Marine Operations Manual – Annex 03

Marine OPS RA 001 - Navigation Risk Assessment

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1. Introduction to the Port of Dover Navigational Risk Assessment:-

The Port of Dover Navigational Risk Assessment document has been compiled to formally identify all the marine hazards both commercial and leisure within the jurisdiction of the Port. Further to this in order to support the Safety Management System (Port Marine Safety Code), a full assessment of the hazards has been carried out against a standard of acceptability. Where appropriate, risk reducing control measures have been put in place to eliminate or reduce the risk to as low as reasonably practicable (ALARP). In order to fully examine the hazards and risks, external stakeholders with specific skills and knowledge have been included in the process.

As with any Safety Management System, we have a robust monitoring and review system in place within the Port Marine Safety Code to fully support the validity of the Navigation Risk Assessment document.

For the purposes of this document the definition of "hazard" and "risk" are detailed below.

"Hazard": A potential source of harm, loss or injury.

"Risk": The probability of suffering harm or loss and is a measure of the frequency and consequence of a particular hazard.

The following Safety Management Systems and Directions provide detail to the Port Marine Safety Code and are all controlled documents.

VTS Quality Management System (VTS QMS)
Vessel Safety Management System (VSM), as required by the ISM Code.
General Directions
Pilotage Direction

Following stakeholder consultations the following Generic Marine Hazards were identified.

1.1 Generic Marine Hazards

- Collision – Contact with another vessel type 1 to 7 when both are underway.
- Collision with fixed object – Vessel making contact with a fixed object, either Port infrastructure or moored vessel.
- Grounding – Vessel making contact with sea bed or underwater obstruction.
- Breakout – Vessel moorings or anchor failure.
- Bunkering – potential for oil pollution.
- Hazardous Cargoes – potential for pollution or fire.
- Diving – Diving operations becoming compromised.
- Pollution – Potential damage to the environment
- Fire – Potential for injury to persons and property.

Operating within the Port we have the following seven vessel types. Whilst all seven are exposed to the same hazards, each have their unique risk levels, requiring the equivalent unique control measures to mitigate the risk.

1.2 Vessel Types

1. Ferries.
2. Commercial excluding Cruise Vessels.
3. Cruise Vessels.
4. Port Vessel Unit – dredger "David Church", tugs "Doughty" and "Dauntless", HPL's "Director" and "Dovorian".
5. Ship Towage (Including Unusual Tows)
6. Contractor Vessels.
7. Leisure and Small Craft Under 50m.

For the purposes of the Port of Dover Navigation Risk Assessment, the methodology adopted is as described below.

1.3 Port of Dover Navigational Risk Assessment Methodology

Risk is assessed by first assigning a value to the likelihood of the event (within the next 5 years) and then to the most likely severity of the consequence for the four categories; People, Operational/Property, Environment and Media/Reputation. The two values are multiplied and form the Risk Matrix. Finally the Risk Matrix score is assigned one of the five colour coded classifications, Slight, Minor, Moderate, High and Intolerable. The Risk Classification indicates the magnitude and acceptability of the risk and determines whether the task can be performed and when additional mitigating control measures are required to bring the risk to ALARP (As Low As Reasonably Practicable) principles.

Likelihood

Level	Likelihood within next 5 years
1	Remote - may occur in exceptional circumstances.
2	Unlikely - could occur but doubtful.
3	Possible - Uncommon but known to occur.
4	Likely – Likely to occur sometime in the next 1-2 years.
5	Almost certain – Common or repeating experience which occurs most years.

Severity

Level	People
1	First Aid Medical treatment, no lost time.
2	Injury requiring minor professional intervention, self cert lost time.
3	Injury requiring hospital stay, some irreversible damage, reportable with less than 2 weeks off. Or MAIB reporting off more than 3 days.
4	Major or permanently disabling injury. HSE or equivalent enquiry, lost time greater than 2 weeks.
5	Fatal injury, possible large number of victims. Police investigation.

Level	Operational/Property
1	No damage to vessel or structure.
2	Minor damage to vessel or structure.
3	Moderate damage to vessel or structure requiring repairs to return to service.
4	Major damage to vessel or structure requiring long term repairs to return to service.
5	Very serious damage with possible criminal proceedings.

Level	Environment
1	Reported but no confirmed impact or lasting effect.
2	Tier 1 spill, limited and local impact, recovery within six months.
3	Tier 2 spill, medium impact, recovery longer than six months.
4	Tier 3 spill confined to harbour. Major impact on ecosystem. Loss of commercial/recreational use, recovery longer than six months.
5	Tier 3 spill not confined to harbour. Major impact on ecosystem. Loss of commercial/recreational use or conservation interest, recovery longer than three years.

Level	Media/Reputation
1	No coverage.
2	Local coverage.
3	Regional coverage.
4	National coverage, local government intervention, major customer intervention.
5	International coverage, government intervention, major stakeholder withdrawal.

Risk Matrix

Likelihood	Level 1	Remote	1	2	3	4	5
	Level 2	Unlikely	2	4	6	8	10
	Level 3	Possible	3	6	9	12	15
	Level 4	Likely	4	8	12	16	20
	Level 5	Almost Certain	5	10	15	20	25
		Severity	Level 1	Level 2	Level 3	Level 4	Level 5

Risk Classification

Score	Classification	Definition
1 – 2	**Slight**	No action required.
3 – 4	**Minor**	No additional control measures required. Monitor for changes.
5 – 9	**Moderate**	Task can be performed under supervision of responsible person. Risk reduction plan to be created to affect ALARP principles
10 – 14	**High**	Task can only be performed after further additional Risk Assessment and authorisation of Harbour Master. Risk reduction plan to be created to affect ALARP principles.
15 – 25	**Intolerable**	Task is not authorised under any circumstances.

The risk is first calculated for all four categories assuming no control measures in place and this is the **'Inherent Risk'**. The control measures are then applied to reduce the risk to ALARP and re-calculated for all four categories, which gives the final **'Residual Risk'.**

The risk assessment process will individually classify the 9 generic marine hazards, as they relate to the 7 vessel types. In addition the 7 vessel types will be individually classified in relation to the generic marine hazard of potential collision with each other generating a total of 74 Risk Assessment Reports. The addition of the DWDR activities during construction works adds a further 11 Risk Assessment Reports, giving a grand total of 85.

