



**Lochboisdale Development Limited  
Statutory Harbour Authority  
for the Lochboisdale and Gasay Port**

# **Marine and Navigational Hazard Identification and Risk Assessment**

## **August 2019 Review**

Approved by the Board of Directors of Lochboisdale Development Limited, 20 September 2019

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## Summary

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### Simplification of the Risk Database

The HazID and Risk Assessment Database has been simplified. The advisability of simplification was recommended in the December 2018 Designated Person Audit Report. The specific changes made are:

- a) simplification of the Risk Scoring system to an arithmetic Frequency x Impact system rather than the previous logarithmic scale which, whilst potentially more robust, proved very difficult to explain
- b) simplifying the calculation of Average Risk Scores so that it is simply the average of the Risk Scores for all constituent scenarios/impact categories and no longer takes any other account of maximum scores for Most Likely and Worst Credible scenarios
- c) removing Location codes and making the location a straightforward text entry
- d) removing Hazard Cause codes and making hazard causes a straightforward text entry
- e) Relabelling the Stakeholder impact category to "Business" - meaning the impact on the LDL harbour business (including impacts on other stakeholders which then impact on LDL)
- f) allowing a single "General" impact category to be used rather than the previously obligatory four detailed categories: People/Property/Environment/Business (albeit they can be used if data available)
- g) removing the requirement for Risk Assessment scenarios to examine all three Risk Control assumptions: No Risk Controls/Existing RC/Proposed RC (although they can all be used where the data is available)
- h) removing the requirement for Risk Assessment scenarios to examine two Outcome assumptions: Most Likely/Worst Credible (although they can both be used where the data is available)
- i) retaining Risk Control codes and the previous list of Risk Controls
- j) Allowing text notes to be largely unconstrained, i.e. be as many characters as the user requires
- k) Facilitating the consolidation of information from the Insured Risk Database

### Conduct of the Risk Review

A Norman was lead author; DA Currie and D Phillips were reviewers

Jun2019: A plan for the risk assessment review was outlined by A Norman and examined by reviewers

mid Jun2019: An initial update of the Risk Assessment Report was produced by A Norman

06Aug2017: Workshop review by A Norman, DA Currie and D Phillips

mid Aug2019: Refine/update of the Risk Assessment Report by A Norman

Hazards 1103, 1104, 1105, 1501 and 1701 from the Nov2017 Risk Assessment have been deleted and details subsumed within remaining Hazards or regarded as no longer relevant to an LDL Risk Assessment

Hazards 1404, 1811 and 1910 have been added to the Risk Assessment

There are now 16 Marine Hazards on the current Risk Database

Aug/Sep2019 dialogue with CalMac/CMAL re definition of marine speed limits

Late Aug2019 final draft issued for internal review

20Sep2019 approved by Board of Directors including for further review with CalMac/CMAL

### Findings of the Risk Review

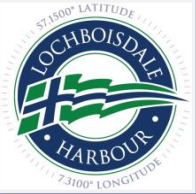
Production of General Directions are confirmed as a priority, together with a review of the documentation and implementation practicalities of Risk Controls such as Standard Operating Procedures

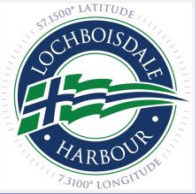
A review of the effectiveness and documentation of Existing Risk Controls could be useful in ensuring that the Risk Assessment reflects actual management practices, particularly where an orange Average Risk Score might mask a red for a constituent part of that Risk Score

A number of Risk Assessments warrant further review with CMAL/CalMac

The HZList report provides an overview of the Risk Assessments for the 16 Hazards, including the Average Risk Scores, the Rank of Hazards according to there either being No Risk Controls (NRC) or the Existing Risk Controls (ERC), and Conclusions and Recommendations for each Hazard

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 <b>Summary of Hazards</b> <b>HAZARD GROUP / Incident Type / Hazard Description</b>		Average Risk Score for different Control scenarios			Adequacy of Existing Risk Controls	Conclusions & Recommendations	Rank on the basis of	
		No Risk Controls (NRC)	Existing Risk Controls (ERC)	Proposed Risk Controls (PRC)			Average Risk Score for NRC	Average Risk Score for ERC
Hazard ID	Hazard Description							
HZ1000	<b>MARINE OPERATIONS</b>							
HZ1100	<b>Vessels Collide</b>							
HZ1101	Ferry or other large constrained vessel collides with small vessel emerging from Lochboisdale Harbour	8.4	4.4	3.9	Significant measures in place	1) Borderline red unacceptable risk scores with NRC scenarios emphasise importance of proper implementation of ERC and PRC 2) Expedite General Directions, particularly re speed limits. 3) Review effectiveness/documentation of Risk Controls, incl. SOP for HM operation of traffic lights (note new rota and cctv) 4) Review insurance cover 5) Review risk assessment with CMAL/Calmac	1	10
HZ1102	Ferry or other large vessel collides with another vessel in the outer Port approaches	7.8	3.8	3.6	Significant measures in place	1) Borderline red unacceptable risk scores with NRC scenarios emphasise the importance of proper implementation of ERC and PRC 2) Risk Assessment reviewed and found still to be relevant. 3) Expedite General Directions. 4) Review effectiveness/documentation of Risk Controls 5) Review with CMAL/Calmac	2	13
HZ1106	Vessel collides with a Vessel at anchor S and E of Gasay	7.8	3.4	3.3	Significant measures in place	1) Borderline red unacceptable risk scores with NRC scenarios emphasise the importance of proper implementation of ERC and PRC 2) Risk Assessment reviewed and found still to be relevant. 3) Expedite General Directions. 4) Review effectiveness/documentation of Risk Controls 5) Review with CMAL/Calmac	2	15
HZ1200	<b>Vessel Contact whilst Berthing</b>							
HZ1201	Vessel contact with pontoons	4.8	4.8	4.8	Significant measures in place	1) Risk Assessment reviewed and found still to be relevant. 2) Review effectiveness/documentation of Risk Controls	13	7
HZ1300	<b>Vessel Contact whilst Underway</b>							
HZ1301	Vessel impacts breakwaters	5.8	4.5	3.3	Adequacy not yet rated	1) Risk Assessment reviewed and found still to be relevant. 2) Review effectiveness/documentation of Risk Controls	10	8
HZ1302	Vessel underway contacts cargo lost overboard or with equipment lost from marine installations	4.3	4.3	2.8	Adequacy not yet rated	1) Risk Assessment reviewed and found still to be relevant. 2) Review effectiveness/documentation of Risk Controls 3) Expedite General Directions and other instructions to mariners and offshore installation managers 4) Review with CMAL/CalMac	15	11

 <b>Summary of Hazards</b> <b>HAZARD GROUP / Incident Type / Hazard Description</b>		Average Risk Score for different Control scenarios			Adequacy of Existing Risk Controls	Conclusions & Recommendations	Rank on the basis of	
		No Risk Controls (NRC)	Existing Risk Controls (ERC)	Proposed Risk Controls (PRC)			Average Risk Score for NRC	Average Risk Score for ERC
Hazard ID	Hazard Description							
HZ1303	Vessel contact with wreck (including a disturbed wreck whilst underway)	5.0	4.5	3.3	Adequacy not yet rated	1) Risk Assessment reviewed and found still to be relevant. 2) Review effectiveness/documentation of Risk Controls 3) Expedite General Directions and other measures 4) Review with CMAL/CalMac	12	8
HZ1400	<b>Vessel Grounding or Stranding</b>							
HZ1401	Vessel grounding whilst entering or leaving the harbour	6.5	4.3	4.1	Significant measures in place	1) Risk Assessment reviewed and found still to be relevant. 2) Review effectiveness/documentation of Risk Controls 3) Expedite General Directions and other measures 4) Review with CMAL/CalMac	7	11
HZ1402	Vessel loses propulsion during dredging operations due to high levels of suspended silt in the sea	6.3	6.3	2.9	Very little in place	1) Risk Assessment reviewed and found still to be relevant. 2) Review effectiveness/documentation of Risk Controls 3) Produce SOP re Dredging and other measures 4) Review with CMAL/CalMac	8	2
HZ1403	Vessel grounding due to shoal not marked on navigational charts	6.3	6.3	3.8	Significant measures in place	1) Risk Assessment reviewed and found still to be relevant. 2) Review effectiveness/documentation of Risk Controls 3) Produce SOP re Hydrographic and other surveys 4) Review with CMAL/CalMac	8	2
HZ1404	Vessel grounding on a shoal or high-point within Lochboisdale's sheltered harbour	7.0	6.0	5.3	Improvements ongoing	1) LDL maintain third party and employer's liability cover of £10m. 2) Advisor suggests increasing towards £35m for 3rd party and £15m for employee injury cover	6	4
HZ1500	<b>Vessel Capsize/Listing/Foundering</b>							
HZ1600	<b>Vessel Fire/Explosion/Flood</b>							
HZ1610	Vessel fire onboard whilst moored alongside	7.5	6.4	6.0	Significant measures in place	1) Borderline red unacceptable risk score with NRC Worst Credible scenario emphasises importance of proper implementation of ERC/PRC 2) Risk Assessment reviewed and found still to be relevant. 3) Review effectiveness/documentation of Risk Controls 4) Expedite 09/06/2019 Incident Report and lessons learned 5) Expedite SOP requiring vehicles with gas bottles to park in designated areas away from buildings with minimum separation distances between vehicles (10m?)	5	1

Hazard ID	Summary of Hazards HAZARD GROUP / Incident Type / Hazard Description	Average Risk Score for different Control scenarios			Adequacy of Existing Risk Controls	Conclusions & Recommendations	Rank on the basis of	
		No Risk Controls (NRC)	Existing Risk Controls (ERC)	Proposed Risk Controls (PRC)			Average Risk Score for NRC	Average Risk Score for ERC
HZ1620	Vessel flooding whilst moored alongside	7.8	4.9	4.9	Significant measures in place	1) Borderline red unacceptable risk scores for NRC scenarios emphasise the importance of proper implementation of ERC and PRC 2) Risk Assessment reviewed and found still to be relevant. 3) Review effectiveness/documentation of Risk Controls 4) Review adequacy of on-site emergency pumping equipment	2	5
HZ1700	<b>Vessel Machinery Failure</b>							
HZ1800	<b>Vessel Causes Pollution</b>							
HZ1801	Vessel causes a major oil spill within the Port approaches	5.4	4.9	4.6	Improvements ongoing	1) Risk Assessment reviewed and found still to be relevant. 2) Expedite completion of Lochboisdale Harbour OSCP, seek the required MCA approval and put the Plan into full effect 3) Consider reflecting this risk also in the OSCP	11	5
HZ1811	Vessel causes an oil spill within the sheltered Lochboisdale Harbour	3.5	3.3	2.8	Improvements ongoing	1) New risk included for consistency with the updated Oil Spill Contingency Plan 2) Expedite completion of the Lochboisdale Harbour OSCP, seek the required MCA approval and put the Plan into full effect	16	16
HZ1900	<b>Other Marine Incident</b>							
HZ1910	Conflict between Vessel and Diving Operations	4.8	3.8	3.8	Significant measures in place	1) New risk included for completeness 2) Review effectiveness/documentation of Risk Controls	13	13

**Notes:**

1) Rank is based on Average Risk Score either for a) No Risk Controls (NRC) as a measure of total Risk exposure, or b) Existing Risk Controls (ERC) as a measure of the residual Risk assuming the ERC are effective

# Risk Scoring System

Increasing Impact Score »				
1	2	3	4	5
Negligible	Minor	Moderate	Major	Catastrophic
0.0001	0.001	0.01	0.1	1
Impact ROM				

Return Period in years = typical long-term average recurrence interval	Probability of occurrence in any year
--	---------------------------------------

Increasing Frequency Score »	
5	Frequent
4	Probable
3	Possible
2	Unlikely
1	Very Rare

Relative order of (ROM)

Frequency ROM = long-term average occurrences per year

Risk Scores:				
5	10	15	20	25
4	8	12	16	20
3	6	9	12	15
2	4	6	8	10
1	2	3	4	5

1/10th or less	100.0%
1	100.0%
10	10.0%
100	1.0%
1000	0.1%

Impact Category:
<b>Generally</b>
<b>People</b>
<b>Property</b>
<b>Environment</b>
<b>Business</b>

