Marine Safety Forum

Stage 1 Risk Assessment Template

Mobile Offshore Unit (MOU) Move Operations

Version	Issue Date	Description of Updated / Modified Section(s)
1.0	14/07/08	Issued for Use
2.0	22/09/09	Revised and amended template

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1. Introduction

1.1 General

The Marine Safety Forum (MSF) Steering Group formed following the marine casualty involving the Bourbon Dolphin was tasked with developing a high level and generic risk assessment to assist the marine and offshore industries involved with the movement of Mobile Offshore Units (MOU's).

1.2 Scope

This risk assessment covers all stages of a MOU move operation from planning through mobilisation, execution, de-mobilisation and other associated activities.

1.3 Objective

The objective of this generic Stage 1 Risk Assessment is to identify significant hazards and control measures considered appropriate by the attendees to provide for safe performance of move activities. This is the first stage of a 3-stage process. The full process being described further in Section 2.

Note: The initial and residual risk ratings, hazards and consequences were assessed and determined on the basis of how each specific activity impacted the overall operation and not the individual activity itself.

This risk assessment should be considered as the basis for further risk assessments relevant to the specific task to be undertaken.

1.4 Abbreviations

AH	Anchor Handling
AHTS	Anchor Handling Tug Supply Vessel
HIRA	Hazard Identification and Risk Assessment
IMCA	The International Marine Contractors Association
NWEA	North West European Area Guidelines for the safe management of offshore supply and rigmove operations
MOB	Man Over Board
MOU	Mobile Offshore Unit (includes all anchored units eg Flotels)
MOC	Management of Change
MSF	Marine Safety Forum
PCP	Permanent Chasing Pennant / Primary Chasing Pennant
PMS	Planned Maintenance System
QA	Quality Assurance
SIMOP	Simultaneous Operations
TRA	Task Risk Assessment
WT	Watertight
Wx	Weather

1.5 References

- Code of Safe Working Practices for Merchant Seamen, MCA
- Task Risk Assessment Guide, Step Change
- Information Note IMCA SEL 10/08

Users should ensure reference is made to the latest revisions of the above documents.

2. Risk Assessment Procedure

2.1 Principles of Risk Assessment

A risk assessment is intended to be a careful examination of what, in the nature of operations, could cause harm to people and/or damage to equipment or the environment, so that decisions can be made as to whether enough precautions have been taken or whether more should be done to prevent an incident. The aim is to minimise incidents throughout operations.

The assessment should first establish the hazards that are present at the place of work and then identify the significant risks arising out of the work activity. The assessment should include consideration of the existing precautions to control the risk, such as permits to work, restricted access and use of warning signs or personal protective equipment.

2.2 Key Terms

Hazard is a source of potential harm or damage or a situation with potential for harm or damage. To help with the process of identifying hazards it may be useful to categorise hazards in different ways e.g.

- mechanical
- electrical
- physical
- radiation
- substances
- fire and explosion
- chemical
- biological
- psychological

Risk has two elements:

- likelihood that a hazard may occur
- consequences (severity) of the hazardous event

2.3 Elements of Risk Assessment

The main elements of the risk assessment process are:

- classify work activities
- identify hazards and personnel at risk
- identify risk controls
- estimate the risk
- decide the tolerability of the risks
- prepare risk control action plan (if necessary)
- review adequacy of action plan
- ensure risk assessment and controls are effective and up to date

2.4 Three Stage Risk Assessment Process

Stage 1 is conducted in an office environment normally by managers and personnel who have ownership of the tasks/equipment etc. and will include persons competent in conducting Risk Assessments. The assessment is carried out sufficiently well in advance of the work to allow adequate lead time to close out actions identified during the Stage 1 Risk Assessment that will further reduce the risks.

The emphasis is on confirming the methodology to be used and in defining control measures that provide the lowest risk.

The target should be to ensure all aspects of the work have been assessed including contingency methods, hazards have been identified, and control measures identified before going to the worksite, such that all risks are made as low as reasonably practicable. The assessment should also consider recovery situations when the work does not go according to plan.

This document forms the basis of Stage 1 risk assessment.

Stage 2 is normally carried out at the worksite by the personnel directly involved in the supervision of the activities utilising the documented results of the Stage 1 assessments. It is primarily instigated to confirm full understanding of the work and control measures to be implemented but may, in special circumstances, be used to further assess details of the work control and recovery measures. The emphasis is now on the details of the man / machine interface. Appendix 2 details generic items (minimum) for discussion in Stage 2.