2. Navigation Risk Assessment Control Measure Library:-

Number	Control Measure
1.	All marine traffic movements within the Port's jurisdiction are managed by Dover Port Control (VTS), with the highest MCA VTS Level; Traffic Organisation Service (TOS). This is a 24hr service.
2.	All VTS operators are professionally qualified IALA V103 certificated. They are formally assessed annually by the VTS Manager and are subject to an external MCA approved IALA V103 refresher every three years, to ensure continued competence.
3.	Compulsory pilotage within the Port's jurisdiction, Pilotage Direction sections 1 and 2. All vessels subject to compulsory pilotage must be under the conduct of an authorised pilot or a bona fida holder of a pilotage exemption certificate (PEC).
4.	All authorised pilots are professionally qualified STCW 11/2 Master Unlimited or Royal Navy CQ2 equivalent.
5.	Port of Dover pilots are formally assessed 5 yearly to satisfy the board of continued competence. PoDMSC 07 - Pilotage
6.	Port of Dover pilots attend full mission simulator 2 days CPD on an annual basis to maintain and enhance ship handling skills.
7.	Port of Dover pilots are assessed annually with peer group tripping and are required to complete a minimum of two tug trips per annum whilst operational assisting commercial vessels.
8.	PEC holders are professionally qualified STCW'95 Command Level Certificate of Competency and examined by Port of Dover authorised Class 1(U) pilot, Pilotage Direction Section 2 & 6. Pilotage Authorisation Document.
9.	PEC holders are revalidated annually subject to minimum requirements of Pilotage Direction Section 7.
10.	PEC holders are formally assessed by Port of Dover authorised pilot every 5 years, to satisfy the board of continued competence, Pilotage Direction Section 3.3.
11	Port Vessel Unit professionally qualified crew for Tugs, Dredger and Harbour Patrol Launch as per Maritime Labour Convention MLC 2006 and approved by MCA.
12	Port Vessel Unit VSM, Vessel Safety Management System.
13	All Port Vessel Unit crew are assessed annually for continued competence.
14	Tug Masters are required to complete a minimum of two pilot trips annually aboard commercial vessels entering the Port.
15	Passage Planning requirements all vessels. General Directions, Section 4a, 4b, 4c, 4d, 4e.
16	Passage planning Ferries, General Directions, Section 4f, 4g, 4h.
17	Passage Planning Commercial Vessels. General Directions, Section 4i, 4j, 4k.
18	Dover Pilotage Plan. Master/Pilot Exchange passage plan agreement signatures.
19	Passage planning Leisure Craft. General Directions, section 4l, 4m. PoDMSC 12. – Leisure Vessels.
20	Passage planning small commercial vessels under 50m, not subject to compulsory pilotage. General Directions, Section 4i.
21	Speed restrictions entering Port to minimise risk of berth surge. General Directions, Sections 5a and 5d.
22	Speed restriction in Harbour. General Directions, Section 5b.
23	Speed restriction in the wick. General Directions, Section 5c.
24	Minimum manning levels when underway within Port limits. General Directions, Section 7a and 7b.
25	Minimum manning levels when alongside or at anchor. General Directions, Section 7c.
26	Weather restrictions Port Closure/Service Suspension. General Directions, Section 8a.

27	Commercial vessel manoeuvring wind limitation. General Directions, Section 8e.
28	Wind speed and swell height limitations for vessels on berths, Eastern Arm, DCT and Admiralty Pier. General Directions, Section 8b, 8c, 8f.
29	Wind speed limitations for ferries using ED7 and ED8 berths. General Directions, Section 8d.
30	Swell height limitations for use of tugs. General Directions, Section 8f.
31	Restricted visibility restrictions for vessels and towage. General Directions, Section 8g.
32	Under Keel Clearance requirements. General Directions, Section 8h.
33	Cruise Ship Control Measures for tidal, wind and length limitations. General Directions, Section 9.
34	Dead ship restrictions for wind and use of pilot when shifting. VSM Annex 7.23 – Tugs - Ship Handling and Towing, Section 21.
35	Availability of tugs, Service Level Agreements. Plus free tug for cruise ship arrivals.
36	Use of Hire Tugs requiring ship specific risk assessment. VSM Annex 7.23 – Tugs - Ship Handling and Towing, Section 22.
37	PoDMSC 05 Conservancy – Published depths and maintenance dredging.
38	Hydrographic Reference Document GM – 0028 – Port survey schedule.
39	Locking span fingers fitted to all ferry berths, to prevent dropping should ferry Surge out of berth.
40	Berth surge alarm, if speed limit at entrance violated. Tested weekly and procedure for span operators incorporated into contractors operating procedures.
41	Port of Dover Local Notice to Mariners.
42	PECAN's.
43	Marine Directives.
44	Dangerous Goods in Harbour Area Regs.
45	Dangerous Goods Harbour Revision Order. No explosives only class 1.4S. No Hazardous cargo in bulk and banned hazardous goods.
46	Port of Dover Emergency Response Plan.
47	Hazardous Goods separation aboard vessels/IMDG Code.
48	Marine Safety Plan – PoDMSC – 03.
49	VTS QMS – Section 3 External Procedures – 3.70 Diving Operations.
50	Marine Pollution Response Plan. MOM Section 12. Plus Tier 2 oil spill contractor.
51	Bunkering and Pollution Prevention – PoDMSC 08.
52	Bunkering Code of Practice. MOM Section 11.
53	VTS QMS – Section 3 External Procedures – 3.60 Bunkering Operations.
54	Bunkering operations within the Port of Dover. General Directions, Section 6a, 6b, 6c, 6d, 6e
55	Individual vessel risk assessments for all vessels over 170m, Ref: CRR. Also all bunker vessels individually assessed.
56	MF 04 - Cargo Vessel Planning Form – draft of vessel and section for draft restrictions.
57	Cruise ship individual risk assessment and simulator assessment for all vessels over 300m. Ref: CRR
58	VTS QMS – Section 3 External Procedures – 3.05 Cruise Vessels.
59	VTS QMS – Section 3 External Procedures – 3.23 Berth Surge.
60	(Marine Work Instruction) MWI No 7 – Storm Warning.
61	UK Maritime Legislation, STCW Training and including statutory fire and abandon ship drills.
62	EA Flood alerts/negative tidal surge warnings.
63	IMO guidelines
64	Duty Port Manager/Pilot on duty 24 x 7.