Very Minor	Minor	Moderate	Major	Catastrophic
Very minor, no first aid needed	Minor injury requires first aid only	Serious injury with lost time or minor long-term health effect	Fatality/serious injury/major long-term health effect	Multiple fatalities
Very minor property damage costing <£1,000	Minor damage costing £2k to £20k	Moderate damage costing £20k to £200k	Major damage costing £200k to £2million	Catastrophic damage costing >£2m
Very minor impact contained/cleared within the Port with local resources	Minor impact contained in Port, cleared with Western Isles resources	Moderate impact - short-term including beyond Port limits	Major impact - widespread or long-term incl. beyond Port limits	Catastrophic - major long-term effects
Very minor impact on stakeholder costs and lost trade <£1000	Minor impact - local media scrutiny/lost trade £2k to £20k	Moderate - media damage to reputation/Port disruption/lost trade £20k to £200k	Major impact - national media damage/temporary Port closure/lost trade £200k to £2m	Catastrophic - international media damage/prolonged Port closure, lost trade >£2m

## NOTES:

1) Risk scoring and preliminary risk assessments **MUST** be subject to review by Subject Matter Experts

2) Risk scores are the product of Frequency and Impact Ratings (RS = F x I)

3) Average Risk Score BEFORE or AFTER Risk Controls is taken as the average of:

- the average of the 'most likely' risk scores
- the average of the 'worst credible' risk scores

This should be regarded as giving a PRELIMINARY indication of risk ranking ONLY

(Note that Marico's HAZMAN system calculates an Overall Risk Score from:

- the average of the 'most likely' risk scores
- the average of the 'worst credible' risk scores
- the maximum of the four 'most likely' risk scores
- the maximum of the four 'worst credible' risk scores

but does not disclose the algorithm used to make this calculation and is not used here)

4) Risk Assessment Scale on the basis of Average Risk Score is as follows:

Risk Assessment Scale		Risk Score	
<b>Broadly Acceptable</b>	Risk should remain on Risk Register with periodic review by management (at least annually)	>=1	< 4
<b>Tolerable if ALARP</b>	Risk should be tolerable provided proactive identification, implementation and monitoring of risk controls provides assurance that the risk is As Low as Reasonably Practicable (ALARP)	>=4	<10
<b>Unacceptable</b>	Risk is intolerable and must either be eliminated (the preferred approach) or risk controls introduced to reduce the risk to a tolerable level that is also ALARP	>=10	<=25

The thick black line on the upper matrix of risk scores shows the normal boundary between unacceptable and Tolerable if ALARP risks

## Risk Controls

RCID	RCDescription
-	
RC1000	EXERCISE OF POWERS
RC1100	Harbour byelaws
RC1200	General Directions to Vessels
RC1201	General Directions to Vessels - particularly re speed limits
RC2000	LDL MARINE SAFETY MANAGEMENT SYSTEM (SMS)
RC2010	Communication, co-operation and co-ordination between the LBH and CMAL harbour
RC2110	Briefing pack on website for skippers/masters of vessels using the Lochboisdale Harbour
RC2900	CMAL Safety Management System (SMS)
RC3000	STANDARD OPERATING PROCEDURES (SOP)
RC3010	SOP re "Securitie" message on VHF 16 for large vessels about to transit the channel.
RC3100	SOP re Aids to Navigation
RC3110	SOP for HM operation of traffic lights
RC3200	SOP re Seabed Information
RC3210	SOP re Hydrographic Surveys and Wreck Surveys
RC3220	SOP re Dredging
RC3230	SOP re Diving
RC3300	SOP re Prevention of Loss of Cargo etc
RC3310	SOP re assuring that Fish Farm does not pose unacceptable risk
RC3400	SOP re Vessel Navigation, Anchorage & Mooring
RC3410	SOP re transit of the Port by vessels carrying wind turbine or other large deck cargoes
RC3420	SOP re awareness of Cruise Liners and similar vessels approaching the port
RC3430	SOP re reservation of an "easy-to-use" berth for emergency use
RC3435	SOP re managing parking of vehicles near the quayside
RC3440	SOPs forming part of the Emergency Response Plan
RC3450	Lochboisdale Harbour Oil Spill Contingency Plan
RC3451	Lochboisdale Harbour Oil Spill Response Contract with Briggs
RC3452	Lochboisdale Harbour Tier 1 Oil Spill Response Equipment
RC3453	Oil Spill Response Exercises
RC3454	MOU/Co-operation Agreement for Mobilising Local Oil Spill Response Resources
RC3460	CMAL Oil Spill Contingency Plan (for Ferry Terminal & Port approaches?)
RC3470	SOP re periodic review of competency certificates etc held by local boat users
RC3500	SOP re employee conduct and expectations while representing the company at external
RC3800	CALMAC FERRY OPERATOR SOP
RC3900	CMAL SOP
RC4000	LB HARBOUR MASTER ACTIONS
RC4010	HM briefs masters of vessels unfamiliar with LB
RC4020	HM monitors effectiveness of E Breakwater security barrier in discouraging unauthorised
RC4030	HM on E Breakwater with red flag/lamps when traffic lights on red and vessels preparing to
RC4040	HM designates vessel anchorages outside the LB harbour
RC5000	NAVIGATIONAL CHARTS & NOTICES TO MARINERS
RC5100	Navigational Charts
RC5105	Advise UKHO of changes needed to navigational charts and check that these are published
RC5110	Advise UKHO of 2012 info about 5m contour extending further into LB approaches than
RC5120	Mark narrow channel used by ferry on navigation charts

## Risk Controls

RCID	RCDescription
RC5130	Request UKHO to remove legacy/unauthorised mooring locations from local chart
RC5200	Notices to Mariners
RC5210	Notice to Mariners re reporting of wrecks
RC5211	Notice to Mariners re diving operations
RC5220	Notice to Mariners re fuelling
RC6000	INFRASTRUCTURE
RC6100	Infrastrucure installed as part of Phase 1 harbour construction 2013-2015
RC6101	Breakwaters repositioned in response to 2012 CMAL HIRA study
RC6102	Marine traffic lights operated during peak tourist season and at peak times of the day.
RC6103	Aids to Navigation lights installed on breakwaters
RC6104	Designated vehicle parking bays
RC6200	Infrastructure generally
RC6201	Adjustable chair supplied in office
RC6202	Adjustable computer monitors supplied in office
RC6203	Poster with correct instrcution for body posture and screen settings posted
RC6210	Aids to Navigation
RC6230	VHF Channel 12 available for co-ordination between HM, Ferry Terminal and vessels
RC6240	Adopted road to standard with appropriate approved signage in place
RC6250	Rock Barrier on causeway side to prevent vehicle driving into water and also to keep driver
RC6260	30 MPH speed limit
RC6270	Liferings positioned on Quayside
RC6275	Emergency equipment on site including pumping equipment
RC6280	Wood kerb edging on Quayside edge
RC6290	Fire Fighting equipment onsite and maintained
RC6300	SOP for weekly inspection of slipway surface condition
RC6310	SOP for weekly inspection of access ladder condition
RC6315	SOP for weekly inspection of facility hardware, handrails, pontoons, gratings and lighting.
RC6320	SOP for Daily inspections of housekeeping on the pontoons and quayside
RC6400	BOAT HOIST
RC6410	Alarm on Boat hoist when Reversing
RC6420	SOP for use of Boat hoist
RC6430	Trained operators requirment for operating boat hoist
RC6440	SOP For maintenance and checks of Boat hoist including 3rd party checks and 5 yearly load
RC6445	SWL stamped on Hoist
RC6450	Keys for tractor kept in locked office
RC6500	CRANE LIFT
RC6510	Permit system in place for all third party crane lifts from the quay
RC6520	Authorized users list for use of harbour crane
RC6530	Locked control cabinet for harbour crane
RC6540	Maintenance schedule for crane including third party annual checks and 5 yearly load test
RC6550	SWL stamped on Crane
RC6555	Hydraulic check valves on system
RC6560	Radio comms on Channel 12
RC6565	Signed contract for boat lifts, boat owner declaring weight and strap positions.
RC7000	VESSEL/MASTER AND VEHICLE/DRIVER CONDITIONS/QUALIFICATIONS ETC



## Risk Controls

RCID	RCDescription
RC7100	Vessel Condition controls
RC7200	Vessel Master Qualification controls
RC7300	Vehicle Condition controls
RC7310	Vehicle MOT requirement
RC7400	Vehicle Driver Qualification controls
RC7410	Driver Licence requirement
RC8000	MATERIALS & SUBSTANCE MANAGEMENT
RC8010	COSHH regulations
RC9000	
RC9999	Last record - DO NOT DELETE!



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## Detail of Hazard Identification and Risk Assessment

Hazard Group	HZO	UNDEFINED
Incident Type	HZ00	-X
Hazard ID	HZ0000	-
Report Status/Date	-	-

### Hazard Location and Other Information

-

### Contributory Hazard Causes

-

### Risk Assessment Note

-

### Quantitative Risk Assessment Scenarios (defined in terms of the following assumptions)

Risk Control Assumptions	Outcome Assumptions	Impact Categories
<input checked="" type="checkbox"/> NRC: No Risk Controls	<input checked="" type="checkbox"/> ML: Most Likely Outcome	<input type="checkbox"/> 1 Category: General
<input checked="" type="checkbox"/> ERC: Existing Risk Controls	<input checked="" type="checkbox"/> WC: Worst Credible Outcome	<input checked="" type="checkbox"/> 4: People, Property, Env, Business
<input checked="" type="checkbox"/> PRC: Proposed Risk Controls		

Risk Assessment Scale	
	Risk Score
Broadly Acceptable	>=1 < 4
Tolerable if ALARP	>=4 < 10
Unacceptable	>=10 <=25

### Quantitative Risk Assessment

Scenario #	Controls	Outcome	Frequency Rating, F	Impact Rating, I				
				Generally	People	Property	Environment	Business
S1	<b>Scenarios With No Risk Controls:</b>							
S1.1	NRC	ML	0	0	0	0	0	0
S1.2	NRC	WC	0	0	0	0	0	0
S2	<b>Scenarios with Existing Risk Controls:</b>							
S2.1	ERC	ML	0	0	0	0	0	0
S2.2	ERC	WC	0	0	0	0	0	0
S3	<b>Scenarios with Existing &amp; Proposed Risk Controls:</b>							
S3.1	PRC	ML	0	0	0	0	0	2
S3.2	PRC	WC	0	0	0	0	0	0

Risk Score = F x I						Average Risk Score
Generally	People	Property	Environment	Business		

### Existing or Proposed Risk Controls (E RC or P RC) Adequacy of Existing Risk Controls: Adequacy not yet rated

E	-
E	-
E	-
E	-
P	-
P	-
P	-
P	-

### Insurance 0 #####

-

### Conclusions and Recommendations 0 #####

0

### Other Information -1 #####

-

### DOCUMENT PRODUCTION/REVISION RECORD

Date	Lead Author	Reviewers	Approved	Status	Remarks
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-



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## Detail of Hazard Identification and Risk Assessment

Hazard Group	HZ1
Incident Type	HZ11
Hazard ID	HZ1101
Report Status/Date	DRAFT 20/08/2019

**MARINE OPERATIONS**

**Vessels Collide**

**Ferry or other large constrained vessel collides with small vessel emerging from Lochboisdale Harbour**

### Hazard Location and Other Information

- 1) Location: North Channel, N and W of Gasay
- 2) Small vessel might be yacht moving slowly but unable to alter course quickly or a rib/motor boat leaving harbour at high-speed
- 3) Master/helmsman of small vessel might be a 'local resident' familiar with harbour or a 'visitor' unfamiliar with it

### Contributory Hazard Causes

Human error by skipper of small vessel or by an officer on the large vessel. Poor visibility. Southerly wind of more than 30 knots (keeping large vessel to S side of the N channel). Vessel equipment failure. Harbour equipment failure (radio, AtN, marine traffic lights, cctv, mains power, standby generator). Poor communication and co-ordination by LDL and Ferry Terminal staff.

