding	Technical Failure Bridge Team Error Environmental Conditions Surveying Omission	Pilotage Licensed Towing FTNS Weather Forecasting / Tidal Predictions Emergency Plans Notice to Mariners Survey / dredging Programme / Schedule Marine Guidelines & Port Information	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	Collision/Allision Contact Grounding Technical Failure Bridge Team Error	Pilotage FTNS Weather Forecasting / Tidal Predictions Emergency Plans Notice to Mariners Survey / dredging Programme / Schedule Tay Byelaws & General Directions Marine Guidelines & Port Information	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 Tay Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting Marine Guidelines & Port Information Notice to Mariners Survey / dredging Programme / Schedule	2	8	8	6	6	1	5	5	5	5	6	Most Likely : Small fire onboard, quickly extinguished Worst Credible: Tanker uncontrollable fire, vessel total loss.	
1.6	Loss of Containment (oil products)	Collision/Allision Grounding Human Error Contact Technical Failure Sinking / Capsizing Fire / Explosion Environmental Conditions	Pilotage FTNS Tay Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting Aids to Navigation Maintenance & Verification Programme Notice to Mariners Survey Programme / Schedule Vetting (Tankers) Marine Guidelines & Port Information	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	Technical Failure Bridge Team Error Environmental Conditions	Pilotage Byelaws & General Directions FTNS Weather Forecasting and Tidal Predictions Licensed Towing Marine Guidelines & Port Information Towage Guidelines	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 significant damage.	

Content Reviewed	Changes Made
Routine Review 02/06/2020 Reviewed by HMD,MOD, MOL All content reviewed	Collision Likelihood increased to reflect current leisure trends. Allision likelihood reduced. Addition of Worst Credible and Most Likely Scenario Scoring Changed to Reflect.

FORTH PORTS LIMITED	Document ID FP PMSC RA (T) 4/04	Risk Assessment Team / Date DMM, HMD 13th Dec 2012
Risk Assessment - Large Tanker Arrival/Sailing Port Limits to Berth	Review Due Jun-22	Revised By / Date June 2020, MMT



FORTH PORTS LIMITED
Navigational Risk Assessment

Port of Dundee - Oil Rigs - 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)	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	Pilotage Byelaws & General Directions FTNS Weather Forecasting and Tidal Predictions Towage Marine Guidelines & Port Information (River Closed to other Traffic during rig move) Towage Audit Declaration / Tug Vetting Large Vessel Movement Notice to Mariners	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	Technical Failure Bridge Team Error Environmental Conditions Change to Shore Infrastructure / Obstruction on the Quay Communication Error	Towage Pilotage FTNS Tay Byelaws & General Directions Emergency Plans Weather Forecasting / Tidal Predictions Marine Guidelines & Port Information (River Closed to other Traffic during rig move) Additional Fendering (if achievable on berth) Appointed Towmaster Towage Audit Declaration / Tug Vetting Simulation Trials Horseshoe Buoy Identified by AIS Unit Port Entry Light/Virtual Buoys	3	3	3	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	Technical Failure Bridge Team Error Environmental Conditions Surveying Omission	Pilotage Towage FTNS Weather Forecasting / Tidal Predictions Emergency Plans Notice to Mariners Survey / dredging Programme / Schedule Marine Guidelines & Port Information Towage Audit Declaration / Tug Vetting Contingency Pin Locations Identified Appointed Towmaster Simulation Trials Horseshoe Buoy Identified by AIS Unit Port Entry Light/Virtual Buoys	2	2	2	4	6	1	1	1	4	6	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 Towage FTNS Weather Forecasting / Tidal Predictions Emergency Plans Notice to Mariners Survey / dredging Programme / Schedule Marine Guidelines & Port Information (River Closed to other Traffic during rig move) Towage Audit Declaration / Tug Vetting Contingency Pin Locations Identified Appointed Towmaster Simulation Trials Horseshoe Buoy Identified by AIS Unit Port Entry Light/Virtual Buoys	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 FTNS Tay Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting Marine Guidelines & Port Information Notice to Mariners Marine Guidelines & Port Information (River Closed to other Traffic during rig move) Towage Audit Declaration / Tug Vetting Appointed Towmaster	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)	Collision Grounding Human Error Contact Technical Failure Sinking / Capsizing Fire / Explosion Environmental Conditions	Pilotage FTNS Tay Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting Aids to Navigation Maintenance & Verification Programme Notice to Mariners Survey Programme / Schedule Marine Guidelines & Port Information (River Closed to other Traffic during rig move) Towage Audit Declaration / Tug Vetting Appointed Towmaster	2	2	2	6	4	1	1	1	4	5	3,125	Most Likely: Small loss of non-persistent oil product Worst Credible: Large spill of persistent product