65	Tidal rate and direction information from tide buoy and height of tide information from Port Control.
66	Mooring gang training and procedures.
67	Leisure users Marina and Yacht Club annual forum.
68	Stakeholder meetings.
69	MWI No 16 – Piloting Hampered Vessels.
70	MD 01 – Unmanned Barges. (Barge moorings and RA)
71	Aids to Navigation
72	VSM Annex 7.23 - Tugs – Ship handling and towing.
73	VSM Annex 7.28 – Tugs – General safety practices during towage operations.
74	VSM Annex 10.7 – Manoeuvring Controls Failure.
75	Outside Towing Guide. MOM Section 06. – Outside Towage.
76	VSM RA 34 - Towing.
77	VSM RA 30 - Over stern Towing.
78	COSWP for Merchant Seaman.
79	ICS Bridge Procedures Guide.
80	PoDMSC 09 – Use of Tugs, Towage Capacity & Guidelines.
81	Diving Operations Guidance Manual. MOM Section 10.
82	Small Vessel Inspection Policy. MOM Section 16, Incl MF18 – Small Vessel Inspection Form.
83	Waterborne Transport & Boat Provision – MWI No 13.
84	General Safety Onboard Vessels. VSM RA 05.
85	Leisure Zone Management Policy. MOM Section 08.
86	Port of Dover Website – Leisure Zone Management Policy. MOM Section 08.
87	Port of Dover Web Site – Dover Marina Navigation and Berthing Information.
88	Signage on beach front with Leisure Zone Management Policy.
89	Marina Berthing Master trained and professional fully manned 24 x 7.
90	Marina operating on VHF Channel 80 24x7, to supply all navigational and berthing information. Signs on approach channel either side to show VHF Channel 80.
91	PoDMSC 12 – Leisure Vessels (Passage Planning Leisure Users).
92	Contractors Safety Code states requirements for contractor's workboat, MCA Category 3 or above.
93	VTS QMS – Section 3 External Procedures – 3.04 Commercial Vessels Inwards and 3.041 Commercial Vessels Outwards

2.1 DWDR Specific Additional Navigation Risk Assessment Control Measure Library:-

Number	Control Measure
a	VolkerStevin and Boskalis Westminster (VSBW) Marine Management Plan published 23/02/2017. Contains details and arrangements for all contractor craft, crew transfer, piling barges, crane barge for demolition Dunkerque Jetty, transfer of piles from coaster to pile holding barges,, bunkering, pollution response, mooring including adverse weather provisions, communication between craft and Dover Port Control VTS, dredging and marine incident reporting.
b	Consultation meeting at Royal Cinque Ports Yacht Club (RCPYC) on Tuesday 7th February at 1700hrs with attendees from the following stakeholders. RCPYC members, Dover Sea Sports, Dover Sea Safari, Dover Rowing Club, Dover Lifeguard Club and Channel Swimming Association. They were briefed on plans and schedule of DWDR works and details of control measures to mitigate the risks involved during construction works. DWDR construction briefings will be ongoing with monthly leisure user stakeholder liaison meetings throughout the project.
c	Local Notice to Mariners No: 08/17 – Consultation on Pilotage Direction No 6 , issued detailing proposed changes to Pilotage Directions for vessels operating in the DWDR Exclusion Zone.
d	Local Notice to Mariners issued detailing works and control measures for vessels transiting the DWDR Works Zone. This includes designation of exclusion zone and prohibited entry other than contractor craft.
e	Marine Work Instruction MWI No 19 – DWDR Work Boat Procedure, to be completed by all contractor small craft/tugs under 50m and thus exempt from compulsory pilotage. The procedure includes a marine briefing and work boat inspection MF 18 – Small Vessel Inspection Form. Also included within the inspection is vessel and crew certification.
f	Marine Work Instruction MWI No 20 – DWDR Work Permits. This details procedure for notification of all daily work permits issued by VSBW, to enable Port Control VTS to issue directions and advice to traffic as required.
g	Port Control VTS maintains primacy over all vessel movements within the Harbour, including DWDR Works Zone. Within the DWDR Exclusion Zone, VSBW craft may manoeuvre without contacting Port Control VTS providing the craft remain within the Exclusion Zone. Whenever a craft enters or leaves the Exclusion Zone, they should report accordingly to Port Control VTS.
h	Traffic Light Signals for transit of North and South Channel.
i	Agreed adverse weather plan for contractor vessels to be safely moored or exit the Port when a storm warning MWI No 7 has been issued. Contractors VolkerStevin and Boskalis Westminster (VSBW) to provide risk assessment and method statement for safe mooring and monitoring of their vessels in adverse weather conditions, to be approved by Port of Dover Marine Department.
j	Diving permits to work will be issued in accordance with Port of Dover SMS, MOM Section 10 – Diving Operations Guidance Manual. Once Port Control has given approval. VSBW will issue the contractor work permit.
k	Individual Risk Assessments and Method Statements will be produced by VSBW for all Marine tasks relating to the DWDR project. These will be reviewed and approved by Port of Dover Marine Department.
l	Contractor's safety boat on site and afloat throughout all activities on or adjacent to the water.
m	DWDR Contractor's Code of Conduct

3. Risk Hierarchy Table:-

The level of risk hierarchy as detailed below for each vessel type is rated as Level 1 for highest risk and reducing as the Risk level number increases. The risk levels have been determined by taking the residual risk values and weighting the risk hierarchy on a sliding scale with the highest being risk to people, followed by property then environment and the lowest value on media.

Category 9. Marine Navigation Risk Assessment – Ship Towage (including unusual tows) is not included in the risk hierarchy table below, as the towage operation in Dover involves relatively high risk, requiring additional and specific controlled measures and is self explanatory.