Stage 3 is usually called the **toolbox** talk and is a briefing given by the supervisors to the personnel directly under their control and who will be conducting the work activities. Again reference should be made to the previously recorded Stage 1 and Stage 2 assessment records and has the purpose of ensuring all personnel fully understand the work, the control measures, any recovery or contingency measures and their responsibilities in executing them. Again personnel need to be aware of what has to be done in situations where the work starts to diverge from the plan and what their roles will be in recovering from it. It also serves as a final check that every hazard has been identified. Team members shall be given an opportunity to ask questions about these issues.

Toolbox talks shall be carried out as part of shift handovers or as part of specific pre job activity. The relevant Task Plan together with relevant Permit to Work shall be part of the toolbox talks. If toolbox talk forms are available, they shall be used, and names of participants listed on the form.

There is a degree of flexibility in how stage 2 and stage 3 assessments are carried out at the worksite; for example, they may be combined if all personnel attend the shift briefing and have the opportunity to discuss / raise further areas of concern. What is important, is that everyone involved in the job is fully aware of his responsibilities, accepts the risks, the control measures to be implemented, and knows to stop the job or knows how to recover the situation or the contingency activities if things do not go exactly as planned.

2.5 Qualifying the Risk

The matrix used for determining the risk rating for this Stage 1 Risk Assessment has come from the Step Change in Safety Task Risk Assessment Guide (2007).

		Hazard Severity				
		Negligible Negligible injury, no absence from work	**Slight** Minor injury requiring first aid treatment	**Moderate** Injury leading to a lost time incident	**High** Involving a single death or serious injury	**Very High** Multiple deaths
Likelihood of Occurrence	**Very Unlikely** A freak combination of factors would be required for an incident to result	L	L	L	L	L
	Unlikely A rare combination of factors would be required for an incident to result	L	L	L	M	M
	Possible Could happen when additional factors are present but otherwise unlikely to occur	L	L	M	M	H
	Likely Not certain to happen but an additional factor may result in an accident	L	M	M	H	H
	Very Likely Almost inevitable that an incident would result	M	M	H	H	H

2.6 Risk Rating Criteria

To determine the Risk Rating (RR), multiply the Hazard Severity (S) by the Likelihood of Occurrence (L).

Low Risk	Identified as L in the matrix. May be acceptable; however, review task to see if risk can be reduced further.
Medium Risk	Identified as M in the matrix. Task should only proceed with appropriate management authorisation after consultation with specialist personnel and assessment team. Where possible, the risk should be redefined to take account of the hazards involved or the risk should be reduced further prior to task commencement.
High Risk	Identified as H in the matrix. Task must not proceed. It should be redefined or further control measures put in place to reduce risk. The controls should be re-assessed for adequacy prior to task commencement.

2.7 Probability Guidelines

It is appreciated the likelihood of occurrence is fairly subjective and open to personal interpretation. In an attempt to achieve a level of consistency, the following definitions are applied.

1. Very Unlikely	A freak combination of factors would be required for an incident to result.
2. Unlikely	A rare combination of factors would be required for an incident to result.
3. Possible	Could happen when additional factors are present but otherwise unlikely to occur.
4. Likely	Not certain to happen but an additional factor may result in an accident.
5. Very Likely	Almost inevitable that an incident would result.

2.8 Severity Guidelines

A. Negligible	Negligible injury or health implications, no absence from work. Negligible loss of function/production with no damage to equipment or the environment.
B. Slight	Minor injury requiring first-aid treatment or headache, nausea, dizziness, mild rashes. Damage to equipment requiring minor remedial repair, loss of production or impact to the environment.
C. Moderate	Event leading to a lost time incident or persistent dermatitis, acne or asthma. Localised damage to equipment requiring extensive repair, significant loss of function/production or moderate pollution incurring some restitution costs.
D. High	Involving a single death or severe injury, poisoning, sensitisation or dangerous infection. Damage to equipment resulting in production shutdown and significant production loss. Severe pollution with short-term localised implications incurring significant restitution costs.
E. Very High	Multiple deaths, lung diseases, permanent debility or fatality. Major pollution with long-term implication and very high restitution costs.