### Risk Assessment Note

### Quantitative Risk Assessment Scenarios (defined in terms of the following assumptions)

<b>Risk Control Assumptions</b>	<b>Outcome Assumptions</b>	<b>Impact Categories</b>
<input checked="" type="checkbox"/> NRC: No Risk Controls	<input checked="" type="checkbox"/> ML: Most Likely Outcome	<input type="checkbox"/> 1 Category: General
<input checked="" type="checkbox"/> ERC: Existing Risk Controls	<input checked="" type="checkbox"/> WC: Worst Credible Outcome	<input checked="" type="checkbox"/> 4: People, Property, Env, Business
<input checked="" type="checkbox"/> PRC: Proposed Risk Controls		

### Risk Assessment Scale

	Risk Score
Broadly Acceptable	>=1 < 4
Tolerable if ALARP	>=4 < 10
Unacceptable	>=10 <=25

### Quantitative Risk Assessment

Scenario #	Controls	Outcome	Frequency Rating, F	Impact Rating, I				
				Generally	People	Property	Environment	Business
S1	<b>Scenarios With No Risk Controls:</b>							
S1.1	NRC	ML	Collision, minor injuries, minor damage	3	5	3	2	2
S1.2	NRC	WC	Collision, capsize, loss of vessel, multiple fatalities	2	4	5	5	5
S2	<b>Scenarios with Existing Risk Controls:</b>							
S2.1	ERC	ML	Collision, minor injuries, minor damage	2	3	3	2	1
S2.2	ERC	WC	Collision, capsize, loss of vessel, multiple fatalities	1	4	5	5	4
S3	<b>Scenarios with Existing &amp; Proposed Risk Controls:</b>							
S3.1	PRC	ML	Collision, minor injuries, minor damage	2	1	3	2	1
S3.2	PRC	WC	Collision, major injuries and damage	1	4	4	4	3

### Risk Score = F x I

Generally	People	Property	Environment	Business	Average Risk Score
	9.0	6.0	6.0	6.0	8.4
	10.0	10.0	10.0	10.0	
	6.0	4.0	2.0	4.0	4.4
	5.0	5.0	4.0	5.0	
	6.0	4.0	2.0	4.0	3.9
	4.0	4.0	3.0	4.0	

### Existing or Proposed Risk Controls (E RC or P RC)

Adequacy of Existing Risk Controls:

Significant measures in place

E	RC2110	Briefing pack on website for skippers/masters of vessels using the Lochboisdale Harbour
E	RC3010	SOP re "Securitie" message on VHF 16 for large vessels about to transit the channel.
E	RC3100	SOP re Aids to Navigation
E	RC3110	SOP for HM operation of traffic lights
E	RC4010	HM briefs masters of vessels unfamiliar with LB
E	RC5110	Advise UKHO of 2012 info about 5m contour extending further into LB approaches than shown on chart
E	RC5120	Mark narrow channel used by ferry on navigation charts
E	RC6100	Infrastrucure installed as part of Phase 1 harbour construction 2013-2015
E	RC6102	Marine traffic lights operated during peak tourist season and at peak times of the day.
E	-	
P	RC1201	General Directions to Vessels - particularly re speed limits
P	RC3110	SOP for HM operation of traffic lights
P	-	

### Insurance

-1 #####

- 1) LDL maintain third party and employer's liability cover of £10m.
- 2) Advisor suggests increasing towards £35m for 3rd party and £15m for employee injury cover

### Conclusions and Recommendations

-3 #####

- 1) Borderline red unacceptable risk scores with NRC scenarios emphasise importance of proper implementation of ERC and PRC
- 2) Expedite General Directions, particularly re speed limits.
- 3) Review effectiveness/documentation of Risk Controls, incl. SOP for HM operation of traffic lights (note new rota and cctv)
- 4) Review insurance cover
- 5) Review risk assessment with CMAL/Calmac

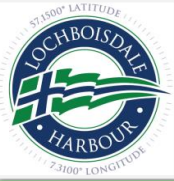
### Other Information

-1 #####

Marine traffic lights operated during peak tourist season to strengthen control for vessels unfamiliar with harbour

**DOCUMENT PRODUCTION/REVISION RECORD**

Date	Lead Author	Reviewers	Approved	Status	Remarks
10/12/2014	A Norman	To be mobilised	-	SUPERSEDED	Desk study HAZID/Risk Assessment
22/06/2016	C Macdonald	A Norman	C Macdonald	SUPERSEDED	Updated to reflect HEO in force
20/11/2017	C Macdonald	A Norman	C Macdonald	CURRENT	Annual Review
20/08/2019	A Norman	DA Currie, D Phillips	-	DRAFT	Annual Review (started 14/6/19, workshop 6/8, update 20/8, finalised?)
-	-	-	-	-	-



Lochboisdale Development Ltd  
Statutory Harbour Authority  
for the Lochboisdale & Gasay Port

## Detail of Hazard Identification and Risk Assessment

Hazard Group	HZ1
Incident Type	HZ11
Hazard ID	HZ1102
Report Status/Date	DRAFT 20/08/2019

**MARINE OPERATIONS**  
**Vessels Collide**  
**Ferry or other large vessel collides with another vessel in the outer Port approaches**

### Hazard Location and Other Information

1) Location: Outer Port approaches

### Contributory Hazard Causes

Human error. Poor visibility. Vessel equipment failure. AtN obscured. AtN failure. Adverse weather.

### Risk Assessment Note

-

### Quantitative Risk Assessment Scenarios (defined in terms of the following assumptions)

Risk Control Assumptions		Outcome Assumptions		Impact Categories	
<input checked="" type="checkbox"/> NRC: No Risk Controls	TRUE	<input checked="" type="checkbox"/> ML: Most Likely Outcome	TRUE	<input type="checkbox"/> 1 Category: General	FALSE
<input checked="" type="checkbox"/> ERC: Existing Risk Controls	TRUE	<input checked="" type="checkbox"/> WC: Worst Credible Outcome	TRUE	<input checked="" type="checkbox"/> 4: People, Property, Env, Business	TRUE
<input checked="" type="checkbox"/> PRC: Proposed Risk Controls	TRUE				

### Risk Assessment Scale

	Risk Score
Broadly Acceptable	>=1 < 4
Tolerable if ALARP	>=4 < 10
Unacceptable	>=10 <=25

### Quantitative Risk Assessment

Scenario #	Controls	Outcome	Frequency Rating, F	Impact Rating, I					
				Generally	People	Property	Environment	Business	
<b>S1 Scenarios With No Risk Controls:</b>									
S1.1	NRC	ML	Collision, minor injuries, minor damage	3	2	3	2	2	1
S1.2	NRC	WC	Collision, capsise, loss of vessel, multiple fatalities	2	4	5	5	4	5
<b>S2 Scenarios with Existing Risk Controls:</b>									
S2.1	ERC	ML	Collision, minor injuries, minor damage	2	1	2	2	1	1
S2.2	ERC	WC	Collision, capsise, loss of vessel, multiple fatalities	1	4	5	5	3	5
<b>S3 Scenarios with Existing &amp; Proposed Risk Controls:</b>									
S3.1	PRC	ML	Collision, minor injuries, minor damage	2	1	2	2	1	2
S3.2	PRC	WC	Collision, major injuries and damage	1	4	4	4	3	4

### Risk Score = F x I

Generally	People	Property	Environment	Business	Average Risk Score
	9.0	6.0	6.0	3.0	7.8
	10.0	10.0	8.0	10.0	
	4.0	4.0	2.0	2.0	3.8
	5.0	5.0	3.0	5.0	
	4.0	4.0	2.0	4.0	3.6
	4.0	4.0	3.0	4.0	

### Existing or Proposed Risk Controls (E RC or P RC)

Adequacy of Existing Risk Controls: Significant measures in place

E	RC2010	Communication, co-operation and co-ordination between the LBH and CMAL harbour authorities (2012 CMAL HIRA Report Hazard 1.16 refers)
E	RC3400	SOP re Vessel Navigation, Anchorage & Mooring
E	RC3420	SOP re awareness of Cruise Liners and similar vessels approaching the port
E	RC5200	Notices to Mariners
E	-	
P	RC1200	General Directions to Vessels
P	-	

### Insurance

- LDL maintain third party and employer's liability cover of £10m.
- Advisor suggests increasing towards £35m for 3rd party and £15m for employee injury cover

### Conclusions and Recommendations

- Borderline red unacceptable risk scores with NRC scenarios emphasise the importance of proper implementation of ERC and PRC
- Risk Assessment reviewed and found still to be relevant.
- Expedite General Directions.
- Review effectiveness/documentation of Risk Controls
- Review with CMAL/Calmac

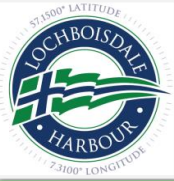
### Other Information

-

-1 ####

### DOCUMENT PRODUCTION/REVISION RECORD

Date	Lead Author	Reviewers	Approved	Status	Remarks
15/12/2014	A Norman	To be mobilised	-	SUPERSEDED	Desk study HAZID/Risk Assessment
22/06/2016	C Macdonald	A Norman	C Macdonald	SUPERSEDED	Updated to reflect Harbour Empowerment Order in force
20/11/2017	C Macdonald	A Norman	C Macdonald	CURRENT	Annual Review
20/08/2019	A Norman	DA Currie, D Phillips	-	DRAFT	Annual Review (started 14/6/19, workshop 6/8, update 20/8, finalised?)
-	-	-	-	-	-



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## Detail of Hazard Identification and Risk Assessment

Hazard Group	HZ1
Incident Type	HZ11
Hazard ID	HZ1106
Report Status/Date	DRAFT 27/08/2019

**MARINE OPERATIONS**

**Vessels Collide**

**Vessel collides with a Vessel at anchor S and E of Gasay**

### Hazard Location and Other Information

- 1) Location: Large vessel anchorages - S and E of Gasay
- 2) Location is designated for use by Cruise Ships or Large Vessels seeking refuge to anchor or hold station with dynamic positioning

### Contributory Hazard Causes

Human error. Poor visibility. Vessel equipment failure. Vessel dragging anchor. Vessel anchoring in, or swinging at anchor into, the navigational channel.

### Risk Assessment Note

-

### Quantitative Risk Assessment Scenarios (defined in terms of the following assumptions)

Risk Control Assumptions	Outcome Assumptions	Impact Categories
<input checked="" type="checkbox"/> NRC: No Risk Controls	<input checked="" type="checkbox"/> ML: Most Likely Outcome	<input type="checkbox"/> 1 Category: General
<input checked="" type="checkbox"/> ERC: Existing Risk Controls	<input checked="" type="checkbox"/> WC: Worst Credible Outcome	<input checked="" type="checkbox"/> 4: People, Property, Env, Business
<input checked="" type="checkbox"/> PRC: Proposed Risk Controls		

### Risk Assessment Scale

	Risk Score
Broadly Acceptable	>=1 < 4
Tolerable if ALARP	>=4 <10
Unacceptable	>=10 <=25

### Quantitative Risk Assessment

Scenario #	Controls	Outcome	Frequency Rating, F	Impact Rating, I					
				Generally	People	Property	Environment	Business	
<b>S1 Scenarios With No Risk Controls:</b>									
S1.1	NRC	ML	Collision, minor injuries, minor damage	3	2	3	2	2	1
S1.2	NRC	WC	Collision, capsize, loss of vessel, multiple fatalities	2	4	5	5	4	5
<b>S2 Scenarios with Existing Risk Controls:</b>									
S2.1	ERC	ML	Collision, minor injuries, minor damage	2	1	2	2	1	1
S2.2	ERC	WC	Collision, capsize, loss of vessel, multiple fatalities	1	4	4	4	3	4
<b>S3 Scenarios with Existing &amp; Proposed Risk Controls:</b>									
S3.1	PRC	ML	Collision, minor injuries, minor damage	2	1	2	2	1	2
S3.2	PRC	WC	Collision, capsize, loss of vessel, multiple fatalities	1	4	4	3	2	3

