

Vestmannaeyjabær NSL4 Water Pipeline***NSL4-06247-P102-0208*****NSL4 - Mobilisation & Installation HIRA****ET1130-HSE-00007**

Originator:	Chevonne Ritchie			HSE Advisor		
Checker:	Olav Vennemann			Principal Project Engineer		
Approver:	Sean Kelly			Project Engineering Manager		
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Rev.	Reason for Issue	Issue Date	Prepared by	Checked by	Approved by	Client Approval

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REVISION RECORD SHEET

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DISTRIBUTION

Recipient	Company	E-Mail Address	Qty
Paul Kelly	Subsea7	paul.kelly@subsea7.com	1
Sean Kelly	Subsea7	Sean.Kelly@Subsea7.com	1
Chevonne Ritchie	Subsea7	Chevonne.Ritchie@Subsea7.com	1
Olav Vennemann	Subsea7	olav.vennemann@subsea7.com	1
Denis Johnstone	Subsea7	Denis.Johnstone@Subsea7.com	1
Simon Hawksley	Subsea7	Simon.Hawksley@Subsea7.com	1
Scott Winning	Subsea7	scott.winning@subsea7.com	1
Paul White	Subsea7	Paul.White@Subsea7.com	1
Graham Mackay	Subsea7	graham.mackay@subsea7.com	1
John Meenaghan	Subsea7	John.Meenaghan@Subsea7.com	1
Rita Moreira	Subsea7	Rita.Moreira@Subsea7.com	1
Offshore Manager Seven Navica	Subsea7	SevenNavica.OffshoreManager@Subsea7.com	1
Captain Seven Navica	Subsea7	SevenNavica.Captain@subsea7.com	1
Shift Supervisor Seven Navica	Subsea7	SevenNavica.ShiftSupervisor@Subsea7.com	1
Hlín Vala Aðalsteinsdóttir	Verkis	hva@verkis.is	1
Eypór Sigurðsson	Verkis	eys@verkis.is	1
Brynjar Ólafsson	Vestmannaeyjar	brynjar@vestmannaeyjar.is	1
Georg Skæringsson	Vestmannaeyjar	georg@vestmannaeyjar.is	1
Gunnlaugur Erlendsson	GELP Diving Company	gunniep@simnet.is	1

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1. INTRODUCTION

1.1 Project Overview

Vestmannaeyjar (the Westman Islands) sit approximately 12km off the south coast of mainland Iceland. The islands are serviced with potable drinking water via a pipeline which runs off the southern shore of mainland Iceland to Vestmannaeyjar.

Following irreparable damage to the water pipeline in 2023, the decision was made that the entire pipeline should be replaced.

The Scope of Work includes transport of a new, 12.5km long, continuous offshore potable water pipeline from NOV Flexibles, in Denmark, to the installation site in Iceland, and installation of the pipe between Bakkafjara on the mainland and Skansfjara on the islands.