2.9 Control Measures

Controls should be chosen taking into account the following, which are in order of effectiveness:

1. Elimination
2. Substitution by something less hazardous and risky
3. Enclosure (enclose the hazard in a way that eliminates or controls the risk)
4. Guarding/Segregation of people
5. Safe system of work that reduces the risk to an acceptable level
6. Written procedures that are known and understood by those affected
7. Review the blend of technical and procedural control
8. Adequate supervision
9. Identification of training needs
10. Information/Instruction (signs, hand-outs)
11. Personal Protective Equipment (last resort) – cannot be controlled by any other means

Appendix 1

Marine Safety Forum
Stage 1 Risk Assessment – MOU Move Operations

Risk Assessment – Stage 1

Attendees – Document Development

During initial development of this document a cross section of representatives from the following organisation were present including operational AHTS Masters, Towmasters, Marine Representatives, Operator Representatives, Drilling Contractor personnel and Marine Consultancy Specialists providing the necessary level of input to ensure a competent process and risk assessment;

Maersk Supply	BP
Transocean	Gulf Offshore (North Sea)
Noble Denton	Trident Offshore
Offshore Marine Services	Promarine
Talisman	

Summary of Activities Covered by this Risk Assessment
This High Level Risk Assessment is for the planning and execution of MOU move operations.

Existing Control Measures	
North West European Area Guidelines - Version 2	National Statutory Requirements
Current Common Marine Inspection Document with all actions addressed	MOU Owner Safety Management System
MSF Template of Data	Marine Operations Manuals – all parties
MSF Anchor Handling Manual	Lessons Learned from previous operations
MSF MOU Move Procedure - Content Guidance	Anchor Manufacturers Handling Instruction
MSF AHTS Checklist	International Shipboard Management Code
MOU Move Specific Procedures	

Assessment Date	**1st Annual Review**	**2nd Annual Review**	**3rd Annual Review**	**4th Annual Review**	**5th Annual Review**
April 2008	September 2009				

Activity	**Hazards**	**Consequences**	**Initial Risk**	**Control Measures**	**Action**	**Residual Risk**	**Actions**

			S	L	RR			S	L	RR	
Step 1 – HAZOP (Selecting Location and Rig Selection). **This stage of the risk assessment is specific to the intended location and unit to be considered or selected for the campaign and will be undertaken by the operator in order to confirm the suitability of the location and the proposed MOU or to determine the specification of unit required.**											
Activity	**Hazards**	**Consequences**	**Initial Risk**			**Control Measures**	**Action By**	**Residual Risk**			**Actions**
			S	**L**	**RR**			**S**	**L**	**RR**	
Step 2 - Planning Identifying Specific Requirements											
Understanding the location	Weather Water depth Seabed conditions Currents Tides Subsea infrastructure Mooring assemblies Other assets Traffic density Dynamic loadings	Inability to achieve location Inadequate procedures Inadequate vessel and equipment specification Damage to seabed assets and/or towing and mooring assemblies	VH	VL	H	Define limits of weather Site survey Mooring analysis & deployment / recovery load analysis Traffic Survey Field drawings Hind Casting & Weather Forecasting Heights determined for seabed clearances for anchor handling and towing Location approval Catenary Calculations		VH	U	M	

Activity	Hazards	Consequences	Initial Risk			Control Measures	Action By	Residual Risk			Actions
			S	L	RR			S	L	RR	
						Location historical data (Where applicable) Previous experience of location Tidal & Current Data					
People	Lack of competence/Lack of time/resource constraints e.g. Naval Architects Approval authorities Warranty Assurance Survey	Incorrect data Inability to achieve required location Inadequate procedures Inadequate vessel and equipment specification	VH	VL	H	Approved vendors Contractor audits Industry accreditation Proven history		VH	U	M	

Activity	Hazards	Consequences	Initial Risk			Control Measures	Action By	Residual Risk			Actions
			S	L	RR			S	L	RR	
Step 3 – Planning Develop Procedures											

Activity	Hazards	Consequences	Initial Risk			Control Measures	Action By	Residual Risk			Actions
			S	L	RR			S	L	RR	
Input data	Lack-of or wrong input data	Schedule delay Inadequate selection of vessels, personnel, equipment Incorrect mooring plan Incorrect location	VH	VL	H	Site survey data Mooring analysis and recovery / deployment load analysis Location HAZOP / HAZID Accurate field survey data Survey procedures Verification of data Lessons learned including use of previous procedures		VH	U	M	
Competence of author	Lack of knowledge	Schedule delay Inadequate selection of vessels, personnel, equipment Incorrect mooring plan Damage to property and assets Harm to personnel	VH	VL	H	Review and approval process which should define reviewers Approved Vendors Contractor audits Proven history Realistic schedule to be identified		VH	U	M	