### Risk Score = F x I

Generally	People	Property	Environment	Business	Average Risk Score
	9.0	6.0	6.0	3.0	7.8
	10.0	10.0	8.0	10.0	
	4.0	4.0	2.0	2.0	3.4
	4.0	4.0	3.0	4.0	
	4.0	4.0	2.0	4.0	3.3
	4.0	3.0	2.0	3.0	

### Existing or Proposed Risk Controls (E RC or P RC)

Adequacy of Existing Risk Controls: Significant measures in place

E	RC2010	Communication, co-operation and co-ordination between the LBH and CMAL harbour authorities (2012 CMAL HIRA Report Hazard 1.16 refers)
E	RC3400	SOP re Vessel Navigation, Anchorage & Mooring
E	RC3420	SOP re awareness of Cruise Liners and similar vessels approaching the port
E	RC5200	Notices to Mariners
E	-	

P RC1200 General Directions to Vessels

P -

### Insurance

0 #####

- 1) LDL maintain third party and employer's liability cover of £10m.
- 2) Advisor suggests increasing towards £35m for 3rd party and £15m for employee injury cover

### Conclusions and Recommendations

0 #####

- 1) Borderline red unacceptable risk scores with NRC scenarios emphasise the importance of proper implementation of ERC and PRC
- 2) Risk Assessment reviewed and found still to be relevant.
- 3) Expedite General Directions.
- 4) Review effectiveness/documentation of Risk Controls
- 5) Review with CMAL/Calmac

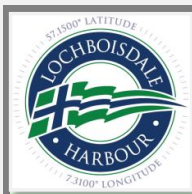
### Other Information

-1 #####

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### DOCUMENT PRODUCTION/REVISION RECORD

Date	Lead Author	Reviewers	Approved	Status	Remarks
15/12/2014	A Norman	To be mobilised	-	SUPERSEDED	Desk study HAZID/Risk Assessment
22/06/2016	C Macdonald	A Norman	C Macdonald	SUPERSEDED	Updated to reflect Harbour Empowerment Order in force
20/11/2017	C Macdonald	A Norman	C Macdonald	CURRENT	Annual Review
27/08/2019	A Norman	DA Currie, D Phillips	-	DRAFT	Annual Review (started 14/6/19, workshop 6/8, update 27/8, finalised?)
-	-	-	-	-	-



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## Detail of Hazard Identification and Risk Assessment

Hazard Group	HZ1
Incident Type	HZ12
Hazard ID	HZ1201
Report Status/Date	DRAFT 27/08/2019

**MARINE OPERATIONS**  
Vessel Contact whilst Berthing  
Vessel contact with pontoons

### Hazard Location and Other Information

- 1) Location: Lochboisdale Harbour
- 2) Scenario: Medium-sized vessel (e.g. fish farm) loses control/steerage whilst moving within harbour and contacts pontoons

### Contributory Hazard Causes

Human error. Vessel control/steerage failure. Malicious damage. High wind.

### Risk Assessment Note

-

### Quantitative Risk Assessment Scenarios (defined in terms of the following assumptions)

Risk Control Assumptions	Outcome Assumptions	Impact Categories
<input checked="" type="checkbox"/> NRC: No Risk Controls <input checked="" type="checkbox"/> ERC: Existing Risk Controls <input checked="" type="checkbox"/> PRC: Proposed Risk Controls	<input checked="" type="checkbox"/> ML: Most Likely Outcome <input checked="" type="checkbox"/> WC: Worst Credible Outcome	<input type="checkbox"/> 1 Category: General <input checked="" type="checkbox"/> 4: People, Property, Env, Business

Risk Assessment Scale	
	Risk Score
Broadly Acceptable	>=1 < 4
Tolerable if ALARP	>=4 < 10
Unacceptable	>=10 <=25

### Quantitative Risk Assessment

Scenario #	Controls	Outcome	Frequency Rating, F	Impact Rating, I					
				Generally	People	Property	Environment	Business	
<b>S1 Scenarios With No Risk Controls:</b>									
S1.1	NRC	ML	Contact, minor injury, minor damage	3	0	2	2	1	1
S1.2	NRC	WC	Contact, moderate injury, moderate damage	2	0	3	3	2	2
<b>S2 Scenarios with Existing Risk Controls:</b>									
S2.1	ERC	ML	Contact, minor injury, minor damage	3	0	2	2	1	1
S2.2	ERC	WC	Contact, moderate injury, moderate damage	2	0	3	3	2	2
<b>S3 Scenarios with Existing &amp; Proposed Risk Controls:</b>									
S3.1	PRC	ML	Contact, minor injury, minor damage	3	0	2	2	1	1
S3.2	PRC	WC	Contact, moderate injury, moderate damage	2	0	3	3	2	2

Risk Score = F x I						Average Risk Score
Generally	People	Property	Environment	Business		
	6.0	6.0	3.0	3.0		4.8
	6.0	6.0	4.0	4.0		
	6.0	6.0	3.0	3.0		4.8
	6.0	6.0	4.0	4.0		
	6.0	6.0	3.0	3.0		4.8
	6.0	6.0	4.0	4.0		

### Existing or Proposed Risk Controls (E RC or P RC)

Adequacy of Existing Risk Controls: Significant measures in place

E	RC3400	SOP re Vessel Navigation, Anchorage & Mooring
E	RC3430	SOP re reservation of an "easy-to-use" berth for emergency use
E	RC5100	Navigational Charts
E	RC5200	Notices to Mariners
E	-	-
P	-	-
P	-	-

### Insurance

- 1) LDL maintain third party and employer's liability cover of £10m.
- 2) Advisor suggests increasing towards £35m for 3rd party and £15m for employee injury cover

### Conclusions and Recommendations

- 1) Risk Assessment reviewed and found still to be relevant.
- 2) Review effectiveness/documentation of Risk Controls

### Other Information

-

### DOCUMENT PRODUCTION/REVISION RECORD

Date	Lead Author	Reviewers	Approved	Status	Remarks
02/01/2015	A Norman	To be mobilised	-	SUPERSEDED	Desk study HAZID/Risk Assessment
22/06/2016	C Macdonald	A Norman	C Macdonald	SUPERSEDED	Updated to reflect Harbour Empowerment Order in force
15/11/2017	C Macdonald	A Norman	C Macdonald	CURRENT	Annual Review
27/08/2019	A Norman	DA Currie, D Phillips	-	DRAFT	Annual Review (started 14/6/19, workshop 6/8, update 27/8, finalised?)
-	-	-	-	-	-



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## Detail of Hazard Identification and Risk Assessment

Hazard Group	HZ1
Incident Type	HZ13
Hazard ID	HZ1301
Report Status/Date	DRAFT 27/08/2019

**MARINE OPERATIONS**  
**Vessel Contact whilst Underway**  
**Vessel impacts breakwaters**

### Hazard Location and Other Information

- 1) Location: Breakwaters - originally raised by CMAL's 2012 HIRA that resulted in construction changes to breakwater alignment
- 2) Incidents: Catermaran lost control and impacted breakwater 01Jun2016

### Contributory Hazard Causes

Human error. AtN failure. Vessel equipment failure. Northerly wind of more than 30 knots. Poor Visibility

### Risk Assessment Note

### Quantitative Risk Assessment Scenarios (defined in terms of the following assumptions)

<input checked="" type="checkbox"/> NRC: No Risk Controls	TRUE	<input checked="" type="checkbox"/> ML: Most Likely Outcome	TRUE	<input type="checkbox"/> 1 Category: General	FALSE
<input checked="" type="checkbox"/> ERC: Existing Risk Controls	TRUE	<input checked="" type="checkbox"/> WC: Worst Credible Outcome	TRUE	<input checked="" type="checkbox"/> 4: People, Property, Env, Business	TRUE
<input checked="" type="checkbox"/> PRC: Proposed Risk Controls	TRUE				

### Risk Assessment Scale

	Risk Score
Broadly Acceptable	>=1 < 4
Tolerable if ALARP	>=4 < 10
Unacceptable	>=10 <=25

### Quantitative Risk Assessment

Scenario #	Controls	Outcome	Frequency Rating, F	Impact Rating, I					
				Generally	People	Property	Environment	Business	
<b>S1 Scenarios With No Risk Controls:</b>									
S1.1	NRC	ML	Contact, minor injuries, minor damage	3	0	2	2	1	1
S1.2	NRC	WC	Contact, major injuries, major damage	2	0	4	4	2	4
<b>S2 Scenarios with Existing Risk Controls:</b>									
S2.1	ERC	ML	Contact, minor injuries, minor damage	2	0	2	2	1	1
S2.2	ERC	WC	Contact, major injuries, major damage	2	0	4	4	2	2
<b>S3 Scenarios with Existing &amp; Proposed Risk Controls:</b>									
S3.1	PRC	ML	Contact, minor injuries, minor damage	2	0	2	2	1	2
S3.2	PRC	WC	Contact, major injuries, major damage	1	0	4	4	2	2

Risk Score = F x I						Average Risk Score
Generally	People	Property	Environment	Business		
	6.0	6.0	3.0	3.0		5.8
	8.0	8.0	4.0	8.0		
	4.0	4.0	2.0	2.0		4.5
	8.0	8.0	4.0	4.0		
	4.0	4.0	2.0	4.0		3.3
	4.0	4.0	2.0	2.0		

### Existing or Proposed Risk Controls (E RC or P RC)

Adequacy of Existing Risk Controls:

Adequacy not yet rated

E	RC2110	Briefing pack on website for skippers/masters of vessels using the Lochboisdale Harbour
E	RC6101	Breakwaters repositioned in response to 2012 CMAL HIRA study
E	RC6103	Aids to Navigation lights installed on breakwaters
E	-	-
P	RC3100	SOP re Aids to Navigation
P	-	-

### Insurance

- 1) LDL maintain third party and employer's liability cover of £10m.
- 2) Advisor suggests increasing towards £35m for 3rd party and £15m for employee injury cover

### Conclusions and Recommendations

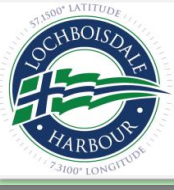
- 1) Risk Assessment reviewed and found still to be relevant.
- 2) Review effectiveness/documentation of Risk Controls

### Other Information

### DOCUMENT PRODUCTION/REVISION RECORD

Date	Lead Author	Reviewers	Approved	Status	Remarks
02/01/2015	A Norman	To be mobilised	-	SUPERSEDED	Desk study HAZID/Risk Assessment
22/06/2016	C Macdonald	A Norman	C Macdonald	SUPERSEDED	Updated to reflect Harbour Empowerment Order in force
15/11/2017	C Macdonald	A Norman	C Macdonald	CURRENT	Annual Review
27/08/2019	A Norman	DA Currie, D Phillips	-	DRAFT	Annual Review (started 14/6/19, workshop 6/8, update 27/8, finalised?)
-	-	-	-	-	-





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## Detail of Hazard Identification and Risk Assessment

Hazard Group	HZ1
Incident Type	HZ13
Hazard ID	HZ1302
Report Status/Date	DRAFT 27/08/2019

**MARINE OPERATIONS**  
**Vessel Contact whilst Underway**  
**Vessel underway contacts cargo lost overboard or with equipment lost from marine installations**

### Hazard Location and Other Information

Location: Port area outside of harbour

### Contributory Hazard Causes

Human error. Vessel cargo securing equipment failure. Poor Visibility. High Waves. Fish farm or offshore renewable energy equipment

### Risk Assessment Note

-

### Quantitative Risk Assessment Scenarios (defined in terms of the following assumptions)

Risk Control Assumptions	Outcome Assumptions	Impact Categories
<input checked="" type="checkbox"/> NRC: No Risk Controls <input checked="" type="checkbox"/> ERC: Existing Risk Controls <input checked="" type="checkbox"/> PRC: Proposed Risk Controls	<input checked="" type="checkbox"/> ML: Most Likely Outcome <input checked="" type="checkbox"/> WC: Worst Credible Outcome	<input type="checkbox"/> 1 Category: General <input checked="" type="checkbox"/> 4: People, Property, Env, Business

Risk Assessment Scale	
	Risk Score
Broadly Acceptable	>=1 < 4
Tolerable if ALARP	>=4 < 10
Unacceptable	>=10 <=25