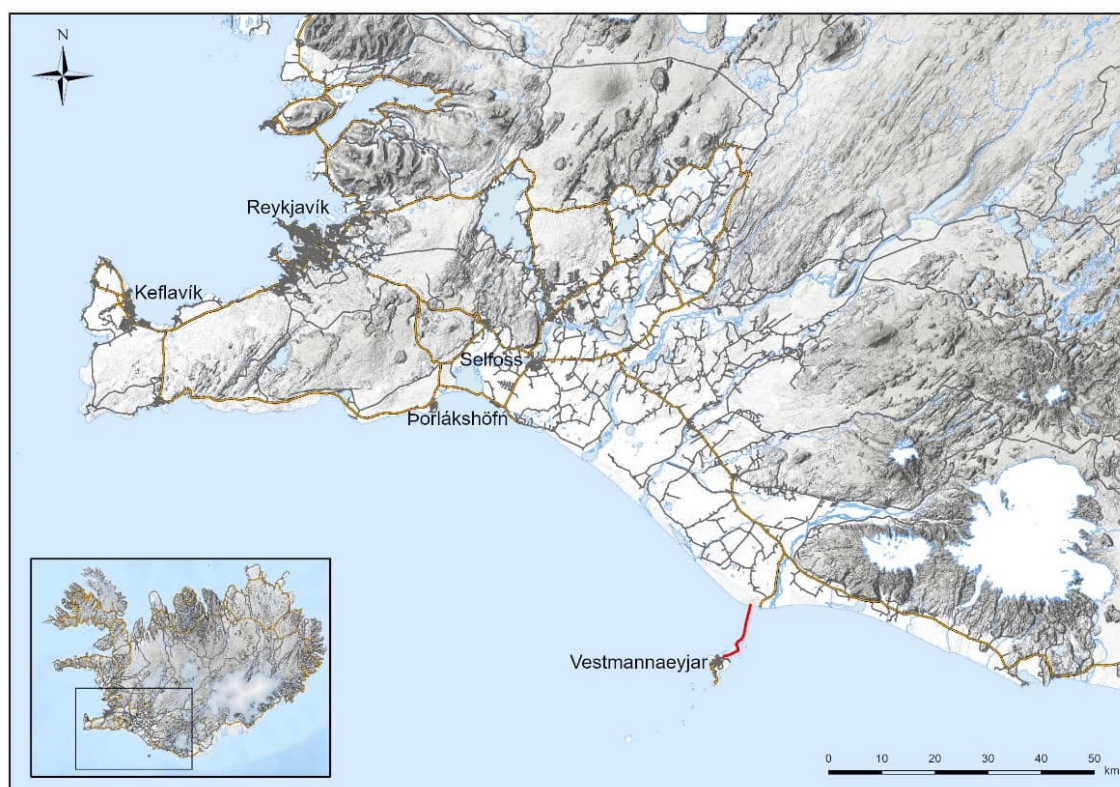


Figure 1-1: Potable Water Pipeline Install Location, Southern Iceland

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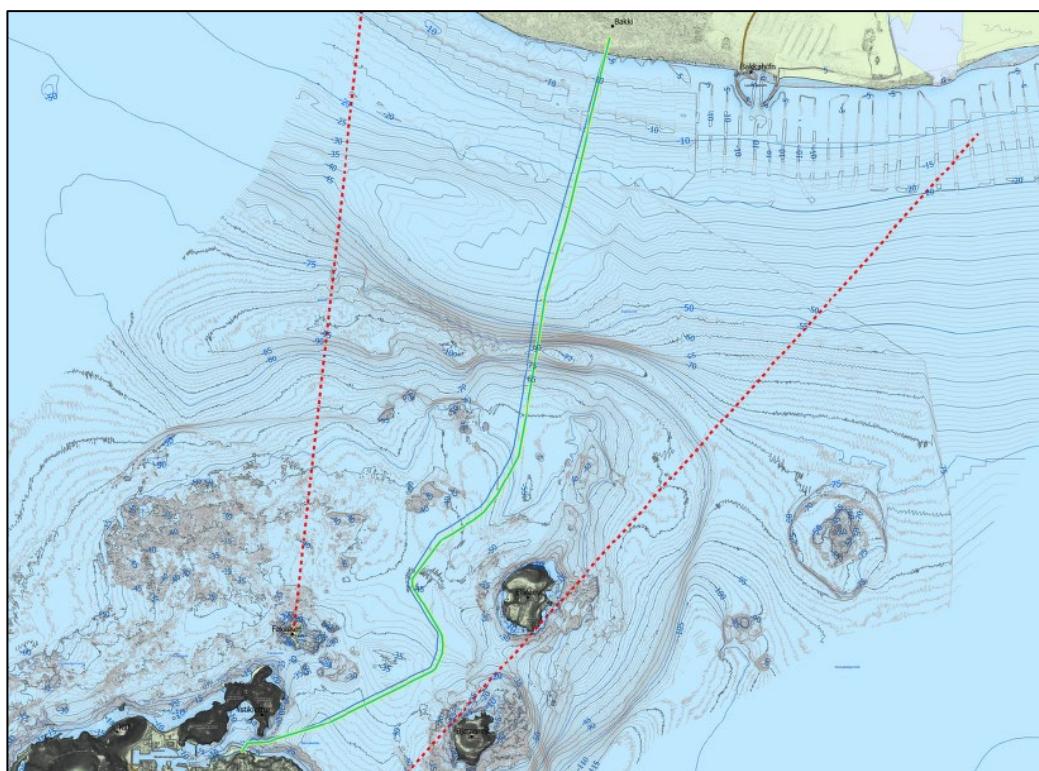


Figure 1-2: Proposed NSL4 Pipeline Layout

1.2 Purpose

The objective of the HIRA process is to identify particular hazards and the required controls, mitigations and actions considered appropriate by those involved in the HIRA to reduce the associated risks to a level which is ALARP.

1.3 Abbreviations and Definitions

Abbreviation	Definition
ALARP	As Low As Reasonably Practicable
BMS	Business Management System
HIRA	Hazard Identification and Risk Assessment
HSE	Health, Safety and Environmental
HSEQ	Health, Safety, Environmental and Quality
MOC	Management of Change
RAM	Risk Analysis Matrix
RPC	Risk Priority Code
SOP	Standard Operational Procedure
TBT	Tool Box Talk
TRA	Task Risk Assessment

Table 1-1: Abbreviations and Definitions

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1.4 References

1.4.1 Documents – Subsea 7

Subsea 7 BMS	
Document Number	Title
PR-GL-HSE-001	Tool box talks
PR-GL-HSE-003	Permit to work procedure
PR-GL-HSE-029	HSE Risk Assessment Procedure
PR-GL-QMI-013	MOC Procedure
PR-GL-OPS-LR-003	Lift planning procedure

Table 1-2: Subsea 7 Standard References

1.4.2 Documents – Subsea 7 Project Specific

Document no	Title
ET1130-HSE-00001	Project HSE Plan
ET1130-PRM-00011	Onshore Pull-in RACI Matrix
ET1130-HSE-00002	NSL4 - Project SMS Bridging Document
M-00030562	PHA Report
M-00031150	Environmental Aspects Register
ET1130-QMI-00008	NSL4- Quality Plan

Table 1-3: Subsea 7 Project References

1.4.3 Documents – Vestmannaeyjabær

Document no	Title
NSL4-06247-P102-0208	Vestmannaeyjabær– NSL4 Water Pipeline Contract
FLX-15279-01-DOC-ENG-701	Data List for 8" Pipe
N/A	Volume 4: Drawings
N/A	Volume 5: Supplementary Information

Table 1-4: Vestmannaeyjabær References

1.5 Responsibilities

The Subsea7 Project Manager is responsible for ensuring that the Subsea 7 **HSE Risk Assessment Procedure PR-GL-HSE-029 and MOC Procedure PR-GL-QMI-013** is implemented and followed by all persons involved in the project.