Content Reviewed	Changes Made
Routine Review 02/06/2020 Reviewed by HMD, MOD, MOL All content reviewed	Addition of Large Vessel NIM (Existing measure, not previously identified in 1.1). Addition of Port Entry Light/Virtual Buoys. Sinking/Capsize Likelihood reduced to 1. Addition of Worst Credible and Most Likely Scenarios Scoring Changed to Reflect.

FORTH PORTS LIMITED	Document ID FP PMSC RA (T) 5/04	Risk Assessment Team / Date DMM, HMD 09th January 2013
Risk Assessment - Port of Dundee - Oil Rigs - Arrival/Sailing Port	Review Due June 22	Revised By / Date June 2020 - JMT



FORTH PORTS LIMITED
Navigational Risk Assessment

Tay - River Transit + Berthing/Sailing Small Commercial Craft (Tugs, Workboats, Pilot Boats 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			
				Likelihood	Overall Risk			Likelihood	Overall Risk						
					People	Property	Environment		Business	People	Property		Environment	Business	
1.1	Collision	Technical Failure Bridge Team Error Environmental Conditions	Byelaws & General Directions (GD13) FTNS Weather Forecasting and Tidal Predictions Marine Guidelines & Port Information Pilot Vessel training & Certification Towage Guidelines Notice to Mariners Liaison with Local Authorities & Boat Clubs Small Vessel SMS	3	3	6	6	3	2	8	6	4	8	5.5	Most Likely: Collision 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 Tay Byelaws & General Directions (GD13) Emergency Plans Weather Forecasting / Tidal Predictions Marine Guidelines & Port Information Towage Guidelines Notice to Mariners Pilot Vessel training & Certification AIS Beacon on Horseshoe Buoy Port Entry Light and Virtual Buoys	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 Weather Forecasting / Tidal Predictions Tay Byelaws & General Directions (GD13) Emergency Plans Notice to Mariners Survey / dredging Programme / Schedule Marine Guidelines & Port Information Towage Guidelines Pilot Vessel training & Certification Small Vessel SMS	3	3	3	3	3	1	3	4	2	3	3	Most Likely: Grounding of small 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	Pilotage FTNS Weather Forecasting / Tidal Predictions Emergency Plans Notice to Mariners Survey / dredging Programme / Schedule Tay Byelaws & General Directions Marine Guidelines & Port Information Pilot Vessel training & Certification Towage Guidelines Small Vessel SMS	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 Tay Byelaws & General Directions Emergency Plans / OPRC Weather Forecasting Aids to Navigation Maintenance & Verification Programme Notice to Mariners Survey Programme / Schedule Marine Guidelines & Port Information Bunkering Procedures Pilot Vessel training & Certification Towage Guidelines	4	4	4	8	4	1	1	2	3	3	3.625	Most Likely: Small loss of non-persistent oil product. Worst Credible: Large spill of persistent product.

Content Reviewed	Changes Made
Routine Review 02/06/2020 Reviewed by HMD,MOD, MOL All content reviewed	Addition of Small Vessel SMS Scoring of Loss of Containment most likely, likelihood increased to reflect recent POLREPS from Pilot Vessels. Addition of Worst Credible and Most Likely Scenarios Scoring Changed to Reflect.