Activity	Hazards	Consequences	Initial Risk			Control Measures	Action By	Residual Risk			Actions
			S	L	RR			S	L	RR	
		Unachievable skidding / positioning on location Unrealistic scheduling									
	Lack of understanding of required content	Schedule delay Inadequate specification / selection of vessels, personnel, equipment Incorrect mooring plan Damage to property and equipment Harm to personnel Critical items / issues not identified	VH	VL	H	Existing control measures No additional controls identified		VH	VU	L	
Preparation, Review, Approval and distribution of Procedures and Onshore pre-move meeting	Pressure of time	Inadequate time to prepare, develop and review procedures	VH	L	H	Sufficient time and resources allowed for preparation and developing procedures		VH	U	M	

Activity	Hazards	Consequences	Initial Risk			Control Measures	Action By	Residual Risk			Actions
			S	L	RR			S	L	RR	
						Procedures issued in sufficient time to allow adequate review					
	Competency of review team	Inadequate review	VH	L	H	Procedures to be reviewed by competent personnel and as a minimum to include: i) Operator ii) MOU Owner iii) Survey Reps iv) Procedure Author v) Marine competent MOU mover		VH	U	M	
	Distribution	Correct procedures are not distributed to the relevant parties. Relevant parties not prepared Potential delays	VH	L	H	Define distribution list Final revision of procedures to be signed off by accountable personnel		VH	U	M	
Step 4 – Execution Infield Operations											
Timing	Inadequate preparation period SIMOPS	Shortcuts Time pressure Delay in operation Equipment, vessel and personnel lead	VH	VL	H	Planning - Adequate notification period for moves to be defined Resources		VH	U	M	

Activity	Hazards	Consequences	Initial Risk			Control Measures	Action By	Residual Risk			Actions
			S	L	RR			S	L	RR	
		times / availability Harm to personnel and the environment Damage to equipment				Integrated communication between relevant parties					
People	Lack of competent and experienced people Inadequate manning Changes to personnel Poor or lack of meaningful communication Unsafe practices Lack of understanding of equipment, operation and procedures Inexperience of proposed operations Fatigue Loss of focus	Harm to personnel Damage to equipment Delay to schedule Lack of continuity Dilution of experience	VH	VL	H	Existing control measures Approved vendors with competency assurance systems in place Demonstrable work experience available (CV, work history) Shift change not to be undertaken during critical operations Realistic schedule that includes allowance for familiarisation, delays and rest periods Personnel competent for proposed operation Clear roles and		H	U	M	

Activity	Hazards	Consequences	Initial Risk			Control Measures	Action By	Residual Risk			Actions
			S	L	RR			S	L	RR	
						responsibilities Adequate shift change handover to take place Staggered shift change where possible New crews to be adequately briefed in the operation Crew changes during MOU move operations to be adequately assessed using Management of Change process					
Chartering Vessels	AHTS not fit for purpose	Damage to, or loss of vessels, property / assets Inadequate selection of vessels and crew Injury to personnel Schedule delay	VH	VL	H	Existing Control Measures Duty Holders to satisfy themselves that a vessel assurance process is in place and is verified Person chartering vessel to be familiar with the operation and the vessels		H	U	M	

Activity	Hazards	Consequences	Initial Risk			Control Measures	Action By	Residual Risk			Actions
			S	L	RR			S	L	RR	
						intended activity Vessel requirements clearly defined Vessel meets defined specification in procedures					
Mobilisation / demobilisation of Equipment	Equipment and/or mobilisation location not fit for purpose Incorrect vessel preparation Competence of people	Delay to schedule Damage to equipment / property / assets Harm to people	H	P	M	Existing control measures Correct Load out plan with defined load list supplied to vessels Approved vendors responsible for supplying equipment as per operators / MOU owners standards Confirmation of equipment at mobilisation meets procedural requirements Certified equipment Level 2 Risk Assessment to be		M	U	L	

Activity	Hazards	Consequences	Initial Risk			Control Measures	Action By	Residual Risk			Actions
			S	L	RR			S	L	RR	
						undertaken specific to the equipment being mobilised Substitute equipment to be confirmed with operator / MOU owner prior to mob Adequate time given to vessel configuration					
Vessel Procedural Review and Detailed Operational Briefing and final assurance and mobilisation	Insufficient time given to vessel to review procedures Lack of understanding of procedures Inadequate briefing of vessel crew	Delay in operation Damage to, or loss of vessels, property / assets Harm to people Lack of understanding of operation Vessel and/or crew found to be not fit for purpose	VH	VL	H	Existing control measures Adequate time given to vessel to review and discuss the procedures, understand the operation and the vessels role Competent and experienced personnel familiar with the operation to conduct the vessel briefings and final assurance		VH	U	M	