The approved HIRA Worksheets shall be audited to verify the satisfactory closure of HIRA actions by the Subsea7 Project Manager before the worksite HIRA review is conducted.

1.6 Risk assessment numbers

The Subsea7 online Risk Assessment Database automatically generates a number for each Risk Assessment. The reference numbers and activities are shown in the following table.

HIRA Worksheet Number	Activity
M-00032034	Vestmannaeyjabær NSL4

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2. HAZARD IDENTIFICATION RISK ASSESSMENT (HIRA)

2.1 HIRA Process

A HIRA is required to be carried out to assess any unique hazards of new procedures when they are sufficiently developed and ready for review before final approval for use. The HIRA is required to review only the parts of a procedure not already assessed and covered by existing approved **Standard Task Plans (STPs)**, **Standard Operational Procedures (SOPs)** and **Task Risk Assessments (TRAs)**.

The HIRA should be conducted as a meeting with appropriate participants to be able to risk assess the activities. Subsea7's online Risk Assessment Database should be used to record the final results of the HIRA.

The HIRA should consider each new task in the procedure using the **RAM**. For each task the Hazards should be identified, and their **Initial RPC** determined. Then, if necessary, corrective measures should be agreed and the resultant **Residual RPC** determined. If further action is required these should be defined, agreed and responsibility for taking the actions assigned. This includes revising the procedure as necessary to manage the identified risk.

If it is identified that we require to deviate from an existing STP, SOP or TRA, this should be assessed as part of the HIRA scope. Alternatively, the existing STP, SOP or TRA can be reviewed and revised.

No activity may proceed until it is established that an acceptable level of risk has been achieved and any necessary actions to do so have been completed.

The final revision of the HIRA is then approved by the Project Manager or equivalent and sent to the worksite for implementation.

2.2 Risk Analysis Matrix

To control HSEQ risks to an acceptable level we require our activities to be risk assessed using the **Risk Analysis Matrix (RAM)**. This should result in risk being reduced to a level that is As Low As Reasonably Practicable (ALARP).

The potential consequences and probability rating of each identified Hazard occurring should be estimated in accordance with the definitions on the matrix. This allows us to identify the **Risk Priority Code (RPC)** which defines if the activity can proceed, if it cannot proceed or if further action is required to allow it to proceed.

For each hazard considered its actual or potential consequence is determined in line with the definitions given. The personal, environmental, and financial consequences are all estimated and the highest hazard severity category from the 3 is selected. Then the probability of the consequence occurring is estimated in accordance with the definitions given. The combination of the Severity and the Probability allows the RPC to be established from the matrix.

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Subsea7 Risk Analysis Matrix									
Hazard Severity Category		Actual/Potential Consequences			Probability Rating				
		Personal Injury / Illness	Environmental Damage	Financial Impact USD	A Very Likely	B Likely	C Possible	D Unlikely	E Very Unlikely
I	Very High	Fatality(s), terminal condition, permanent debility	Very High level of major widespread long term irreversible damage.	>1M	1				
II	High	Serious injury, poisoning or dangerous infection	High level of significant long term irreversible damage.	>250 k					
III	Moderate	Injury leading to a lost time accident	Moderate damage that requires significant corrective action.	>50k			2		
IV	Slight	Minor Injury requiring First Aid treatment or headache, nausea, dizziness	Slight reversible damage that requires corrective action.	>10k					
V	Negligible	Negligible injury or health implications, no absence from work	Negligible damage and requires minor corrective action.	<10k					3
1, 2 and 3 above represent the RPC									
PROBABILITY RATING					RISK PRIORITY CODE (RPC)				
A VERY LIKELY: Almost inevitable that an incident would result.					1 HIGH RISK: Must not proceed. Change task or further control measures required to reduce the risk.				
B LIKELY: Not Certain to happen but an additional factor may result in an incident.					2 MEDIUM RISK: Can only proceed with senior management review and written authorisation. *				
C POSSIBLE: Could happen when additional factors are present but otherwise unlikely to occur.					3 LOW RISK: Permissible by those trained and authorised to do so but a review should be carried out to see if risk can be reduced further.				
D UNLIKELY: A rare combination of factors would be required for an incident to result.									
E VERY UNLIKELY: A freak combination of factors would be required for an incident to result.									

* For Hazard Severity Category I, II & III, Very High, High, and Moderate, Senior Management is the relevant Project Manager or Functional Manager in the responsible project or business unit.

For Hazard Severity Category IV & V (Slight & Negligible), Senior Management is the relevant vessel or site manager (or combination of managers for overlapping activities) i.e., Offshore Manager, Captain, Chief Engineer, Base or Yard Manager.

** 'rare' – event, situation or condition not occurring very often.
 'freak' – a very unusual and unexpected event or situation.

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3. MANAGEMENT OF CHANGE PROCESS

If at any time before or during work, it is identified that there is a requirement to change in any way from the approved procedure it is required to stop and review the situation with the appropriate level of management. This is to be done by following our **Management of Change (MOC)** Process. This is detailed in the separate **MOC procedure (PR-GL-QMI-013)** available on the BMS.

PR-GL-QMI-013 MOC Process Flow can be found at **Appendix II**:

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APPENDIX I - HIRA

M-00032034

Vestmannaeyjabær NSL4



risk assessment

HIRA – M-00032034 – Approved
Vestmannaeyjabær NSL4

This report shows the assessment as it was when printed on 22-Jun-26. It does not show any changes that have been made to the assessment since this time.