### Quantitative Risk Assessment

Scenario #	Controls	Outcome	Frequency Rating, F	Impact Rating, I					
				Generally	People	Property	Environment	Business	
<b>S1 Scenarios With No Risk Controls:</b>									
S1.1	NRC	ML	Contact, minor injuries, minor damage	3	0	2	2	1	1
S1.2	NRC	WC	Contact, moderate injuries, moderate damage	2	0	3	3	1	1
<b>S2 Scenarios with Existing Risk Controls:</b>									
S2.1	ERC	ML	Contact, minor injuries, minor damage	3	0	2	2	1	1
S2.2	ERC	WC	Contact, moderate injuries, moderate damage	2	0	3	3	1	1
<b>S3 Scenarios with Existing &amp; Proposed Risk Controls:</b>									
S3.1	PRC	ML	Contact, minor injuries, minor damage	2	0	2	2	1	2
S3.2	PRC	WC	Contact, moderate injuries, moderate damage	1	0	3	3	1	1

Risk Score = F x I						Average Risk Score
Generally	People	Property	Environment	Business		
	6.0	6.0	3.0	3.0		4.3
	6.0	6.0	2.0	2.0		
	6.0	6.0	3.0	3.0		4.3
	6.0	6.0	2.0	2.0		
	4.0	4.0	2.0	4.0		2.8
	3.0	3.0	1.0	1.0		

### Existing or Proposed Risk Controls (E RC or P RC)

Adequacy of Existing Risk Controls:

Adequacy not yet rated

E	RC2110	Briefing pack on website for skippers/masters of vessels using the Lochboisdale Harbour
E	RC3300	SOP re Prevention of Loss of Cargo etc
E	-	

P	RC1200	General Directions to Vessels
P	RC3310	SOP re assuring that Fish Farm does not pose unacceptable risk
P	RC5200	Notices to Mariners
P	-	

### Insurance

- LDL maintain third party and employer's liability cover of £10m.
- Advisor suggests increasing towards £35m for 3rd party and £15m for employee injury cover

### Conclusions and Recommendations

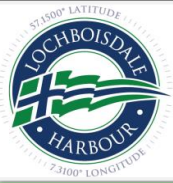
- Risk Assessment reviewed and found still to be relevant.
- Review effectiveness/documentation of Risk Controls
- Expedite General Directions and other instructions to mariners and offshore installation managers
- Review with CMAL/CalMac

### Other Information

-

### DOCUMENT PRODUCTION/REVISION RECORD

Date	Lead Author	Reviewers	Approved	Status	Remarks
02/01/2015	A Norman	To be mobilised	-	SUPERSEDED	Desk study HAZID/Risk Assessment
22/06/2016	C Macdonald	A Norman	C Macdonald	SUPERSEDED	Updated to reflect Harbour Empowerment Order in force
15/11/2017	C Macdonald	A Norman	C Macdonald	CURRENT	Annual Review
27/08/2019	A Norman	DA Currie, D Phillips	-	DRAFT	Annual Review (started 14/6/19, workshop 6/8, update 27/8, finalised?)
-	-	-	-	-	-



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## Detail of Hazard Identification and Risk Assessment

Hazard Group	HZ1	MARINE OPERATIONS
Incident Type	HZ13	Vessel Contact whilst Underway
Hazard ID	HZ1303	Vessel contact with wreck (including a disturbed wreck whilst underway)
Report Status/Date	DRAFT	27/08/2019

### Hazard Location and Other Information

- 1) Location: Port area outside of harbour.
- 2) Known underwater obstructions: The reference on marine charts to an obstruction east of Gasay Rock was removed by UKHO following an LDL bathymetric survey Apr/May2016)

### Contributory Hazard Causes

Human error. Failure to discover changes to wrecks timeously. Poor visibility. Vessel equipment failure. Failure to report wreck.

### Risk Assessment Note

-

### Quantitative Risk Assessment Scenarios (defined in terms of the following assumptions)

Risk Control Assumptions	Outcome Assumptions	Impact Categories
<input checked="" type="checkbox"/> NRC: No Risk Controls	<input checked="" type="checkbox"/> ML: Most Likely Outcome	<input type="checkbox"/> 1 Category: General
<input checked="" type="checkbox"/> ERC: Existing Risk Controls	<input checked="" type="checkbox"/> WC: Worst Credible Outcome	<input checked="" type="checkbox"/> 4: People, Property, Env, Business
<input checked="" type="checkbox"/> PRC: Proposed Risk Controls		

Risk Assessment Scale	
	Risk Score
Broadly Acceptable	>=1 < 4
Tolerable if ALARP	>=4 <10
Unacceptable	>=10 <=25

### Quantitative Risk Assessment

Scenario #	Controls	Outcome	Frequency Rating, F	Impact Rating, I					
				Generally	People	Property	Environment	Business	
<b>S1 Scenarios With No Risk Controls:</b>									
S1.1	NRC	ML	Minor damage to vessel	2	0	2	2	1	1
S1.2	NRC	WC	Loss of lives and vessel	2	0	4	4	2	4
<b>S2 Scenarios with Existing Risk Controls:</b>									
S2.1	ERC	ML	Minor damage to vessel	2	0	2	2	1	1
S2.2	ERC	WC	Loss of lives and vessel	2	0	4	4	2	2
<b>S3 Scenarios with Existing &amp; Proposed Risk Controls:</b>									
S3.1	PRC	ML	Minor damage to vessel	2	0	2	2	1	1
S3.2	PRC	WC	Loss of lives and vessel	1	0	4	4	2	4

Risk Score = F x I						Average Risk Score
Generally	People	Property	Environment	Business		
	4.0	4.0	2.0	2.0		5.0
	8.0	8.0	4.0	8.0		
	4.0	4.0	2.0	2.0		4.5
	8.0	8.0	4.0	4.0		
	4.0	4.0	2.0	2.0		3.3
	4.0	4.0	2.0	4.0		

### Existing or Proposed Risk Controls (E RC or P RC)

Adequacy of Existing Risk Controls:

Adequacy not yet rated

E	RC2110	Briefing pack on website for skippers/masters of vessels using the Lochboisdale Harbour
E	RC3210	SOP re Hydrographic Surveys and Wreck Surveys
E	RC5210	Notice to Mariners re reporting of wrecks
E	-	

P	RC1200	General Directions to Vessels
P	RC6210	Aids to Navigation
P	-	

### Insurance

- 1) LDL maintain third party and employer's liability cover of £10m.
- 2) Advisor suggests increasing towards £35m for 3rd party and £15m for employee injury cover

### Conclusions and Recommendations

- 1) Risk Assessment reviewed and found still to be relevant.
- 2) Review effectiveness/documentation of Risk Controls
- 3) Expedite General Directions and other measures
- 4) Review with CMAL/CalMac

### Other Information

-

### DOCUMENT PRODUCTION/REVISION RECORD

Date	Lead Author	Reviewers	Approved	Status	Remarks
02/01/2015	A Norman	To be mobilised	-	SUPERSEDED	Desk study HAZID/Risk Assessment
22/06/2016	C Macdonald	A Norman	C Macdonald	SUPERSEDED	Updated to reflect Harbour Empowerment Order in force
15/11/2017	C Macdonald	A Norman	C Macdonald	CURRENT	Annual Review
28/08/2019	A Norman	DA Currie, D Phillips	-	DRAFT	Annual Review (started 14/6/19, workshop 6/8, update 28/8, finalised?)
-	-	-	-	-	-



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## Detail of Hazard Identification and Risk Assessment

Hazard Group	HZ1
Incident Type	HZ14
Hazard ID	HZ1401
Report Status/Date	DRAFT 28/08/2019

**MARINE OPERATIONS**  
**Vessel Grounding or Stranding**  
**Vessel grounding whilst entering or leaving the harbour**

### Hazard Location and Other Information

Location: N Channel - N & W of Gasay

### Contributory Hazard Causes

Human error. Poor visibility. AtN failure. Mains or Renewable power failure and standby generation unavailable. Deficiency in SOP re

### Risk Assessment Note

-

### Quantitative Risk Assessment Scenarios (defined in terms of the following assumptions)

<b>Risk Control Assumptions</b> <input checked="" type="checkbox"/> NRC: No Risk Controls <input checked="" type="checkbox"/> ERC: Existing Risk Controls <input checked="" type="checkbox"/> PRC: Proposed Risk Controls	<b>Outcome Assumptions</b> <input checked="" type="checkbox"/> ML: Most Likely Outcome <input checked="" type="checkbox"/> WC: Worst Credible Outcome	<b>Impact Categories</b> <input type="checkbox"/> 1 Category: General <input checked="" type="checkbox"/> 4: People, Property, Env, Business
--	---	--

Risk Assessment Scale	
	Risk Score
Broadly Acceptable	>=1 < 4
Tolerable if ALARP	>=4 < 10
Unacceptable	>=10 <=25

### Quantitative Risk Assessment

Scenario #	Controls	Outcome	Frequency Rating, F	Impact Rating, I					
				Generally	People	Property	Environment	Business	
<b>S1 Scenarios With No Risk Controls:</b>									
S1.1	NRC	ML	Grounding, minor injuries, hull damage	3	0	2	2	1	1
S1.2	NRC	WC	Grounding, major injury, loss of vessel	2	0	4	5	3	5
<b>S2 Scenarios with Existing Risk Controls:</b>									
S2.1	ERC	ML	Grounding, minor injuries, hull damage	3	0	2	2	1	1
S2.2	ERC	WC	Grounding, major injury, loss of vessel	1	0	4	5	3	4
<b>S3 Scenarios with Existing &amp; Proposed Risk Controls:</b>									
S3.1	PRC	ML	Grounding, minor injuries, hull damage	2	0	2	2	3	2
S3.2	PRC	WC	Grounding, major injury, loss of vessel	1	0	4	5	3	3

Risk Score = F x I						Average Risk Score
Generally	People	Property	Environment	Business		
	6.0	6.0	3.0	3.0		6.5
	8.0	10.0	6.0	10.0		
	6.0	6.0	3.0	3.0		4.3
	4.0	5.0	3.0	4.0		
	4.0	4.0	6.0	4.0		4.1
	4.0	5.0	3.0	3.0		

### Existing or Proposed Risk Controls (E RC or P RC)

Adequacy of Existing Risk Controls:

Significant measures in place

E	RC2110	Briefing pack on website for skippers/masters of vessels using the Lochboisdale Harbour
E	RC5105	Advise UKHO of changes needed to navigational charts and check that these are published
E	RC6103	Aids to Navigation lights installed on breakwaters
E	-	-
P	RC1200	General Directions to Vessels
P	RC3100	SOP re Aids to Navigation
P	-	-

### Insurance

- LDL maintain third party and employer's liability cover of £10m.
- Advisor suggests increasing towards £35m for 3rd party and £15m for employee injury cover

### Conclusions and Recommendations

- Risk Assessment reviewed and found still to be relevant.
- Review effectiveness/documentation of Risk Controls
- Expedite General Directions and other measures
- Review with CMAL/CalMac

### Other Information

-

### DOCUMENT PRODUCTION/REVISION RECORD

Date	Lead Author	Reviewers	Approved	Status	Remarks
02/01/2015	A Norman	To be mobilised	-	SUPERSEDED	Desk study HAZID/Risk Assessment
22/06/2016	C Macdonald	A Norman	C Macdonald	SUPERSEDED	Updated to reflect Harbour Empowerment Order in force
15/11/2017	C Macdonald	A Norman	C Macdonald	CURRENT	Annual Review
28/08/2019	A Norman	DA Currie, D Phillips	-	DRAFT	Annual Review (started 14/6/19, workshop 6/8, update 28/8, finalised?)
-	-	-	-	-	-



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## Detail of Hazard Identification and Risk Assessment

Hazard Group	HZ1
Incident Type	HZ14
Hazard ID	HZ1402
Report Status/Date	DRAFT 28/08/2019

**MARINE OPERATIONS**  
**Vessel Grounding or Stranding**  
**Vessel loses propulsion during dredging operations due to high levels of suspended silt in the sea**

### Hazard Location and Other Information

- 1) Location: N Channel - N & W of Gasay.
- 2) Hazard first identified: by CMAL's 2012 HIRA in terms of suspended silt entering ferry cooling water induction system in a way that could compromise vessel propulsion.
- 3) Also applicable to any vessel with a cooling water system that can be compromised by a silt blockage in the intake filter.
- 4) The concern originally pertained to dredging during construction operations but remains potentially relevant to any dredging associated with future harbour construction or maintenance works.