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Activity	Hazards	Consequences	Initial Risk			Control Measures	Action By	Residual Risk			Actions
			S	L	RR			S	L	RR	
Mobilisation, Procedural Review and Detailed Operational Briefing of assigned MOU move personnel e.g. Tow Master, Marine Rep, Survey Rep etc.	Insufficient time to mobilise personnel, undertake MOU induction and familiarisation Insufficient time to review procedures Lack of understanding of procedures Inadequate briefing Insufficient rest time	Delay in operation Damage to, or loss of vessels, property / assets Harm to people Lack of understanding of operation Fatigue	VH	VL	H	Existing control measures Competent and experienced personnel familiar with the operation Adequate time given to review and discuss the procedures, understand the operation and their role Sufficient time in process to ensure MOU induction and familiarisation is undertaken Sufficient rest time to be given prior to commencement of operations		VH	U	M	
Pre-Operational Commencement Meeting (offshore)	Vessels do not understand the MOU requirements MOU does not understand the vessels capabilities and limitations	Delay in operation Damage to, or loss of vessels, property / assets Harm to people	VH	P	H	Existing control measures Discussion between the MOU and the vessels to ensure accurate sharing of information and		M	U	L	

Activity	Hazards	Consequences	Initial Risk			Control Measures	Action By	Residual Risk			Actions
			S	L	RR			S	L	RR	
	Failure to manage any changes MOU and vessel crew are not familiar with their roles in the operation. Clear lines of communication and accountability are not defined. Lack of co-ordination of operation Failure to identify specific risks associated with the operation					vessel equipment availability MOU to fully understand the vessels capabilities and limitations Confirmation and agreement from vessels that they understand their roles in the operation Operational status of vessels and MOU to be confirmed Define communication lines and accountability Continual review of all factors to be undertaken and communicated until such times as a start time has been identified and agreed between all parties. Confirmation that Level 2 Risk Assessments have					

Activity	Hazards	Consequences	Initial Risk			Control Measures	Action By	Residual Risk			Actions
			S	L	RR			S	L	RR	
						been undertaken and any issues shared with all parties involved in the operation Management of change assessment					
Establishing and assessing Environmental Conditions	Information on environmental conditions and forecast not available or incorrect Insufficient environmental working window Inadequate monitoring and appraisal of environmental conditions	Damage to, or loss of vessels, property / assets Harm to people Damage to the environment Operating out with the safe working limits of the vessels and/or and MOU	VH	VL	H	Operational status of vessels and MOU to be confirmed within operating limits and continual reviews to be undertaken Suitable window identified and agreed for each phase of the operation to commence or be suspended Suitable monitoring equipment to be available onsite and utilised Accurate and up-to-date Environmental information and forecasting to be		M	U	L	

Activity	Hazards	Consequences	Initial Risk			Control Measures	Action By	Residual Risk			Actions
			S	L	RR			S	L	RR	
						provided and verified Open lines of communication between MOU and vessels and vice-versa to advise of any change in status					
Step 5 – Vessel demobilisation											
Release of Vessels	Premature release of vessels	Reduced redundancy and/or capability of remaining vessels	VH	P	H	Planning - Adequate notification period for moves to be defined Resources Integrated communication between relevant parties		VH	U	M	

Appendix 2

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Stage 2 Risk Assessment – MOU Move Operations

Activity	Hazards	Consequences	Initial Risk			Control Measures	Action By	Residual Risk			Actions
The following points are included to act as an aide memoire to assist in the Stage 2 Risk Assessment - To be discussed Offshore											
Anchor Handling Transfer / Receiving PCP Chasing Out / Stripping back J Hooking / Grappling Crane / lifting operations Winch Operation Breaking Out Recovery / Decking the Anchor Recovery and deployment of mooring system Fitting of specialised moorings Bolster / Un-bolstering Anchor Setting Anchor	Dropped Objects Failure to follow procedures Vessels in close proximity to MOU / platform and each other Collision Vessel capsize Other marine traffic Breakdown in communications Equipment failure Working on deck and / or over side Over stressing equipment High breakout loads Vesse((s) unable to hold station and/or heading Loss of control of	Damage to, or loss of vessels, property / assets Harm to people Damage to the environment Delay to schedule Man Overboard Flooding	VH	VL	H	Existing Control Measures Break out limits and strategy to be defined Good communication between MOU / vessels Planned Maintenance System Extension line to be highlighted on survey displays beyond anchor position Identify vessel excursion limits from intended mooring track Mooring analysis calculations Redundancy in survey equipment Back deck clear		M	U	L	1. Appropriate means of determining vessel excursion to be in place