Originator	Olav Vennemann	Reference Procedures / Task Plans	ET1130-ENG-00004 - Mobilisation Procedure ET1130-ENG-00005 - Installation Procedure
Local Reference			
Region	UKGIRM		
Project	Vestmannaeyjabær - NSL4 Water Pipeline		
Operation	Project Operations		
Worksite	UK		
Area on Site	Vessel		
		Additional Notes	TRAs: V301-00000158 - Ramp Jacking Operations V301-00000169 - Lifting operations, over boarding and recovery for subsea tasks. Including ROV basket V301-00000191 - ROV Shallow Water Operations V301-00000245 - PIPE SPOOLING OPS - RDS-Reel walking / Packing Ops /Man riding for reel packing V301-00000247 - Remove & Replace Clamp Pad shoes and general work in the clamp area V301-00000265 - General Hot work and Fire watch - Welding ,burning, grinding & arc air gouging V301-00000270 - Palletised lifts Lifting operations V301-00000293 - Working Over the Side/Open water V301-00000395 - Use of Man Riding basket V301-00000475 - General Work With Scaffolding V301-00000487 - Working on lower workstation V301-00000621 - General work with scaffolding on and around the ramp area V301-00000627 - Visitors without Basic Safety Training V301-00000646 - Man riding for Spooling operations using shore side crane V301-00000647 - DP operations in shallow waters
APPROVAL			
Approver	Paul Kelly	Approvers Comments	[2026-06-10 - Paul Kelly - Approved] -- no comment --
Approval Date	10-Jun-26		
Actions confirmed			
ATTENDEES			
Meeting Date	20-May-26	Meeting Location	Subsea7 Westhill Campus FW04
Subsea 7 Attendees		External Attendees	

Attendee Name	Position
Paul Kelly	Project Manager
Sean Kelly	Project Engineering Manager
Simon Hawksley	Project Engineer
Olav Vennemann	Project Engineer
Denis Johnstone	DSV Operations Manager
Chevonne Richie	HSE Advisor
Scott Winning	Survey
Paul White	Vessel Operations Manager
Graham Mackay	BU1 Eng Man
John Meenaghan	PG Pipelay Operations Authority
Rita Moreira	Seven Navica FE
Martyn Richardson	Offshore Manager Seven Navica
Wojciech Ulicki	Captain Seven Navica
Pete Whitehouse	Shift Supervisor Seven Navica
Bengt Eiulf Pedersen	Captain Seven Navica

Attendee Name	Company Name	Position
Hlín Vala Aðalsteinsdóttir	Verkis	Project Manager
Eypór Sigurðsson	Verkis	Engineer
Brynjar Ólafsson	Vestmannaeyjar	Employer
Georg Skæringsson	Vestmannaeyjar	Employer
Gunnlaugur Erlendsson	GELP Diving Company	Owner

TASK 1: Lifting Operations

	Description	Consequences / Impacts	Initial	Life Saving Rules	Control Measures	Residual	Actions
1	Dropped objects	• Injury • Asset Damage • Equipment Damage • Environmental Damage	I-C 1	• Line of Fire • Safe Mechanical Lifting	1. All loads and crane checked for loose items prior to lift (inc ice and snow) 2. Lifting sequence to negate lifts over working areas 3. Review lifts and use gabion bags if needed for loose items 4. Barriers in place 5. Ensure flexible head is clear of track pads (See Synergi: 24787093 and 24313343)	II-D 2	
2	Swinging Loads	• Injury • Asset Damage • Equipment Damage • Environmental Damage	I-C 1	• Line of Fire • Safe Mechanical Lifting	Self Verification 1. Tag lines used where required 2. Deck and quayside personnel aware of access / egress routes during lifting operations 3. Specific risk assessments if unusual load identified (non-expected) 4. Monitor weather	II-D 2	
3	Lifting equipment / rigging failure	• Injury • Asset Damage • Equipment Damage • Environmental Damage	I-D 2	• Safe Mechanical Lifting	1. All rigging and lift points visually inspected prior to use 2. Lift plans supplied by project 3. All loads released from sea fastenings or tie downs prior to lift 4. Specific risk assessments if unusual load identified (non-expected) 5. Check for sharp edges	I-E 3	
4	SIMOPS (vessel and quayside)	• Injury • Asset Damage • Equipment Damage • Environmental Damage	II-C 2		1. Deck Supervisor is dedicated responsible person for back deck 2. Mobilisation Co-ordinator / Project Engineer / quayside banksman (ADF) is dedicated responsible person for quayside 3. Pre-planned mobilisation sequence for lifts 4. Regular communications with harbor authority (bridge monitoring marine traffic) 5. Test of coms channels prior lift	II-E 3	
5	Adverse weather conditions	• Injury • Asset Damage • Equipment Damage • Environmental Damage	III-C 2		1. Continual monitoring of weather conditions prior to and during lifting operations 2. Crane Operator adherence to operational limitations of Cranes	III-E 3	
6	Total Communication failure	• Injury • Asset Damage • Equipment Damage • Environmental	II-C 2		1. Good clear communications during lifting operations - banksman clearly identified. 2. All stop for any failure in communications 3. Roles and responsibilities of Crane Operator, Deck Supervisor, Assistant Deck Supervisor,	II-E 3	