FORTH PORTS LIMITED	Document ID FP PMSC RA (T) 6/03	Risk Assessment Team / Date DMM, HMD 09th January 2013
Risk Assessment - River Tay Transit + Berthing/Sailing Small	Review Due June 22	Revised By / Date June 2020 /MMT



FORTH PORTS LIMITED
Navigational Risk Assessment

Forth & Tay - Vessels at Anchor

MRF 017/18 (Dragging Anchor)

	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

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 possibility of loss of life.

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

Most likely: Vessel grounds in soft mud and refloats on following tide with minimal damage.
Worst credible: Vessel hard aground, cannot be refloated resulting in major disruption to ports, extreme damage and loss of contaminant.

Most likely: Vessel sinks, all crew safely abandon ship
Worst credible: Vessel sinks resulting in total loss of vessel, and loss of life.

Most likely: Small fire on board which is quickly and easily extinguished.
Worst credible: Uncontrollable fire, total loss of vessel, and loss of life.

Most likely: Small spill of non-persistent 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 FP PMSC RA (F&T) 1/05	Risk Assessment Team / Date DMM, HMFO, HMF, HMD, MT&PV / 11th Jan 2013
Risk Assessment - Vessels at Anchor	Review Due Jul-22	Revised By / Date July 2020, MMT

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 to the vessel.

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 significant damage to either the vessel or object and no injuries

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

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

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

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



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: Ves damage. Worst credible: significant dama
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: Ves minimal damage Worst credible: disruption to po
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: Sm Worst credible:

MRF 072/19 (Fire)

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

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

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

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

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)	Added hazard for Fire/Explosion as a result of MRF 072/19 (Fire on an immobilized vessel)

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													
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/Explosion 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/Explosion 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

POLREP (Leith) 07/18

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													
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 Fire/Explosion 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 Fire/Explosion 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

No relevant MRFs since previous review

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



FORTH PORTS LIMITED
Navigational Risk Assessment

	Forth & Tay - NAABSA 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	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
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
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
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
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

MRF 020/19 (Contact)

Most likely: vessel has slow speed impact with quayside resulting in minimal damage.

Worst credible: Vessel has high speed impact with quayside resulting in extreme damage to vessel, quayside, and loss of business due to potential port closure.

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

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

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

Most likely: Vessel suffers minor hull damage which can be easily repaired and no injuries occur.

Worst credible: Vessel suffers extensive hull damage resulting in flooding and loss of life

Most likely: Small spill of non-persistent 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 to environment (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													
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
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	3.12

No relevant MRFs since previous review

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.

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, environment and business - Swamping (4 > 3)

FORTH PORTS LIMITED	Document ID	Risk Assessment Team / Date
Risk Assessment - Diving Operations	FP PMSC RA (F&T) 7/03	HMF/I/HMFO/HMD/MM/CHM 03rd Sep 14
	Review Due	Revised By / Date
	Jul-22	July 2020_MMT



FORTH PORTS LIMITED
Navigational Risk Assessment

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

MRF 068/2018 - Swim Event

Most Likely: Contact between participant and other water user resulting in alarm or minor injury.

Worst Credible: Contact between participant and other water user resulting in fatality.

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 fatality.

Content Reviewed	Changes Made
All content reviewed MRF 068/2018	No changes made

FORTH PORTS LIMITED	Document ID	Risk Assessment Team / Date
	FP PMSC RA (F&T) 8/03	HMF/HMFO/HMD/MM/CHM 03rd Sep 14
Risk Assessment - Recreational Events	Review Due	Revised By / Date
	Jul-22	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: Pipeleine/Cable receives heavy contact resulting in substantial damage causing widespread pollution or major loss of supply from cables	
1.2	Pipeline / Cable Damage	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: Pipeleine/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)		
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 Jul-2020 MMT

FORTH PORTS LIMITED
Navigational Risk Assessment

	Marine Pollution (Enclosed Dock)														POLREP - Leith (19/2/19) (1/9/19)	
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

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