RISK LEVEL	FERRY	COMMERCIAL VESSEL	CRUISE VESSEL
1	Fire Aboard	Fire Aboard	Fire Aboard
2	Collision with Fixed Object	Collision with Fixed Object	Collision with Fixed Object
3	Collision with Leisure Craft	Breakout/Mooring Parted	Breakout/Mooring Parted
4	Pollution/Bunker Spill	Pollution/Bunker Spill	Pollution/Bunker Spill
5	Breakout/Mooring Parted	Collision with Harbour Tug	Collision with Cruise Vessel
6	Hazardous Cargo Spill	Collision with Ferry	Collision with Harbour Tug
7	Collision with Harbour Tug	Collision with Cruise v/l	Collision with Commercial
8	Collision with Contractor v/l	Collision with Commercial	Collision with Ferry
9	Collision with Commercial	Collision with Leisure v/l	Collision with Leisure v/l
10	Collision with Cruise v/l	Hazardous Cargo Spill	Collision with Contractor
11	Collision with another Ferry	Collision with Contractor	Grounding
12	Diving Incident	Diving Incident	Diving incident
13	Grounding	Grounding	
RISK LEVEL	**TUG/DREDGER/HPL**	**CONTRACTOR VESSELS**	**LEISURE CRAFT**
1	Collision with Fixed Object	Collision with Ferry	Collision with Ferry
2	Grounding	Collision with Commercial	Collision with Cruise
3	Fire aboard	Collision with Leisure v/l	Collision with Commercial
4	Collision with other vessel	Collision with Cruise v/l	Collision with fixed object
5	Pollution/bunker spill	Collision with Port v/l unit	Collision with Leisure v/l
6	Diving incident	Collision with Contractor	Collision with Port v/l unit
7	Breakout/mooring parted	Breakout/mooring parted	Collision with Contractor v/l
8		Collision with Fixed Object	Pollution/Oil spill
9		Grounding	Grounding
10		Diving Incident	Diving Incident.

4. Marine Navigation Risk Assessment – Ferries

Hazard	Description	Inherent Risk								Risk Mitigation	Residual Risk									Comments/Actions
		Likelihood	Severity				Risk Rating				Likelihood	Severity				Risk Rating				
			People	Property	Environment	Media	People	Property	Environment	Media			People	Property	Environment	Media	People	Property	Environment	Media	
Collision	With another Ferry	3	5	5	3	4	15	15	9	12	1, 2, 3, 8, 9, 10, 15, 16, 22, 26, 29, 34, 35, 36, 42, 71, 79.	1	3	3	2	2	3	3	2	2	Any collision likely to be low speed with minimal damage.
Collision	With Commercial Vessel	3	5	5	3	4	15	15	9	12	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 16, 17, 18, 20, 22, 24, 27, 34, 41, 42, 54, 55, 71.	1	5	5	3	4	5	5	3	4	
Collision	With Cruise Vessel	3	5	5	3	4	15	15	9	12	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 16, 18, 22, 24, 33, 34, 35, 57, 58, 71.	1	5	5	3	4	5	5	3	4	
Collision	With Port Vessel Unit	4	2	2	1	1	8	8	4	4	1, 2, 3, 8, 9, 10, 11, 12, 13, 15, 16, 22, 26, 30, 31, 34, 36, 42, 43, 71, 72, 73, 74, 76.	3	2	2	1	1	6	6	3	3	Mainly risk of tug having unplanned collision with ferry whilst assisting in heavy weather.
Collision	With Contractor Vessels	5	3	3	2	2	15	15	10	10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 16, 20, 22, 42, 43, 71, 82, 92.	2	3	3	2	2	6	6	4	4	
Collision	With Leisure and small craft under 50m	4	4	3	1	2	16	12	4	8	1, 2, 3, 8, 9, 10, 15, 16, 19, 20, 22, 42, 43, 67, 71, 85, 86, 87, 88, 91.	2	4	3	1	2	8	6	2	4	
Collision With fixed object	With either side of Harbour entrance, Pier/Berths or vessels made fast alongside	4	4	4	3	3	16	16	12	12	1, 2, 3, 8, 9, 10, 11, 12, 13, 15, 16, 22, 26, 29, 30, 31, 34, 36, 41, 42. 65, 71.	4	2	2	2	1	8	8	8	4	
Grounding	In Port approaches, Harbour or Berths	2	1	3	1	1	2	6	2	2	1, 2, 8, 9, 10, 11, 13, 15, 16, 22, 32, 37, 38, 41, 42. 71.	1	1	3	1	1	1	3	1	1	
Breakout	Moorings parted, Berth Surge or Dragging Anchor	4	4	3	2	4	16	12	8	16	8, 9, 10, 15, 16, 21, 22, 25, 28, 39, 40, 41, 60.	3	2	2	1	1	6	6	3	3	High initial risk rating from berth surge causing v/s to pull away from spans and vehicle possibly going into water.
Hazardous Cargo	Hazardous spill, flammable cargo, corrosive cargo.	4	3	4	2	3	12	16	8	12	44, 45, 46, 47.	3	2	2	2	2	6	6	6	6	
Diving Operations	Injury to Divers	3	5	1	1	3	15	3	3	9	1, 2, 3, 8, 9, 10, 41, 46, 49, 81.	1	5	1	1	3	5	1	1	3	Diving approval and risk assessment required for each job. Only approved divers allowed in Port.

Pollution	Hazardous Spill. Hydraulic spill from spans. Bunkering spill, spill of bunkers from collision.	4	1	2	4	4	4	8	16	16	1, 2, 3, 8, 9, 10, 17, 18, 20, 24, 26, 27, 31, 41, 42, 44, 45, 46, 50, 51, 52, 53.	3	1	2	3	3	3	6	9	9	
Fire	Fire aboard.	4	5	4	2	4	20	16	8	16	35, 44, 45, 46, 47.	4	3	4	2	4	12	16	8	16	Not possible to remove risk of fire from ferries totally. The consequences can be severe for damage to ship and reputation. Hence Red Risk, We do have ERP for evacuation.