		Damage			- and Riggers clearly defined. 4. Bridge informed prior to the commencement of lifting operations 5. Dedicated radio channels for lifting operations 6. Back-up communication means		
7	Blind Lift to tail of ramp	• Injury • Asset Damage • Equipment Damage	II-C 2		1. Good clear communications during lifting operations - banksman clearly identified. 2. All stop for any failure in communications 3. Roles and responsibilities of Crane Operator, Deck Supervisor, Assistant Deck Supervisor, and Riggers clearly defined. 4. Appropriate lighting 5. Specific Lift Plan 6. Dedicated radio channels for lifting operations	II-D 2	

TASK 2: Mobilisation & Demobilisation

	Description	Consequences / Impacts	Initial	Life Saving Rules	Control Measures	Residual	Actions
1	Moving vehicles	• Injury • Asset Damage • Equipment Damage	I-C 1	• Driving	1. Vehicle operators adhere to the speed limit 2. Controlled quayside 3. Traffic management plan in place 4. Designated segregated pedestrian routes 5. Forklift manoeuvre horn to be switched on 6. All persons to be aware of "line of sight" 7. Forklift Movements spotted during operation as required 8. Designated lifting/ drop off/ unloading zones 9. New personnel unfamiliar with quayside, to be escorted from security cabin gate to vessel	I-D 2	
2	Personnel working near edge of the quayside / housekeeping of quayside	• Injury	II-C 2		V301-00000293 Working Over the Side/Open water 1. Authorised personnel only within 1m from the quayside edge. If working within 1m - appropriate PPE to be worn inside line (life jacket) 2. No lone working 3. Operating area's of quayside kept clear 4. Suitable Barriers erected, if required 5. Personnel to always use vessel	II-E 3	

					gangway to board/depart vessel 6. Quayside to be kept clean throughout mobilisation / demobilisation		
3	Personnel Movements	• Injury • Equipment Damage	II-C 2		1. All vessel personnel report through vessel administration when arriving on or departing the vessel 2. Adherence to the ISPS code - ship/gangway and port security in place to prevent unauthorised access to the vessel 3. Quayside site/access arrangements sent out with mobilisation notice / Mob Fax 4. Worksite perimeter / sufficient barriers on the quayside	II-E 3	
4	Unfamiliar personnel	• Injury	III-C 2		1. Inductions for all new joiners / 3rd parties 2. Ensure TBT is performed and signed 3. Quayside to be a controlled area 4. Project Engineer to assist with coordination of activities on the quayside 5. Controlled deck access for personnel 6. Deck activities controlled by the Deck Supervisor/Shift Supervisor 7. Visitors to vessel to be monitored and supervised by vessel personnel at all times 8. Mob fax communicated prior to mobilisation 9. Ensure information passed onto 3rd party personnel is clearly understood (i.e. language barrier)	III-D 3	
5	Unauthorised personnel in work area	• Injury	II-C 2	• Bypassing Safety Controls	1. Quayside to be a controlled area with barriers in place 2. Deck and quayside activities controlled by Deck Supervisor/Shift Supervisor 3. Only essential personnel on deck as required 4. Deck Supervisor in charge of deck inductions for 3rd party personnel 5. conduct and sign TBT by all personnel on back deck/ quayside	II-E 3	
6	SIMOPS on-board and quayside	• Injury • Asset Damage	II-C 2	• Bypassing Safety Controls	1. Quayside to be a controlled area with barriers in place	II-D 2	

		Equipment Damage			2. Forklift speed on quayside to be limited to walking speed 3. Forklift Movements spotted during operation as required 4. Controlled deck access for personnel 5. Deck activities controlled by the Deck supervisor/shift supervisor 6. Deck Layout to be highlighted during TBT, deck plans and load out sequence 7. Banksman checks to ensure lifting route and landing areas are clear 8. Only essential personnel on deck 9. Areas barriered off to prevent unauthorised access 10. Maintain clear communication - key personnel equipped with radios 11. Visitors to vessel to be monitored and supervised by vessel personnel at all times 12. Agreed load out & backload schedule 13. Awareness of non-project specific activities on the vessel 14. Confirm location of quayside crane is suitable for SIMOPS with vessel crane		
7	Insufficient lighting and shadowing	- Injury - Asset Damage - Equipment Damage	III-C 2		1. Suitable lighting available for quayside works (additional lighting as required) 2. Remind personnel to be vigilant with respect to trip hazards in shadow area's	III-D 3	Action 5 - Completed Are additional lights required at Kalundborg to monitor the catenary? If so ensure these are ordered in advance of the mobilisation

TASK 3: Mobilisation & Demobilisation of Suitcase Wire

	Description	Consequences / Impacts	Initial	Life Saving Rules	Control Measures	Residual	Actions
1	Using axle stands (uncontrolled movement of load) – entrapment / crush injuries	Injury	II-C 2		1. Ensure stands are on a stable base and cannot topple. 2. Ensure stands are suitable for the cable drum size & weight. 3. Maintain control by hand of drum to prevent uncontrolled movement or bird-caging. 4. Tack stands to deck 5. Perform test turn of wire spool on axle stands	II-E 3	
2	Cutting suitcase wire - stored energy release	Injury	I-C 1	Line of Fire	Self Verification 1. Release all tension in wire prior to any	I-E 3	

				cutting operation 2. Personnel awareness of potential for stored energy. 3. Personnel clear of line of fire prior to cutting.		
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TASK 4: Flexible Load out