### Contributory Hazard Causes

Vessel propulsion failure, Deficiencies in communication, co-ordination and co-operation between LDL and CMAL harbour authorities.  
Dredging leading to high levels of suspended silt.

### Risk Assessment Note

-

### Quantitative Risk Assessment Scenarios (defined in terms of the following assumptions)

Risk Control Assumptions	Outcome Assumptions	Impact Categories
<input checked="" type="checkbox"/> NRC: No Risk Controls <input checked="" type="checkbox"/> ERC: Existing Risk Controls <input checked="" type="checkbox"/> PRC: Proposed Risk Controls	<input checked="" type="checkbox"/> ML: Most Likely Outcome <input checked="" type="checkbox"/> WC: Worst Credible Outcome	<input type="checkbox"/> 1 Category: General <input checked="" type="checkbox"/> 4: People, Property, Env, Business

Risk Assessment Scale	
	Risk Score
Broadly Acceptable	>=1 < 4
Tolerable if ALARP	>=4 < 10
Unacceptable	>=10 <=25

### Quantitative Risk Assessment

Scenario #	Controls	Outcome	Frequency Rating, F	Impact Rating, I					Average Risk Score	
				Generally	People	Property	Environment	Business		
<b>S1 Scenarios With No Risk Controls:</b>										
S1.1	NRC	ML	Grounding, minor injuries, hull damage	3	0	2	2	1	1	
S1.2	NRC	WC	Grounding, major injury, loss of vessel	2	0	4	5	3	4	6.3
<b>S2 Scenarios with Existing Risk Controls:</b>										
S2.1	ERC	ML	Grounding, minor injuries, hull damage	3	0	2	2	1	1	6.3
S2.2	ERC	WC	Grounding, major injury, loss of vessel	2	0	4	5	3	4	6.3
<b>S3 Scenarios with Existing &amp; Proposed Risk Controls:</b>										
S3.1	PRC	ML	Grounding, minor injuries, hull damage	1	0	2	2	1	2	2.9
S3.2	PRC	WC	Grounding, major injury, loss of vessel	1	0	4	5	3	4	2.9

Risk Score = F x I						Average Risk Score
Generally	People	Property	Environment	Business		
	6.0	6.0	3.0	3.0		6.3
	8.0	10.0	6.0	8.0		6.3
	6.0	6.0	3.0	3.0		6.3
	8.0	10.0	6.0	8.0		6.3
	2.0	2.0	1.0	2.0		2.9
	4.0	5.0	3.0	4.0		2.9

### Existing or Proposed Risk Controls (E RC or P RC)

Adequacy of Existing Risk Controls:

Very little in place

E	RC2010	Communication, co-operation and co-ordination between the LBH and CMAL harbour authorities (2012 CMAL HIRA Report Hazard 1.16 refers)
E	-	-
P	RC3220	SOP re Dredging
P	RC5200	Notices to Mariners
P	-	-

### Insurance

0 #####

- 1) LDL maintain third party and employer's liability cover of £10m.
- 2) Advisor suggests increasing towards £35m for 3rd party and £15m for employee injury cover

### Conclusions and Recommendations

0 #####

- 1) Risk Assessment reviewed and found still to be relevant.
- 2) Review effectiveness/documentation of Risk Controls
- 3) Produce SOP re Dredging and other measures
- 4) Review with CMAL/CalMac

### Other Information

-1 #####

-

### DOCUMENT PRODUCTION/REVISION RECORD

Date	Lead Author	Reviewers	Approved	Status	Remarks
16/12/2014	A Norman	To be mobilised	-	SUPERSEDED	Desk study HAZID/Risk Assessment
22/06/2016	C Macdonald	A Norman	C Macdonald	SUPERSEDED	Updated to reflect Harbour Empowerment Order in force
15/11/2017	C Macdonald	A Norman	C Macdonald	CURRENT	Annual Review
28/08/2019	A Norman	DA Currie, D Phillips	-	DRAFT	Annual Review (started 14/6/19, workshop 6/8, update 28/8, finalised?)
-	-	-	-	-	-



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## Detail of Hazard Identification and Risk Assessment

Hazard Group	HZ1	MARINE OPERATIONS
Incident Type	HZ14	Vessel Grounding or Stranding
Hazard ID	HZ1403	Vessel grounding due to shoal not marked on navigational charts
Report Status/Date	DRAFT	28/08/2019

### Hazard Location and Other Information

- 1) Location: N Channel - N & W of Gasay.
- 2) Hazard first identified: by CMAL's 2012 HIRA, Hazard 1.8. Led to a recommendation to notify UKHA of a shoal not then marked on navigational charts (namely the 5m contour extending further in to the Loch Boisdale approaches adjacent to Gasay)

### Contributory Hazard Causes

Deficiency in SOP re notifications to UKHO. Failure to discover changing seabed levels timeously.

### Risk Assessment Note

-

### Quantitative Risk Assessment Scenarios (defined in terms of the following assumptions)

Risk Control Assumptions		Outcome Assumptions		Impact Categories	
<input checked="" type="checkbox"/> NRC: No Risk Controls	TRUE	<input checked="" type="checkbox"/> ML: Most Likely Outcome	TRUE	<input type="checkbox"/> 1 Category: General	FALSE
<input checked="" type="checkbox"/> ERC: Existing Risk Controls	TRUE	<input checked="" type="checkbox"/> WC: Worst Credible Outcome	TRUE	<input checked="" type="checkbox"/> 4: People, Property, Env, Business	TRUE
<input checked="" type="checkbox"/> PRC: Proposed Risk Controls	TRUE				

Risk Assessment Scale	
	Risk Score
Broadly Acceptable	>=1 < 4
Tolerable if ALARP	>=4 < 10
Unacceptable	>=10 <=25

### Quantitative Risk Assessment

Scenario #	Controls	Outcome	Frequency Rating, F	Impact Rating, I					
				Generally	People	Property	Environment	Business	
S1	<b>Scenarios With No Risk Controls:</b>								
S1.1	NRC	ML	Grounding, minor injuries, hull damage	3	0	2	2	1	1
S1.2	NRC	WC	Grounding, major injury, loss of vessel	2	0	4	5	3	4
S2	<b>Scenarios with Existing Risk Controls:</b>								
S2.1	ERC	ML	Grounding, minor injuries, hull damage	3	0	2	2	1	1
S2.2	ERC	WC	Grounding, major injury, loss of vessel	2	0	4	5	3	4
S3	<b>Scenarios with Existing &amp; Proposed Risk Controls:</b>								
S3.1	PRC	ML	Grounding, minor injuries, hull damage	2	0	2	2	1	2
S3.2	PRC	WC	Grounding, major injury, loss of vessel	1	0	4	5	3	4

Risk Score = F x I						Average Risk Score
Generally	People	Property	Environment	Business		
	6.0	6.0	3.0	3.0		6.3
	8.0	10.0	6.0	8.0		
	6.0	6.0	3.0	3.0		6.3
	8.0	10.0	6.0	8.0		
	4.0	4.0	2.0	4.0		3.8
	4.0	5.0	3.0	4.0		

### Existing or Proposed Risk Controls (E RC or P RC)

Adequacy of Existing Risk Controls: Significant measures in place

E	RC5105	Advise UKHO of changes needed to navigational charts and check that these are published
E	RC5110	Advise UKHO of 2012 info about 5m contour extending further into LB approaches than shown on chart
E	-	
P	RC3210	SOP re Hydrographic Surveys and Wreck Surveys
P	-	

### Insurance

0 #####

- 1) LDL maintain third party and employer's liability cover of £10m.
- 2) Advisor suggests increasing towards £35m for 3rd party and £15m for employee injury cover

### Conclusions and Recommendations

0 #####

- 1) Risk Assessment reviewed and found still to be relevant.
- 2) Review effectiveness/documentation of Risk Controls
- 3) Produce SOP re Hydrographic and other surveys
- 4) Review with CMAL/CalMac

### Other Information

-1 #####

-

### DOCUMENT PRODUCTION/REVISION RECORD

Date	Lead Author	Reviewers	Approved	Status	Remarks
16/12/2014	A Norman	To be mobilised	-	SUPERSEDED	Desk study HAZID/Risk Assessment
22/06/2016	C Macdonald	A Norman	C Macdonald	SUPERSEDED	Updated to reflect Harbour Empowerment Order in force
15/11/2017	C Macdonald	A Norman	C Macdonald	CURRENT	Annual Review
28/08/2019	A Norman	DA Currie, D Phillips	-	DRAFT	Annual Review (started 14/6/19, workshop 6/8, update 28/8, finalised?)
-	-	-	-	-	-



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## Detail of Hazard Identification and Risk Assessment

Hazard Group	HZ1
Incident Type	HZ14
Hazard ID	HZ1404
Report Status/Date	DRAFT 28/08/2019

**MARINE OPERATIONS**  
**Vessel Grounding or Stranding**  
**Vessel grounding on a shoal or high-point within Lochboisdale's sheltered harbour**

### Hazard Location and Other Information

1) Location: Within the breakwaters of Lochboisdale Harbour

### Contributory Hazard Causes

Insufficient or unclear information about the location of high-points on the sea-bed

### Risk Assessment Note

-

### Quantitative Risk Assessment Scenarios (defined in terms of the following assumptions)

<b>Risk Control Assumptions</b>	<b>Outcome Assumptions</b>	<b>Impact Categories</b>
<input checked="" type="checkbox"/> NRC: No Risk Controls	<input checked="" type="checkbox"/> ML: Most Likely Outcome	<input type="checkbox"/> 1 Category: General
<input checked="" type="checkbox"/> ERC: Existing Risk Controls	<input checked="" type="checkbox"/> WC: Worst Credible Outcome	<input checked="" type="checkbox"/> 4: People, Property, Env, Business
<input checked="" type="checkbox"/> PRC: Proposed Risk Controls		

Risk Assessment Scale	
	Risk Score
Broadly Acceptable	>=1 < 4
Tolerable if ALARP	>=4 < 10
Unacceptable	>=10 <=25

### Quantitative Risk Assessment

Scenario #	Controls	Outcome	Frequency Rating, F	Impact Rating, I				
				Generally	People	Property	Environment	Business
S1	<b>Scenarios With No Risk Controls:</b>							
S1.1	NRC	ML	Grounding, minor injuries, hull damage	4	0	2	2	2
S1.2	NRC	WC	Grounding, major injury, vessel holed and sunk	2	0	4	4	2
S2	<b>Scenarios with Existing Risk Controls:</b>							
S2.1	ERC	ML	Grounding, minor injuries, hull damage	3	0	2	2	2
S2.2	ERC	WC	Grounding, major injury, vessel holed and sunk	2	0	4	4	2
S3	<b>Scenarios with Existing &amp; Proposed Risk Controls:</b>							
S3.1	PRC	ML	Grounding, minor injuries, hull damage	3	0	2	2	1
S3.2	PRC	WC	Grounding, major injury, vessel holed and sunk	2	0	4	4	2

Risk Score = F x I						Average Risk Score
Generally	People	Property	Environment	Business		
	8.0	8.0	8.0	8.0		7.0
	8.0	8.0	4.0	4.0		
	6.0	6.0	6.0	6.0		6.0
	8.0	8.0	4.0	4.0		
	6.0	6.0	3.0	3.0		5.3
	8.0	8.0	4.0	4.0		

### Existing or Proposed Risk Controls (E RC or P RC)

Adequacy of Existing Risk Controls:

Improvements ongoing

E	RC2110	Briefing pack on website for skippers/masters of vessels using the Lochboisdale Harbour
E	RC4010	HM briefs masters of vessels unfamiliar with LB
E	-	-

P	RC2110	Briefing pack on website for skippers/masters of vessels using the Lochboisdale Harbour
P	-	-

### Insurance

0 #####

- LDL maintain third party and employer's liability cover of £10m.
- Advisor suggests increasing towards £35m for 3rd party and £15m for employee injury cover

### Conclusions and Recommendations

0 #####

- Risk Assessment reviewed and found still to be relevant.
- Review effectiveness/documentation of Risk Controls
- Expedite improvements to Mariners Information on harbour website including publishing the latest available bathymetric survey
- Consider pole/paint marks/signs near end of southermost pontoon

### Other Information

-1 #####

-

### DOCUMENT PRODUCTION/REVISION RECORD

Date	Lead Author	Reviewers	Approved	Status	Remarks
28/08/2019	A Norman	DA Currie, D Phillips	-	DRAFT	Identified at workshop 6/8, update 28/8, finalised?)
-	-	-	-	-	-





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## Detail of Hazard Identification and Risk Assessment

Hazard Group	HZ1
Incident Type	HZ16
Hazard ID	HZ1610
Report Status/Date	DRAFT 28/08/2019

**MARINE OPERATIONS**  
**Vessel Fire/Explosion/Flood**  
**Vessel fire onboard whilst moored alongside**

### Hazard Location and Other Information

- 1) Location: Harbour quayside or pontoons.
- 2) Scenario: 09Jun2019 incident in which fire starting within a campervan parked next to quayside set alight 3 adjacently parked

### Contributory Hazard Causes

Human error. Utilities failures. Vessel equipment failure. Malicious damage. Lightning strike. Burning debris from a landside fire.