5. Marine Navigation Risk Assessment – Commercial Vessels

Hazard	Description	Inherent Risk								Risk Mitigation	Residual Risk									Comments/Actions
		Likelihood	Severity				Risk Rating				Likelihood	Severity				Risk Rating				
			People	Property	Environment	Media	People	Property	Environment	Media			People	Property	Environment	Media	People	Property	Environment	Media	
Collision	With a ferry	4	4	4	4*	4	16	16	16	16	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 18, 22, 24, 27, 31, 46, 50, 55. 71, 93.	1	4	4	4	4	4	4	4	4	
Collision	With another commercial vessel	2	4	4	4	4	4	4	4	4	1, 2, 3, 4, 5, 6, 7, 11, 12, 13, 14, 15, 17, 18, 22, 24, 27, 35, 36, 51, 52, 53, 54, 55, 71, 72, 93.	1	4	4	4	4	4	4	4	4	* High risk environment for bunker vessel involved in collision
Collision	With a Cruise Vessel	3	2	3	2	2	6	9	6	6	1, 2, 3, 4, 5, 6, 7, 11, 12, 13, 14, 15, 17, 18, 20, 22, 24, 26, 27, 31, 35, 36, 51, 52, 53, 54, 55, 71, 72, 93.	2	2	3	2	2	4	6	4	4	* High risk environment for bunker vessel involved in collision
Collision	With a Port Vessel Unit	4	5	5	2	3	20	20	8	12	1, 2, 3, 4, 5, 6, 7, 11, 12, 13, 14, 15, 17, 18, 20, 22, 24, 26, 27, 30, 31, 36, 43, 61, 71, 72, 73, 74, 76, 80, 93.	3	2	2	2	2	6	6	6	6	Mainly risk vessel having unplanned collision with tug whilst assisting with berthing and capsizing tug.
Collision	With a Contractor Vessel	3	3	3	2	2	9	9	6	6	1. 2, 3, 4, 5, 6, 7, 15, 17, 18, 20, 22, 24, 27, 31, 41, 49, 71, 82, 92.93.	2	3	3	2	2	6	6	4	4	
Collision	With a Leisure and small craft under 50m	3	5	4	1	1	15	12	3	3	1, 2, 3, 4, 5, 6, 7, 15, 17, 18, 19, 20, 22, 24, 31, 41, 67, 71, 85, 86, 87, 88, 91, 93.	2	2	2	1	1	4	4	2	2	
Collision With Fixed Object	With either side of Harbour entrance, Piers/Berth or vessel made fast alongside.	5	4	4	4*	4	20	20	20	20	1, 2, 3, 4, 5, 6, 7, 11, 12, 13, 14, 15, 17, 18, 22, 24, 26, 27, 30, 31, 34, 35, 36, 43, 46, 55, 65, 71.	3	3	3	3	2	9	9	9	6	* High risk for bunker vessels. Individual RA's required for vessels over 170m or hampered.
Grounding	In Port Approaches Outer Harbour and Berths	4	1	2	1	1	4	8	4	4	1, 2, 3, 4, 5, 6, 7, 12, 13, 14, 15, 18, 24, 27, 31, 32, 34, 37, 38, 48, 55, 56, 71	2	1	2	1	1	2	4	2	2	
Breakout	Moorings part or drag anchor	5	2	3	2	2	10	15	10	10	15, 17, 18, 25, 26, 28, 35, 43, 46, 48, 60.	3	2	3	2	2	6	9	6	6	Dynamic RA required particularly regarding unmanned barge moorings
Hazardous Cargo	Hazardous Spill. Flammable Cargo, Corrosive Cargo	2	3	3	2	2	6	6	4	4	44, 45, 46, 47.	2	2	2	2	1	4	4	4	2	Only very limited quantities of hazardous allowed

																					in Port, as passenger Port.
Diving Operations	Injury to Divers	3	5	1	1	3	15	3	3	9	1, 2, 3, 8, 9, 10, 41, 46, 49, 81.	1	5	1	1	3	5	1	1	3	Diving approval and risk assessment required for each job. Only approved Divers allowed in Port.
Pollution	Bunker vessels supplying ferries and cruise ships.	4	1	1	4	4	4	4	16	16	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 14, 17, 18, 20, 21, 22, 24, 27, 31, 41, 43, 46, 50, 51, 52, 53, 54, 59, 60, 63, 64.	3	1	1	3	3	3	3	9	9	All bunker vessels are individually assessed by DPM/Pilot before being approved.
Fire	Fire aboard	4	4	4	2	3	16	16	8	12	1, 2, 44, 45, 46, 64.	4	4	4	2	3	16	16	8	12	Not possible to control risk of fire aboard vessel. Thus red risk with serious consequences. ERP in place plus exercise drills for evacuation.

6. Marine Navigation Risk Assessment – Cruise Vessels

Hazard	Description	Inherent Risk								Risk Mitigation	Residual Risk									Comments/Actions
		Likelihood	Severity				Risk Rating				Likelihood	Severity				Risk Rating				
			People	Property	Environment	Media	People	Property	Environment	Media			People	Property	Environment	Media	People	Property	Environment	Media	
Collision	With Ferry	3	5	5	3	4	15	15	9	12	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 16, 17, 18, 22, 24, 27, 31, 33, 35, 36, 42, 43, 46, 48, 50, 57, 58, 71, 93.	1	5	5	3	4	5	5	3	4	Individual risk assessment required for cruise vessels over 300m. Includes Simulator trails.
Collision	With commercial vessel	2	5	5	3	4	10	10	6	8	1, 2, 3, 4, 5, 6, 7, 15, 17, 18, 22, 27, 31, 33, 35, 46, 48, 50, 57, 58, 71, 93.	1	5	5	3	4	5	5	3	4	
Collision	With Cruise Ship	4	3	3	1	2	12	12	4	8	1, 2, 3, 4, 5, 6, 7, 11, 12, 13, 14, 15, 18, 22, 27, 30, 33, 35, 36, 46, 48, 50, 57, 58, 71, 72, 73, 74, 80, 93.	3	2	2	1	2	6	6	3	6	Most likely when cruise vessels to and from CT1 contact cruise vessels on CT2. Low speed impact.
Collision	With Port vessel Unit	4	5	4	1	2	20	16	4	8	1, 2, 3, 4, 5, 6, 7, 11, 12, 13, 14, 15, 17, 18, 22, 27, 33, 36, 46, 48, 50, 57, 58, 71, 72, 73, 74, 80, 93.	3	3	3	1	1	6	6	3	3	Most likely with a tug when coming in to assist but due to speed restrictions and VSM procedures, damage would be minimum.
Collision	Contractor Vessels	4	4	4	2	2	16	16	8	8	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 17, 18, 20, 22, 24, 27, 31, 33, 35, 46, 48, 50, 57, 58, 71, 82, 92, 93.	2	2	2	2	2	4	4	4	4	
Collision	With Leisure and small craft under 50m	4	5	4	1	3	20	16	4	12	1, 2, 3, 4, 5, 6, 7, 15, 17, 18, 19, 20, 22, 33, 46, 48, 57, 58, 67, 71, 85, 86, 87, 88, 91, 93.	2	2	3	1	1	4	6	2	2	
Collision With Fixed Object	With either side of Harbour entrance, Piers/Berths or other vessels made fast	4	5	5	3	4	20	20	12	16	1, 2, 3, 4, 5, 6, 7, 11, 12, 13, 14, 15, 17, 18, 22, 24, 27, 30, 31, 33, 34, 35, 36, 46, 48, 57, 58, 65, 71.	2	4	4	2	3	8	8	4	6	Individual risk assessment required for cruise vessels over 300m. Includes simulator trial. Strict tidal restrictions in place.
Grounding	In Port approaches Outer Harbour or Berths.	3	1	3	1	1	3	9	3	3	3, 4, 5, 6, 7, 17, 18, 32, 37, 38, 48, 71.	1	1	3	1	1	1	3	1	1	Pilots check UKC whilst making passage plan prior to boarding. Also