	Description	Consequences / Impacts	Initial	Life Saving Rules	Control Measures	Residual	Actions
1	Dropped objects & swinging loads	- Injury - Asset Damage - Equipment Damage - Environmental Damage	I-C 1	- Line of Fire - Safe Mechanical Lifting	1. Use of tool lanyards where applicable 2. Dedicated and certified rigging 3. Pre-use checks of rigging 4. Deck activities controlled by Deck Supervisor/Shift Supervisor 5. All personnel aware of body location/positioning - clear of line of fire 6. Use of tag lines as required 7. Planned access and egress routes 8. Good communication and awareness of concurrent activities taking place 9. Protection to be installed between work station and product 10. Spotters to be located in the ramp to ensure no clash between the crane, product (pipe), and ramp. 11. Dropped object survey to be completed prior the ramp jacking operations	I-D 2	
2	Congested quayside	- Injury - Asset Damage - Equipment Damage	III-C 2		1. Clearly marked quayside areas for mob 2. Suitable placement of equipment 3. Dedicated mobilisation/loadout location identified. 4. Pre-planning and communication with harbour / NOV to est up quayside	III-D 3	Action 3 - Completed Fender positions which were shown at Kalundborg on the quayside slides were incorrect. Check drawing and update. Fenders should be positioned closer to centre than as shown.
3	Reel walking	Injury	I-D 2	Working at Height	Refer to V301-00000165 -Reel Walking & Packing Ops & M-00009092 Working At Height 1. Planned access for working at height - crane rated for man riding 2. Working at height rescue plan, team and equipment in place	I-E 3	
4	Crush/ Entrapment points from Rotating machinery	Injury	II-C 2	- Bypassing Safety Controls - Line of Fire	1. All personnel aware of body location/positioning - avoid line of fire 2. Barriers in place as required 3. Awareness of rotating machinery - discussed in TBT	II-D 2	

					4. Awareness of fleeting - ramp position 5. Instruction to winch operators provided only by Deck Supervisor 6. Planned access and egress routes		
5	Working with lines under tension	Injury	I-D 2	Line of Fire	1. Awareness of wire routing and proximity 2. Restricted areas during winch operations - clear deck policy/barriers in place 3. Winch Operator stationed in a safe location with a good overview	II-D 2	
6	3rd party interfaces (synchronization of load out equipment)	- Injury - Asset Damage - Equipment Damage	II-C 2		1. Quayside to have barrier in place and be a controlled area 2. Roles and responsibilities established and discussed prior to operations commencing. 3. Agreed communication protocol in place between vessel and Quayside 4. Single 3rd party point of contact during load out. 5. NOV/vessel pre-spooling meeting 6. Spotter walking the line during load out. 7. NOV induction for all personnel working on the Quayside 8. Survey crew also acting as spotters 9. NOV review of Subsea 7 HIRA and procedure. 10. Crane Operator and Banksman captured in communication protocol. 11. 2 x Radios for NOV personnel 12. 1 x Radio for shoreside crane 13. TBT held prior spooling ops between Subsea7 and NOV personnel 14. continuous monitoring of flexible catenary between quayside and vessel	II-D 2	
7	Adverse environmental conditions	- Injury - Asset Damage - Equipment Damage	III-C 2		1. Weather forecasts are constantly monitored 2. Operations to be conducted in accordance with operational limits 3. Adverse weather PPE available	III-D 3	
8	Sharp edges in load out route	Asset Damage	II-C 2		1. Project, Vessel, Client and NOV to walk the line before start of load out 2. Spotters in place along line during spooling. 3. No holes in the chute 4. Polyplank protection being installed on product route to protect against sharp edges 5. Techs perform pre-loadout check & sign off for any sharp edges. 6. Recheck route for lay operations after any configuration changes (i.e chute)	II-D 2	
9	Falling off quayside	Injury	I-C		V301-00000293 Working Over the Side/Open	I-E	

	into water	-----	1		water 1. All persons keep a safe distance back from quayside edge (NOV has identified this with a line of dots otherwise 2m from edge) 2. Raise quality of Quay marking at TBT 3. Additional barriers in place as required 4. Life saving equipment worn if working at quayside edge 5. No lone working at quayside edge 6. Operating area of quayside kept clear 7. Personnel always use vessel gangway to access / depart vessel 8. Adherence to security / ISPS shack 9. Adequate lighting at quayside during the hours of darkness. 10. Review of Quayside Ladder position with regards fenders. 11. MOB Rescue plan in place and raised at pre-spooling briefing 12. Man riding basket and crane available when not in use for load out	3	
10	Exposure to fumes when DF monitors the load-out	• Injury	IV-C 3		1. Review weather/wind direction. 2. Review location before load-out. 3. Review engine planning to optimize fumes.	IV-E 3	
11	MBR Infringement	• Asset Damage	II-C 2		1. Loadout equipment aligned 2. good communication between tensioner operators 3. Continuous monitoring of catenary between quayside and stern ramp 4. Checked loadout route 5. Analysis performed to confirm min occurring MBRs during loadout	II-D 2	Action 2 - Completed Request NOV mark quayside with position of aft of vessel to help with alignment and correct positioning with quayside tensioner.