### Risk Assessment Note

-

### Quantitative Risk Assessment Scenarios (defined in terms of the following assumptions)

<input checked="" type="checkbox"/> Risk Control Assumptions	<input checked="" type="checkbox"/> Outcome Assumptions	<input type="checkbox"/> Impact Categories
<input checked="" type="checkbox"/> NRC: No Risk Controls	<input checked="" type="checkbox"/> ML: Most Likely Outcome	<input type="checkbox"/> 1 Category: General
<input checked="" type="checkbox"/> ERC: Existing Risk Controls	<input checked="" type="checkbox"/> WC: Worst Credible Outcome	<input checked="" type="checkbox"/> 4: People, Property, Env, Business
<input checked="" type="checkbox"/> PRC: Proposed Risk Controls		

### Risk Assessment Scale

	Risk Score
Broadly Acceptable	>=1 < 4
Tolerable if ALARP	>=4 < 10
Unacceptable	>=10 <=25

### Quantitative Risk Assessment

Scenario #	Controls	Outcome	Frequency Rating, F	Impact Rating, I					
				Generally	People	Property	Environment	Business	
S1	<b>Scenarios With No Risk Controls:</b>								
S1.1	NRC	ML	Moderate damage to vessel	3	0	1	3	2	1
S1.2	NRC	WC	Major damage to vessel, moderate injury	3	0	3	4	3	3
S2	<b>Scenarios with Existing Risk Controls:</b>								
S2.1	ERC	ML	Moderate damage to vessel	3	0	1	3	2	1
S2.2	ERC	WC	Major damage to vessel, moderate injury	3	0	3	1	3	3
S3	<b>Scenarios with Existing &amp; Proposed Risk Controls:</b>								
S3.1	PRC	ML	Moderate damage to vessel	3	0	1	3	2	2
S3.2	PRC	WC	Moderate damage to vessel, moderate injury	3	0	3	3	1	1

### Risk Score = F x I

Generally	People	Property	Environment	Business	Average Risk Score
3.0	9.0	6.0	3.0		7.5
9.0	12.0	9.0	9.0		
3.0	9.0	6.0	3.0		6.4
9.0	3.0	9.0	9.0		
3.0	9.0	6.0	6.0		6.0
9.0	9.0	3.0	3.0		

### Existing or Proposed Risk Controls (E RC or P RC)

Adequacy of Existing Risk Controls:

Significant measures in place

E	RC2110	Briefing pack on website for skippers/masters of vessels using the Lochboisdale Harbour
E	RC5220	Notice to Mariners re fuelling
E	RC6290	Fire Fighting equipment onsite and maintained
E	-	
P	RC3435	SOP re managing parking of vehicles near the quayside
P	-	

### Insurance

- 1) LDL maintain third party and employer's liability cover of £10m.
- 2) Advisor suggests increasing towards £35m for 3rd party and £15m for employee injury cover

### Conclusions and Recommendations

- 1) Borderline red unacceptable risk score with NRC Worst Credible scenario emphasises importance of proper implementation of ERC/PRC
- 2) Risk Assessment reviewed and found still to be relevant.
- 3) Review effectiveness/documentation of Risk Controls
- 4) Expedite 09/06/2019 Incident Report and lessons learned
- 5) Expedite SOP requiring vehicles with gas bottles to park in designated areas away from buildings with minimum separation distances between vehicles (10m?)

### Other Information

-

### DOCUMENT PRODUCTION/REVISION RECORD

Date	Lead Author	Reviewers	Approved	Status	Remarks
21/11/2017	C Macdonald	A Norman	C Macdonald	CURRENT	Annual Review
28/08/2019	A Norman	DA Currie, D Phillips	-	DRAFT	09/06/2019 Incident and Annual Review
-	-	-	-	-	-



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## Detail of Hazard Identification and Risk Assessment

Hazard Group	HZ1
Incident Type	HZ16
Hazard ID	HZ1620
Report Status/Date	DRAFT 28/08/2019

**MARINE OPERATIONS**  
**Vessel Fire/Explosion/Flood**  
**Vessel flooding whilst moored alongside**

### Hazard Location and Other Information

Location: Harbour quayside or pontoons.

### Contributory Hazard Causes

Human error. Vessel equipment failure (e.g. a cooling hose failure). Vandalism. Adverse weather. Heavy Rain

### Risk Assessment Note

-

### Quantitative Risk Assessment Scenarios (defined in terms of the following assumptions)

Risk Control Assumptions	Outcome Assumptions	Impact Categories
<input checked="" type="checkbox"/> NRC: No Risk Controls	<input checked="" type="checkbox"/> ML: Most Likely Outcome	<input type="checkbox"/> 1 Category: General
<input checked="" type="checkbox"/> ERC: Existing Risk Controls	<input checked="" type="checkbox"/> WC: Worst Credible Outcome	<input checked="" type="checkbox"/> 4: People, Property, Env, Business
<input checked="" type="checkbox"/> PRC: Proposed Risk Controls		

### Risk Assessment Scale

	Risk Score
Broadly Acceptable	>=1 < 4
Tolerable if ALARP	>=4 < 10
Unacceptable	>=10 <=25

### Quantitative Risk Assessment

Scenario #	Controls	Outcome	Frequency Rating, F	Impact Rating, I				
				Generally	People	Property	Environment	Business
S1	<b>Scenarios With No Risk Controls:</b>							
S1.1	NRC	ML	Damage to vessel equipment	3	0	2	2	1
S1.2	NRC	WC	Fatalities, loss of vessel	4	0	3	3	2
S2	<b>Scenarios with Existing Risk Controls:</b>							
S2.1	ERC	ML	Damage to vessel equipment	2	0	2	2	1
S2.2	ERC	WC	Fatalities, loss of vessel	3	0	2	3	2
S3	<b>Scenarios with Existing &amp; Proposed Risk Controls:</b>							
S3.1	PRC	ML	Damage to vessel equipment	3	0	1	1	2
S3.2	PRC	WC	Fatalities, loss of vessel	2	0	4	4	3

Risk Score = F x I						Average Risk Score
Generally	People	Property	Environment	Business		
	6.0	6.0	3.0	3.0		7.8
	12.0	12.0	12.0	8.0		
	4.0	4.0	2.0	2.0		4.9
	6.0	6.0	9.0	6.0		
	3.0	3.0	3.0	6.0		4.9
	8.0	8.0	2.0	6.0		

### Existing or Proposed Risk Controls (E RC or P RC)

Adequacy of Existing Risk Controls:

Significant measures in place

E	RC2110	Briefing pack on website for skippers/masters of vessels using the Lochboisdale Harbour
E	RC3430	SOP re reservation of an "easy-to-use" berth for emergency use
E	RC4010	HM briefs masters of vessels unfamiliar with LB
E	-	

P	RC6275	Emergency equipment on site including pumping equipment
P	-	

### Insurance

- LDL maintain third party and employer's liability cover of £10m.
- Advisor suggests increasing towards £35m for 3rd party and £15m for employee injury cover

### Conclusions and Recommendations

- Borderline red unacceptable risk scores for NRC scenarios emphasise the importance of proper implementation of ERC and PRC
- Risk Assessment reviewed and found still to be relevant.
- Review effectiveness/documentation of Risk Controls
- Review adequacy of on-site emergency pumping equipment

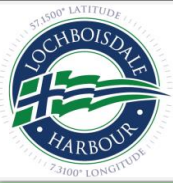
### Other Information

-

### DOCUMENT PRODUCTION/REVISION RECORD

Date	Lead Author	Reviewers	Approved	Status	Remarks
21/11/2017	C Macdonald	A Norman	C Macdonald	CURRENT	Annual Review
28/08/2019	A Norman	DA Currie, D Phillips	-	DRAFT	Annual Review
-	-	-	-	-	-





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## Detail of Hazard Identification and Risk Assessment

Hazard Group	HZ1	MARINE OPERATIONS
Incident Type	HZ18	Vessel Causes Pollution
Hazard ID	HZ1801	Vessel causes a major oil spill within the Port approaches
Report Status/Date	DRAFT	28/08/2019

### Hazard Location and Other Information

Location: Port area outside harbour.

### Contributory Hazard Causes

Human error. Vessel equipment failure. Deficiency in Oil Spill Contingency Plan

### Risk Assessment Note

This risk is not explicitly identified in the Aug2019 draft OSCP prepared by Briggs

### Quantitative Risk Assessment Scenarios (defined in terms of the following assumptions)

Risk Control Assumptions	Outcome Assumptions	Impact Categories
<input checked="" type="checkbox"/> NRC: No Risk Controls	<input checked="" type="checkbox"/> ML: Most Likely Outcome	<input type="checkbox"/> 1 Category: General
<input checked="" type="checkbox"/> ERC: Existing Risk Controls	<input checked="" type="checkbox"/> WC: Worst Credible Outcome	<input checked="" type="checkbox"/> 4: People, Property, Env, Business
<input checked="" type="checkbox"/> PRC: Proposed Risk Controls		

### Risk Assessment Scale

	Risk Score
Broadly Acceptable	>=1 < 4
Tolerable if ALARP	>=4 < 10
Unacceptable	>=10 <=25

### Quantitative Risk Assessment

Scenario #	Controls	Outcome	Frequency Rating, F	Impact Rating, I				
				Generally	People	Property	Environment	Business
S1	<b>Scenarios With No Risk Controls:</b>							
S1.1	NRC	ML	Minor pollution incident	3	0	1	2	2
S1.2	NRC	WC	Major pollution incident	2	0	1	2	4
S2	<b>Scenarios with Existing Risk Controls:</b>							
S2.1	ERC	ML	Minor pollution incident	3	0	1	2	2
S2.2	ERC	WC	Moderate pollution incident	2	0	1	2	3
S3	<b>Scenarios with Existing &amp; Proposed Risk Controls:</b>							
S3.1	PRC	ML	Minor pollution incident	3	0	1	2	2
S3.2	PRC	WC	Moderate pollution incident	2	0	1	2	3

### Risk Score = F x I

Generally	People	Property	Environment	Business	Average Risk Score
	3.0	6.0	6.0	6.0	5.4
	2.0	4.0	8.0	8.0	
	3.0	6.0	6.0	6.0	4.9
	2.0	4.0	6.0	6.0	
	3.0	6.0	6.0	6.0	4.6
	2.0	4.0	6.0	4.0	

### Existing or Proposed Risk Controls (E RC or P RC)

Adequacy of Existing Risk Controls:

Improvements ongoing

E	RC3460	CMAL Oil Spill Contingency Plan (for Ferry Terminal & Port approaches?)
E	RC3451	Lochboisdale Harbour Oil Spill Response Contract with Briggs
E	RC3452	Lochboisdale Harbour Tier 1 Oil Spill Response Equipment
E	-	