																					tidal range and ship's draft checked prior to arrival when put on shipping list a week in advance.
Breakout	Moorings parted or berth surge	3	2	4	1	1	6	12	3	3	18, 21, 26, 28, 35, 43, 57, 58, 60.	2	2	4	1	1	4	8	2	2	Tug available to push up when cruise ship on berth in gale particularly at high water. Minimum wash when ferries Western Entrance.
Diving Operations	Injury to diver	3	5	1	1	3	15	3	3	9	1, 2, 3, 8, 9, 10, 41, 46, 49, 81.	1	5	1	1	3	5	1	1	3	Diving approval and risk assessment required for each job. Only approved divers allowed to work in Port.
Pollution	Bunkering spill or spill of bunkers from collision	4	1	2	3	4	4	8	12	16	1, 2, 3, 4, 5, 6, 7, 15, 17, 18, 20, 22, 26, 27, 31, 33, 46, 50, 51, 52, 53, 54, 55, 57, 58, 65, 71,	3	1	2	3	3	3	6	9	9	Relates to spillage on board as result of bunkering.
Fire	Fire aboard	4	5	4	2	4	20	16	8	16	35, 46.	4	3	4	2	4	12	16	8	16	Not possible to reduce risk of fire aboard cruise ships. The consequences can be severe for damage to ship and reputation. Hence red risk. We do have ERP for evacuation.

7. Marine Navigation Risk Assessment – Tug, Dredger & HPL

Hazard	Description	Inherent Risk								Risk Mitigation	Residual Risk									Comments/Actions
		Likelihood	Severity				Risk Rating				Likelihood	Severity				Risk Rating				
			People	Property	Environment	Media	People	Property	Environment	Media			People	Property	Environment	Media	People	Property	Environment	Media	
Collision	With other vessels apart from tug collision with tow.	3	5	5	2	3	15	15	6	9	1, 2, 11, 12, 13, 14, 15, 17, 24, 41, 42, 43, 46, 50, 61, 63, 71, 72, 73, 75, 78, 79, 82, 85, 86, 87, 88, 89, 90, 91, 92.	1	5	5	2	3	5	5	2	3	For towing operations see separate NRA.
Collision With Fixed Object	With either side of Harbour entrance, Piers/Berths or vessel made fast alongside or nav aid.	4	3	3	2	2	12	12	8	8	1, 2, 11, 12, 13, 14, 26, 36, 43, 46, 48, 71.	3	3	3	2	2	9	9	6	6	
Grounding	In Harbour, Wick Channel and Berths. Dredger in tidal harbour.	5	1	2	1	1	5	10	5	5	1, 2, 11, 12, 13, 23, 36, 37, 38, 41, 43, 48, 71.	5	1	2	1	1	5	10	5	5	Main risk for tugs grounding is in Wick Channel at low water. However with speed restriction the damage to tug from touching bottom is minimal. However if dredger touches bottom, can damage propulsion units, hence risk rating 10.
Breakout	Moorings parted	1	1	2	1	1	1	2	1	1	60.	1	1	2	1	1	1	2	1	1	Duty tug is manned 24hrs x 7. Dredger "David Church" runs storm moorings whenever adverse weather forecast.
Diving Operations	Injury to divers.	3	5	1	1	3	15	3	3	9	1, 2, 3, 8, 9, 10, 11, 12, 13, 41, 46, 48, 49, 81.	1	5	1	1	3	5	1	1	3	Diving approval and risk assessment required for each job. Only approved divers allowed in Port.
Pollution	Spill of bunkers from collision.	2	1	2	2	1	2	4	4	2	11, 12, 13, 50.	2	1	2	2	1	2	4	4	2	
Fire	Fire aboard	3	4	4	1	3	12	12	3	9	11, 12, 13, 46, 61.	3	2	3	1	2	6	9	3	6	

8. Marine Navigation Risk Assessment – Ship Towage (Including Unusual Tows)

Hazard	Description	Inherent Risk									Risk Mitigation	Residual Risk									Comments/Actions
		Likelihood	Severity				Risk Rating					Likelihood	Severity				Risk Rating				
			People	Property	Environment	Media	People	Property	Environment	Media			People	Property	Environment	Media	People	Property	Environment	Media	
Collision	With towed vessel	4	2	3	1	1	8	12	4	4	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 17, 18, 26, 27, 30, 31, 34, 36, 43, 69, 70, 72, 73, 74, 75, 76, 77.	3	2	3	1	1	6	9	3	3	Passage Plan required for all towage operations to reduce risk ALARP.
Collision With Fixed Object	With Nav Aid or Berth/Pier	4	1	2	1	1	4	8	4	4	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 17, 18, 26, 27, 30, 31, 34, 36, 43, 69, 70, 71, 72, 73, 74, 75, 76, 77.	3	1	2	1	1	3	6	3	3	Passage Plan required for all towage operations to reduce risk ALARP.
Grounding	When operating in another Port such as Ramsgate or undertaking outside towage	4	1	3	1	1	4	12	4	4	11, 12, 13, 15, 43, 62, 69, 71, 72, 73, 75, 79.	3	1	3	1	1	3	9	3	3	Passage plan required for other Ports or outside towing.
Failure of equipment	Tugs tow line parting.	5	5	4	2	3	25	20	10	15	72, 76.	4	2	3	2	2	8	12	8	8	injury to people reduced/removed by adopting a clear deck principle. Potential damage to the ship being assisted is unavoidable in heavy weather.
Failure of equipment	Tugs engine failure	5	1	3	2	2	5	15	10	10	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 72, 73, 74.	5	1	1	1	1	5	5	5	5	Tugs have 2 engines, only ever lost one engine so normally single azimuthing prop remains functional. Crew carry out training exercises operating on one engine, to ensure they can give minimum assistance to keep vessel out of trouble.
Environmental conditions	Severe weather conditions, such as gales, heavy swell, strong tides and poor visibility.	5	3	4	2	2	15	20	10	10	12, 13, 14, 26, 27, 30, 31, 33, 34, 36, 54, 60, 62, 70, 72, 73, 75, 76, 77, 78, 79.	5	2	2	1	1	10	10	5	5	Minor damage to tugs and or Personnel occurs due to working conditions in the exposed Harbour.