TASK 5: Lay Activities

	Description	Consequences / Impacts	Initial	Life Saving Rules	Control Measures	Residual	Actions
1	DP failure/loss of vessel position		--- 0		V301-00000530 DP Operations	--- 0	
2	Lay Spread Equipment Failure	• Injury • Asset Damage • Equipment Damage	I-C 1		1. Equipment maintained as per TM Master 2. Barriers to be erected to prevent unauthorized personnel entering work areas and workstation on ramp 3. Competent Technical Team operations & maintenance support 4. Consideration given to product limitation for equipment set-up	I-E 3	

3	Dropped Objects	• Injury • Asset Damage • Equipment Damage	I-B 1	• Line of Fire	Self Verification 1. Awareness on back deck during lay 2. Only essential personnel on back deck 3. Controlled work area and barriers in place 4. Use of lanyards for tooling 5. Beware of packing blocks sticking to pipe/falling from reel 6. Barrier off area aft of reel on main deck during lay ops 7. Pre-lay and jacking ops checklist to be completed before jacking operation (pipelay operation) 8. Personnel in ramp to monitor blocks coming off of reel continuously 9. 6 Monthly dropped object review	IV-B 2	
4	Working at Height	• Injury	II-C 2	• Working at Height	M-00009092 Working At Height 1. Clear platform of non-essential equipment/personnel 2. Configuration of work platform planned	II-D 2	
5	Total Loss of Communication	• Injury • Asset Damage • Equipment Damage	II-C 2		1. Regular radio checks between bridge and deck crew 2. Controlled stop / all stop policy 3. Adhere to agreed communication fallback options 4. All STOP if communication is lost	II-E 3	
6	ROV Breakdown	• Asset Damage • Equipment Damage • Environmental Damage	III-C 2		V301-00000182 ROV Drift Launch / Recovery V301-00000191 ROV Shallow Water ops 1. Good tether management 2. ROV inspected prior to each dive and each use 3. Maintenance plan followed and essential spares on-board 4. If vehicle breaks down, ALL STOP 5. Consult Employer if operation can continue or alternative TDP monitoring is required	III-E 3	
7	Weather outwith limits	• Asset Damage • Equipment Damage	II-C 2		1. Confirmation of sufficient weather window plus contingency as per operational weather criteria, prior to operations commencing 2. Use of Offshore Decision Support Tool (ODST) 3. Weather assessment	II-D 2	
8	Deviation from lay corridor	• Asset Damage • Equipment Damage	II-C 2		1. ROV monitoring TDP 2. Use of Gemini sonars in case of low visibility 3. Compare with vessel navigation system 4. Survey and bridge to confirm waypoints are correct for operation	II-E 3	

					5. Use of lasers on ROV as required to guide shift supervisor		
9	Pipe walking off lay system	- Asset Damage - Equipment Damage	II-D 2		1. Guides added to Seven Navica aligner 2. Shift Sup to monitor pipe 3. Spotter to be present at top of ramp	II-E 3	
10	Reel surging causing back tension outside acceptable limits	Asset Damage	I-D 2		1. Adjust lay speed to reduce surging 2. Manual adjustment possible to reduce surging. 3. Consider running reel in manual mode	I-E 3	
11	Interference with other vessels / leisure crafts	- Injury - Asset Damage - Equipment Damage	III-C 2		1. Harbour Master to Issue Notice to Mainers 2. Listen to VHF16 and address other vessels via VHF16	III-D 3	
12	MBR Infringement	Asset Damage	II-C 2		1. Adhere to lay tables 2. good communication between tensioner and reel operators	II-D 2	

TASK 6: Lines of communication with Employer Contractors

	Description	Consequences / Impacts	Initial	Life Saving Rules	Control Measures	Residual	Actions
1	Communication breakdown / mis-communication	- Injury - Asset Damage - Equipment Damage	II-C 2		1. Common language is English between 7 Navica and Subcontractors 2. Interface requests to clarify lines of communication. 3. Operational procedures to carry out communication checks 4. Coordination of vessel/beach activities covered in Bridging Doc 5. Standard Emergency Procedures. 6. Emergency Notification Flow Charts. 7. Contingency communication links (UHF, VHF, mobile phone etc.). 8. S7 representative onshore as liaison between Vessel and shoreside personnel. 9. Arrange a 'Pull-in on Paper' exercise to run through both pull-ins step by step with S7 personnel and shoreside personnel. 10. Conduct a communications protocol meeting prior to commencing operations 11. Conduction TBT prior operations start	II-D 2	
2	Scope Split (S7 - Employer/Verkis)	- Injury - Asset Damage - Equipment Damage	IV-C 3		1. Understanding of Responsibilities. 2. RACI Matrix agreed, approved and in place. 3. Single Line of contact between beach and vessel. 4. Hold TRA and TBT prior Landfall Operations	IV-D 3	

TASK 7: Flexible Land Pull-In

	Description	Consequences / Impacts	Initial	Life Saving Rules	Control Measures	Residual	Actions
1	Incorrect Handling/lifting of flexible	- Injury - Asset Damage - Injury to Diver	III-C 2		1. Interface requests to clarify details of the flexible product 2. Workshops held with pull-in team 3. Approved Operational Procedures 4. Rollers to be used during beach pull-in	III-D 3	
2	Incorrect handling/use of floatation/buoyancy aids	- Injury - Asset Damage	I-C 1		1. Follow instructions for use by manufacturer 2. Diver and work-boat awareness when deflating buoyancy aids under water 3. Familiarisation with floatation/buoyancy aids to be carried out 4. Teather management 5. Rope / debris entanglement - raise awareness of lose ropes and debris	II-D 2	Action 4 - Completed Pillow floats need to be secured to prevent slippage, cannot rely upon friction alone
3	Lack of product control when paying out with Airbags attached	Asset Damage	II-C 2		1. Stages of operations to be clearly defined 2. Each stage to be discussed with Installation Analysis Engineer and analysed appropriately 3. Employer personnel to be clearly briefed prior to operations (TBT)	II-D 2	
4	Tides/Currents/Weather	Asset Damage	III-A 1		1. Assessment made on vessel capabilities working in shallow water to confirm minimum water depth 2. Understanding from all parties that operation will be conducted through several tide cycles 3. Tide tables to be available onboard vessel 4. Analysis advises pipe position during pull in operations and provides anticipated loads 5. Clearly defined maximum excursions of pipe for pull-in/workboat teams 6. Monitor weather forecasts 7. Delay commencement of operations in case of building up fog risks (low visibility)	III-B 2	
5	SIMOPS	- Asset Damage - Equipment Damage	III-C 2		1. Vessel to monitor other work boats in field / maintain radio contact 2. Adhere to Communication protocol 3. Daily SIMOPS meeting held 4. Clear order in priority between vessels 5. Work boats equipped with AIS	III-D 3	
6	Interference with Harbour traffic	- Asset Damage - Equipment Damage	II-C 2		1. Adhere to agreed lay corridor for Vestmannaeyjar approach	III-D 3	