Activity	Hazards	Consequences	Initial Risk			Control Measures	Action By	Residual Risk			Actions
	anchor and/or equipment on deck Survey equipment not working, ready or set-up properly Entanglement of wires with vessel(s) Excessive movement of crane assemblies Lack of understanding of emergency preparedness during operation Operating outwith safe working limits Tandem operations Unable to maintain required tension					policy when wires and equipment are under tension Certified and/or inspection and testing regime of equipment in place Decking / Overboarding to be carried out in safe area (clear of subsea assets and infrastructure) Awareness of anchor orientation when decking / overboarding Adequate positive stability to be maintained in worst case scenario Change of MOU thruster status to be advised Suitable crane assembly (pennant length, hook, headache ball) Survey Quality Assurance Procedures					

Activity	Hazards	Consequences	Initial Risk			Control Measures	Action By	Residual Risk			Actions
						Minimum separations and distances to be agreed and adhered to between all parties involved in the operation Operational status of vessels and MOU to be confirmed within operating limits and continual reviews to be undertaken All Emergency release procedures to be defined and clearly understood Water tight integrity policy strictly adhered to during the operation Equipment to be operated within manufacturers specification					
Towing Passing / Recovery of Tow Bridle	Other marine traffic Proximity of towing vessel to MOU	Damage to, or loss of vessels, property / assets Harm to people	VH	L	H	Existing control measures Good communication		M	U	L	2. NWEA Guidelines to be reviewed with regard to SWL vs. BL

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Stage 2 Risk Assessment – MOU Move Operations

Activity	Hazards	Consequences	Initial Risk			Control Measures	Action By	Residual Risk			Actions
Under Tow	Tow length vs. water depth Inadequate passage plan Change in environmental conditions Critical motions exceeded (MOU and/or vessel(s)) Towing arrangements and equipment not fit for Purpose Loss of tow Equipment failure Loss of water tight integrity Inadequate communication	Damage to the environment Delay to schedule Collision Flooding and/or capsize Loss of control of tow Man Overboard				Limitation of equipment known and understood Certified and inspected equipment and connections Planned Maintenance System Tow Master visual inspection and review of MOU towing system Limiting loads to take into account age and condition of equipment Emergency Tow arrangements clarified before commencement of tow Watertight integrity checks to be undertaken MOU specific passage plan prepared					

Activity	Hazards	Consequences	Initial Risk			Control Measures	Action By	Residual Risk			Actions
						Spare tow wire available and accessible on tow vessel(s) Navigation warnings If heli-ops undertaken during tow then speed and heading to be agreed					
Manoeuvring / Positioning	Proximity to other assets (surface and subsea) Inability to maintain intended track Equipment Failure Poor communication Excessive thrust from MOU	Damage to, or loss of vessels, property / assets Harm to people Damage to the environment Delay to schedule Collision Flooding and/or capsize Loss of control of tow Unable to achieve final position	VH	VL	H	Existing control measures Certified and inspected equipment and connections Good communication Limitation of equipment known and understood Planned Maintenance System Limiting loads to		H	P	M	

Activity	Hazards	Consequences	Initial Risk			Control Measures	Action By	Residual Risk			Actions
						take into account age and condition of equipment Contingency procedures to be agreed and understood Emergency Procedures clarified before commencement of approach Interfaces with other assets / 3rd parties					

Appendix 3

THE FOLLOWING 'ACTIONS' WERE IDENTIFIED AS NECESSARY TO REDUCE THE RISKS INVOLVED TO A LEVEL THAT IS 'AS LOW AS IS REASONABLY PRACTICABLE'*:*					
No.	ACTION	WHEN	BY WHOM	ACTION TAKEN	CLOSED
1	Appropriate means of determining vessel excursion from the intended track to be in place	For each move operation	Duty Holders		
2	NWEA guidelines to be reviewed in respect of Safe Working Loads vs. Break Load Limit	Next Revision of NWEA Guidelines	NWEA Guideline Working Group and consultees		