																					Working ferries up to 55kts wind will cause minor acceptable damage to tugs. Crew well practiced and trained to cope with conditions.
Human error	Tug girting/capsize Poor communication between tug and tow/pilot	3	5	5	3	4	15	15	9	12	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 24, 36, 43, 46, 61, 69, 72, 73, 75, 76, 77, 78, 79, 80.	1	5	5	3	4	5	5	3	4	ASD tugs tow over bow preventing girting. Outside towing over stern, see RA plus Outside Towing Guide. Unusual tows must have individual RA and Passage plan as per VSM 7.23 Ship Handling & Towing Operations section 18-23.
Act or Omission	Poor use of heaving line by ship's crew. Control of tugs tow line when making fast and letting go.	5	4	3	1	1	20	15	5	5	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 30, 36, 43, 72, 73, 75, 76, 77, 79.	4	2	2	1	1	8	8	4	4	Has happened recently (Nov 2015) with crew finger injury. Potential severity of injury has been reduced by review of control measures after full investigation by ship board safety officer.
Over Stern Towing incident.	When undertaking outside towing contract.	4	4	4	1	2	16	16	4	8	75, 77.	2	2	2	1	1	4	4	2	2	Risk greatly reduced by restricting operations to favourable weather and sea conditions plus RA and practical training exercises.

9. Marine Navigation Risk Assessment – Contractor Vessels

		Inherent Risk									Residual Risk									
Hazard	Description	Likelihood	Severity				Risk Rating				Risk Mitigation	Likelihood	Severity				Risk Rating				Comments/Actions
			People	Property	Environment	Media	People	Property	Environment	Media			People	Property	Environment	Media	People	Property	Environment	Media	
Collision	With Ferry	4	5	4	2	2	20	16	8	8	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 18, 20, 22, 24, 31, 41, 46, 48, 50, 71, 82, 92.	2	3	2	1	1	6	4	2	2	Inspection of all contractor's vessels including coxswain certification.
Collision	With Commercial Vessel	3	5	4	2	2	15	12	6	6	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 17, 18, 20, 22, 24, 41, 46, 48, 50, 71, 82, 92, 93.	2	3	2	1	1	6	4	2	2	
Collision	With Cruise Vessel	2	5	4	2	2	10	8	4	4	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 17, 18, 20, 22, 24, 31, 33, 41, 46, 48, 50, 57, 71, 82, 92, 93.	1	5	4	2	2	5	4	2	2	
Collision	With Port Vessel Unit	3	2	2	2	1	6	6	6	3	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 20, 22, 23, 24, 36, 41, 46, 48, 50, 61, 71, 72, 73, 79, 82, 83, 84, 92, 93.	2	2	2	2	1	4	4	4	2	
Collision	With Contractors Vessel	3	2	2	2	1	6	6	6	3	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 22, 23, 24, 41, 46, 48, 50, 71, 82, 92, 93.	2	2	2	2	1	4	4	4	2	
Collision	With Leisure and small craft under 50m	3	2	2	2	1	6	6	6	3	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 19, 20, 22, 23, 41, 46, 48, 50, 67, 71, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93.	2	2	2	2	1	4	4	4	2	
Collision With Fixed Object	Contact with Berths/Piers other vessels moored.	3	2	2	1	1	6	6	3	3	1, 2, 20, 22,23, 31, 43, 71, 82, 83, 84, 92.	2	2	2	1	1	4	4	2	2	
Grounding	Around Marina, tidal basin, JFT and behind ferry berths	2	1	2	1	1	2	4	2	2	1, 2, 37, 38, 71, 82, 92.	2	1	2	1	1	2	4	2	2	
Breakout	Moorings parting on unmanned barge.	4	1	4	2	1	4	16	8	4	25, 28, 35, 43, 60, 64, 70, 82.	3	1	4	1	1	3	12	3	3	Individual risk assessment required for monitoring moorings of unmanned or manned barges.
Diving Operations	Divers safety when utilising as dive support boat	3	5	1	1	2	15	3	3	6	1, 2, 49, 81, 82, 83, 84.	1	5	1	1	2	5	1	1	2	Individual risk assessment required for each diving operation. Only approved divers allowed in the Port.