P	RC3450	Lochboisdale Harbour Oil Spill Contingency Plan
P	RC3453	Oil Spill Response Exercises
P	RC3454	MOU/Co-operation Agreement for Mobilising Local Oil Spill Response Resources
P	-	

### Insurance

- LDL maintain third party and employer's liability cover of £10m.
- Advisor suggests increasing towards £35m for 3rd party and £15m for employee injury cover

### Conclusions and Recommendations

- Risk Assessment reviewed and found still to be relevant.
- Expedite completion of Lochboisdale Harbour OSCP, seek the required MCA approval and put the Plan into full effect
- Consider reflecting this risk also in the OSCP

### Other Information

-

### DOCUMENT PRODUCTION/REVISION RECORD

Date	Lead Author	Reviewers	Approved	Status	Remarks
03/01/2015	A Norman	To be mobilised	-	SUPERSEDED	Desk study HAZID/Risk Assessment
12/06/2016	C Macdonald	A Norman	C Macdonald	SUPERSEDED	Updated to reflect Harbour Empowerment Order in force
15/11/2017	C Macdonald	A Norman	C Macdonald	CURRENT	Annual Review
28/08/2019	A Norman	DA Currie, D Phillips	-	DRAFT	Annual Review (started 14/6/19, workshop 6/8, update 28/8)
-	-	-	-	-	-



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**Detail of Hazard Identification and Risk Assessment**

Hazard Group	HZ1	MARINE OPERATIONS
Incident Type	HZ18	Vessel Causes Pollution
Hazard ID	HZ1811	Vessel causes an oil spill within the sheltered Lochboisdale Harbour
Report Status/Date	DRAFT	28/08/2019

**Hazard Location and Other Information**

Location: Within the Lochboisdale Harbour breakwaters

**Contributory Hazard Causes**

Human error. Vessel equipment failure. Deficiency in Oil Spill Contingency Plan

**Risk Assessment Note**

The Aug2019 draft OSCP prepared by Briggs indicates that the risk of spill through fuel storage and berthing is Low

**Quantitative Risk Assessment Scenarios** (defined in terms of the following assumptions)

Risk Control Assumptions	Outcome Assumptions	Impact Categories
<input checked="" type="checkbox"/> NRC: No Risk Controls	<input checked="" type="checkbox"/> ML: Most Likely Outcome	<input type="checkbox"/> 1 Category: General
<input checked="" type="checkbox"/> ERC: Existing Risk Controls	<input checked="" type="checkbox"/> WC: Worst Credible Outcome	<input checked="" type="checkbox"/> 4: People, Property, Env, Business
<input checked="" type="checkbox"/> PRC: Proposed Risk Controls		

Risk Assessment Scale	
Risk Score	
Broadly Acceptable	>=1 < 4
Tolerable if ALARP	>=4 < 10
Unacceptable	>=10 <=25

**Quantitative Risk Assessment**

Scenario #	Controls	Outcome	Frequency Rating, F	Impact Rating, I				
				Generally	People	Property	Environment	Business
S1	<b>Scenarios With No Risk Controls:</b>							
S1.1	NRC	ML	Negligible pollution incident	3	0	1	1	1
S1.2	NRC	WC	Minor pollution incident	2	0	2	2	2
S2	<b>Scenarios with Existing Risk Controls:</b>							
S2.1	ERC	ML	Negligible pollution incident	3	0	1	1	1
S2.2	ERC	WC	Minor pollution incident	2	0	2	2	1
S3	<b>Scenarios with Existing &amp; Proposed Risk Controls:</b>							
S3.1	PRC	ML	Negligible pollution incident	2	0	1	1	1
S3.2	PRC	WC	Minor pollution incident	2	0	2	2	1

Risk Score = F x I						Average Risk Score
Generally	People	Property	Environment	Business		
	3.0	3.0	3.0	3.0		3.5
	4.0	4.0	4.0	4.0		
	3.0	3.0	3.0	3.0		3.3
	4.0	4.0	4.0	2.0		
	2.0	2.0	2.0	2.0		2.8
	4.0	4.0	4.0	2.0		

**Existing or Proposed Risk Controls** (E RC or P RC)

Adequacy of Existing Risk Controls: Improvements ongoing

- E RC3451 Lochboisdale Harbour Oil Spill Response Contract with Briggs
- E RC3452 Lochboisdale Harbour Tier 1 Oil Spill Response Equipment
- E RC5220 Notice to Mariners re fuelling
- E -

- P RC3450 Lochboisdale Harbour Oil Spill Contingency Plan
- P RC3453 Oil Spill Response Exercises
- P RC3454 MOU/Co-operation Agreement for Mobilising Local Oil Spill Response Resources
- P -

**Insurance**

- 1) LDL maintain third party and employer's liability cover of £10m.
- 2) Advisor suggests increasing towards £35m for 3rd party and £15m for employee injury cover

**Conclusions and Recommendations**

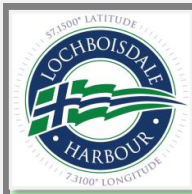
- 1) New risk included for consistency with the updated Oil Spill Contingency Plan
- 2) Expedite completion of the Lochboisdale Harbour OSCP, seek the required MCA approval and put the Plan into full effect

**Other Information**

-

**DOCUMENT PRODUCTION/REVISION RECORD**

Date	Lead Author	Reviewers	Approved	Status	Remarks
28/08/2019	A Norman	-	-	DRAFT	Annual Review + consistency with Oil Spill Contingency Plan
-	-	-	-	-	-



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### Detail of Hazard Identification and Risk Assessment

Hazard Group	HZ1	MARINE OPERATIONS
Incident Type	HZ19	Other Marine Incident
Hazard ID	HZ1910	Conflict between Vessel and Diving Operations
Report Status/Date	DRAFT	28/08/2019

#### Hazard Location and Other Information

Location: Within the Lochboisdale and Gasay Port

#### Contributory Hazard Causes

Human error. Vessel equipment failure. Diving Equipment failure or shortcoming.

#### Risk Assessment Note

-

#### Quantitative Risk Assessment Scenarios (defined in terms of the following assumptions)

Risk Control Assumptions	Outcome Assumptions	Impact Categories
<input checked="" type="checkbox"/> NRC: No Risk Controls	<input checked="" type="checkbox"/> ML: Most Likely Outcome	<input type="checkbox"/> 1 Category: General
<input checked="" type="checkbox"/> ERC: Existing Risk Controls	<input checked="" type="checkbox"/> WC: Worst Credible Outcome	<input checked="" type="checkbox"/> 4: People, Property, Env, Business
<input checked="" type="checkbox"/> PRC: Proposed Risk Controls		

Risk Assessment Scale	
	Risk Score
Broadly Acceptable	>=1 < 4
Tolerable if ALARP	>=4 < 10
Unacceptable	>=10 <=25

#### Quantitative Risk Assessment

Scenario #	Controls	Outcome	Frequency Rating, F	Impact Rating, I					
				Generally	People	Property	Environment	Business	
<b>S1 Scenarios With No Risk Controls:</b>									
S1.1	NRC	ML	Minor Personal Injury and Property Damage	3	0	2	2	1	1
S1.2	NRC	WC	Major Personal Injury and Property Damage	2	0	4	4	1	1
<b>S2 Scenarios with Existing Risk Controls:</b>									
S2.1	ERC	ML	Minor Personal Injury and Property Damage	3	0	2	2	1	1
S2.2	ERC	WC	Major Personal Injury and Property Damage	2	0	2	2	1	1
<b>S3 Scenarios with Existing &amp; Proposed Risk Controls:</b>									
S3.1	PRC	ML	Minor Personal Injury and Property Damage	2	0	2	2	1	2
S3.2	PRC	WC	Moderate Personal Injury and Property Damage	2	0	3	3	1	1

Risk Score = F x I						Average Risk Score
Generally	People	Property	Environment	Business		
	6.0	6.0	3.0	3.0		4.8
	8.0	8.0	2.0	2.0		
	6.0	6.0	3.0	3.0		3.8
	4.0	4.0	2.0	2.0		
	4.0	4.0	2.0	4.0		3.8
	6.0	6.0	2.0	2.0		

#### Existing or Proposed Risk Controls (E RC or P RC)

Adequacy of Existing Risk Controls: Significant measures in place

E	RC3230	SOP re Diving
E	RC5211	Notice to Mariners re diving operations
E	-	-
P	-	-
P	-	-

#### Insurance

- LDL maintain third party and employer's liability cover of £10m.
- Advisor suggests increasing towards £35m for 3rd party and £15m for employee injury cover

#### Conclusions and Recommendations

- New risk included for completeness
- Review effectiveness/documentation of Risk Controls

#### Other Information

-

#### DOCUMENT PRODUCTION/REVISION RECORD

Date	Lead Author	Reviewers	Approved	Status	Remarks
28/08/2019	A Norman	-	-	DRAFT	Annual Review
-	-	-	-	-	-

# SYSTEM Setup Parameters

## Risk Controls

RCID	RCTitle
NRC	No Risk Controls
ERC	Existing Risk Controls
PRC	Proposed Risk Controls

## Outcomes

OCID	OCTitle
ML	Most Likely
WC	Worst Credible
NA	Not Applicable

## Risk Assessment

RAID	RATitle	RAGuidance	RAScale <
RA1	Broadly Acceptable	Risk should remain on Risk Register with periodic review by management (at least annually)	4
RA2	Tolerable if ALARP	Risk should be tolerable provided proactive identification, implementation and monitoring of risk controls provides assurance that the risk is As Low as Reasonably Practicable (ALARP)	10
RA3	Unacceptable	Risk is intolerable and must either be eliminated (the preferred approach) or risk controls introduced to reduce the risk to a tolerable level that is also ALARP	25

## Consequence Categories

CCID	CCTitle
CC1	Generally
CC2	People
CC3	Property
CC4	Environment
CC5	Business

## Adequacy Ratings for Existing Risk Controls

AR	ARDescription
0	Adequacy not yet rated
1	No existing Risk Controls
2	Very little in place
3	Improvements ongoing
4	Significant measures in place
5	Everything practicable is in place

## Report Status

RS	RSDescription
0	-
1	PRELIMINARY
2	DRAFT
3	CURRENT
4	SUPERSEDED
5	DELETED

**Hazard ID Characters & Titles**

HZ	HZ0	HZ1	HZ2	HZ3	HZ4	HZ5
HZ*ID	0	1	2	3	4	5
HZ*	UNDEFINED	MARINE OPERATIONS	LANDSIDE OPERATIONS	OFFICE ACTIVITIES	OFFSITE ACTIVITIES	OTHER BUSINESS HAZARDS
HZ*0	Undefined	-X	-	-	-	-
HZ*1	-Y	Vessels Collide	Lifting Equipm	Slips, Trips & Travel		Personnel
HZ*2	-	Vessel Contact whilst Berthing	Vehicles Collid	Lifting	Activities in 3-	-
HZ*3	-	Vessel Contact whilst Underway	Vehicle Contac	Visual Displa	-	-
HZ*4	-	Vessel Grounding or Stranding	Vehicle Fire/E	Fire	-	-
HZ*5	-	Vessel Capsize/Listing/Foundering	Vehicle Cause	Equipment	-	-
HZ*6	-	Vessel Fire/Explosion/Flood	Pollution - Nor	-	-	-
HZ*7	-	Vessel Machinery Failure	Slips, Trips anc	-	-	-
HZ*8	-	Vessel Causes Pollution	-	-	-	-
HZ*9	-	Other Marine Incident	Other Landside	Other Office	Other Offsite	Other Busine

## User Notes

[User notes to be placed here]

Be aware that some worksheets may be hidden in order to prevent them appearing in PDF reports. You may have to Unhide them!

All hazard-specific data goes in the HZData worksheet (NOT in individual hazard output sheets such as HZ1101, HX1102 etc)

To create a new hazard, insert a new column for it in the HZData worksheet, a new row for it in the HZList worksheet, and a new hazard output sheet for it by copying HZOutput and renaming the new sheet to HZxxxx

Take care to make sure all sheets that are to be printed in a PDF are formatted for an A4 Page size