10. Marine Navigation Risk Assessment – Leisure & Small Craft Under 50m

Hazard	Description	Inherent Risk								Risk Mitigation	Residual Risk									Comments/Actions
		Likelihood	Severity				Risk Rating				Likelihood	Severity				Risk Rating				
			People	Property	Environment	Media	People	Property	Environment	Media			People	Property	Environment	Media	People	Property	Environment	Media	
Collision	With Ferry		5	4	1	3	20	16	4	12	1, 2, 8, 9, 10, 15, 16, 19, 22, 46, 48, 67, 68, 71, 85, 86, 87, 88, 91.	2	5	4	1	2	10	8	2	4	
Collision	With Commercial Vessel	3	5	4	1	3	15	12	3	9	1, 2, 3, 4, 5, 6, 7, 15, 17, 18, 19, 22, 24, 46, 48, 67, 68, 71, 85, 86, 87, 88, 91, 93.	2	5	4	1	2	10	8	2	4	
Collision	With Cruise Ship	3	5	4	1	3	15	12	3	9	1, 2, 3, 4, 5, 6, 7, 15, 17, 19, 22, 24, 33, 46, 48, 57, 58, 67, 68, 71, 85, 86, 87, 88, 91, 93.	2	5	4	1	2	10	8	2	4	
Collision	With Port Vessel Unit	3	2	2	1	1	6	6	3	3	1, 2, 11, 12, 13, 14, 15, 19, 22, 23, 46, 48, 67, 68, 71, 78, 79, 85, 86, 87, 88, 89, 90, 91.	2	2	2	1	1	4	4	2	2	
Collision	With Contractors Vessel	3	2	2	1	1	6	6	3	3	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 19, 22, 23, 41, 46, 48, 67, 68, 71, 82, 85, 86, 87, 88, 89, 90, 91, 92, 93.	2	2	2	1	1	4	4	2	2	
Collision	Collision with leisure and Small Craft under 50m	3	2	2	1	1	6	6	3	3	1, 2, 19, 22, 23, 41, 46, 48, 67, 68, 71, 85, 86, 87, 88, 89, 90, 91.	2	2	2	1	1	4	4	2	2	
Collision With Fixed Object	Contact with Piers and Berths	4	1	2	1	1	4	8	4	4	1, 2, 20, 22, 23, 41, 67, 71, 85, 86, 87, 88, 89, 90, 91.	3	1	2	1	1	3	6	3	3	
Grounding	In Tidal Basin or Marina	3	1	2	1	1	3	6	3	3	37, 38, 71, 85, 86, 87, 89, 90.	2	1	2	1	1	2	4	2	2	
Diving Operations	Passing close to divers without being aware.	3	4	1	1	2	12	3	3	6	1, 2, 19, 41, 49, 85, 86, 87, 88, 89, 90.	1	4	1	1	2	4	1	1	2	Individual Risk Assessment for diving operations. Notice to Mariners issued.
Pollution	Automatic bilge pumps in Marina. Sinking with fuel and oil leakage.	4	1	1	2	1	4	4	8	4	50, 89, 90.	4	1	1	1	1	4	4	4	4	

11. Marine Navigation Risk Assessment – Dover Western Docks Revival Activities

Hazard	Description	Inherent Risk								Risk Mitigation	Residual Risk									Comments/Actions
		Likelihood	Severity				Risk Rating				Likelihood	Severity				Risk Rating				
			People	Property	Environment	Media	People	Property	Environment	Media			People	Property	Environment	Media	People	Property	Environment	Media	
Collision damage between vessels transiting DWDR Work Zone including cruise vessels and commercial vessels for CT1 and CT2.	Leisure vessels, cruise ships, commercial craft, contractor vessels, tugs, dredger and HPL transiting the DWDR works zone.	5	3	3	2	2	15	15	10	10	a, b, d, e, f, g, h.	3	3	3	2	2	9	9	6	6	
Contact with construction site structures, works plant, buoys, moored barges or anchor cables/wires in DWDR Works Zone in Inner Harbour.	Cruise ships, commercial vessels and leisure craft manoeuvring in Inner Harbour to and from CT1 within the Works Zone.	5	3	4	2	2	15	20	10	10	a, b, d, e, f, g, h, i. k.	3	3	3	2	2	9	9	6	6	
Contact with construction site structures, works plant, buoys, moored barges or anchor cables/wires in North and South and cut through Dunkerque Jetty DWDR Works Zone.	Leisure vessels, contractor craft and tugs/HPL transiting the North and South Channel from Tug Haven and Marina.	5	2	3	2	2	10	15	10	10	a, b, d, e, f, g, h, i, k.	3	2	3	2	2	6	9	6	6	
Contact between vessels, works plant, buoys, moored barges and construction site structures in DWDR Exclusion Zone.	Contractors controlling their own craft and marine plant in the Exclusion Zone. Pilotage exemption under new Pilotage Direction (PD6).	5	3	3	2	1	15	15	10	5	a, b, c, e, g, i, k, l, m.	3	3	3	2	1	9	9	6	3	All works and movements controlled by contractors with method statements and risk assessments in place.
Breakout of	There will be a	5	3	4	2	2	15	20	10	10	a, c, e, i, k.	3	3	4	2	2	9	12	6	6	Specific VSBW

Contractor Craft in adverse weather	large number and variety of contractor craft, barges and vessels working in the harbour and they need to be safely moored or removed from the harbour before onset of adverse weather. Need to be aware of potential for parting moorings or dragging anchors.																				method statement and risk assessment in place and approved by harbour master to reduce risk of breakout to ALARP.
Poor Communications between Construction Site and Dover Port Control VTS	Port control VTS needs to be kept fully appraised of operations in the DWDR work zone, so they can advise vessels accordingly of the latest hazards to navigation whilst transiting the area.	5	4	4	2	3	20	20	10	15	a, d, e, f, g, h, j, k, l, m.	4	2	2	1	1	8	8	4	4	
Contractors construction staff working over water and on waterline with potential for falling in.	A lot of activity during construction from both barges and shore side construction at waters edge with contractors working on or near to water.	4	5	1	1	3	20	4	4	12	a, e, f, k, l, m.	4	2	1	1	1	8	4	4	4	Contractor's safety boat on site always.
Unexploded Ordnance being dredged up.	Expected to find a lot of world war 2 unexploded ordnance whilst carrying out dredging operations, which will need to be dealt with by military bomb disposal unit.	5	5	4	2	4	25	20	10	20	a, k.	1	5	4	2	4	5	4	2	4	Specific VSBW method statement and risk assessment in place with full tried and tested procedures from previous works in Portsmouth.
DWDR Craft	There will be a	4	3	1	1	1	12	4	4	4	a, k, l, m.	3	3	1	1	1	9	1	1	1	Specific VSBW

Mooring Operations causing injury from strained backs to trapped fingers or falling into water as working near quay edge.	lot of mooring operations carried out by contractors and they need to be trained in ILO safe working procedures, as per our licensed ILO operatives.																				method statement and risk assessment in place.
Contractor tugs carrying out Towage Operations with potential for girting, injury from parted lines.	There will be a lot of barge towage carried out by contractor tugs/work boats, which needs to be carried out in a safe manner, monitored and audited	4	5	5	2	4	20	20	8	16	a, c, e, k, l, m.	3	4	4	2	2	12	12	6	6	Specific VSBW method statement and risk assessment in place for towage. Plus work boat inspection by Port of Dover.
Diving Operations	Need to ensure all diving operations are carried out in accordance with Port of Dover regulations.	3	5	1	1	3	15	3	3	9	a, d, e, f, g, j, k, l. m.	2	5	1	1	3	10	2	2	6	Port of Dover MOM section 10, plus specific VSBW permit to work system in place for diving operations.