					2. Harbour master aware of lay activities 3. Float out flexible into northern area of bay 4. Beach pull-in ops executed over night 5. Notification to Mariners issued by Harbour Master		
7	3rd party workboats close proximity to stern ramp	- Injury - Asset Damage - Equipment Damage	I-C 1		Self Verification 1. Long Deployment pennant to be released / cut at vessel stern and pulled back onboard where possible. 2. If long pennant cut by workboat (contingency action) cut is to be close to end fitting buoyancy. 3. Lookout at stern of vessel during close proximity ops 4. Work boats aware of thruster wash 5. Dip crane block into water to stabilise 6. Suitable swell and weather conditions for close approach work	I-D 2	
8	Unclear communications during pull-in operations		--- 0		See Lines of Communication with Employer contractors	--- 0	
9	Vessel working in shallow water (15m water depth)		--- 0		V301-00000647 - Shallow water operation	--- 0	

TASK 8: SIMOPS - Navica and Workboats / Divers

	Description	Consequences / Impacts	Initial	Life Saving Rules	Control Measures	Residual	Actions
1	Swimmers / Divers working in proximity to lay vessel	Injury	I-C 1		Self Verification 1. Minimum separation distance between Navica and personnel in water (Divers or swimmers) 50m minimum.	I-E 3	Action 1 - Completed Agree / finalise minimum distance between swimmer/diver operations and Seven Navica position during 1st end payout product laydown (float deflation activities).

ACTIONS

	Action Required	Owner	Other Owner	Action Taken	Deadline	Completed	Status
1	Agree / finalise minimum distance between swimmer/diver operations and Seven Navica	Olav Vennemann	Sean Kelly; Hlin Vala Aðalsteinsdóttir	Discussed during HIRA minimum distance will be stated in procedures to be 50m.this can be	12-Jun-26	21-May-26	Completed

	position during 1st end payout product laydown (float deflation activities).			increased on the day if conditions require this			
2	Request NOV mark quayside with position of aft of vessel to help with alignment and correct postitioning with quayside tensioner.	Simon Hawksley	Olav Vennemann; Sean Kelly	Drawing updated and sent to Client	01-Jul-26	21-May-26	Completed
3	Fender positions which were shown at Kalundborg on the quayside slides were incorrect. Check drawing and update. Fenders should be positioned closer to centre than as shown.	Simon Hawksley	Olav Vennemann; Sean Kelly	Drawing updated and sent to Client	01-Jul-26	21-May-26	Completed
4	Pillow floats need to be secured to prevent slippage, cannot rely upon friction alone	Simon Hawksley	Olav Vennemann; Sean Kelly	intermittingly attaching slings to product as stopper. Tightly tying the two pillow floats together and securing them against each other.	01-Jul-26	10-Jun-26	Completed
5	Are additional lights required at Kalundborg to monitor the catenary? If so ensure these are ordered in advance of the mobilisation	Simon Hawksley	Olav Vennemann; Sean Kelly	NOV confirmed sufficient quayside lighting is available	01-Jul-26	10-Jun-26	Completed

SUBSEA 7 RISK MATRIX

Hazard Severity Category	Descriptive Words	Actual/Potential Consequences			Probability Rating				
		Personal Injury / Illness	Environmental Damage	Financial Impact USD	A Very Likely	B Likely	C Possible	D Unlikely	E Very Unlikely
I	Very High	Fatality(s), terminal condition, permanent debility	Very high level of major widespread long term irreversible damage	>1M	1				
II	High	Serious injury, poisoning or dangerous infection	High level of significant long term irreversible damage	>250k					
III	Moderate	Injury leading to a lost time accident	Moderate damage that requires significant corrective action	>50k			2		
IV	Slight	Minor injury requiring first aid treatment or headache, nausea, dizziness	Slight reversible damage that requires corrective action	>10k					
V	Negligible	Negligible injury or health implications, no absence from work	Negligible damage and requires minor corrective action	<10k					3

ESTABLISHED CONTROL MEASURES

- Health and Safety Management System
- Task Risk Assessment (TRA) Procedure
- Permit to Work (PTW) Procedure
- Tool Box Talk (TBT) Procedure
- Working at Height Procedure and PPE
- Confined Space Entry Procedure and PPE
- Standard Minimum PPE Requirements
- Hazardous Substance Management Procedures
- Observation and Intervention System
- Health and Safety Meetings
- Life Saving Rules
- Housekeeping Procedures
- Standard Operational Procedures (SOPs)
- Standard Operating Instructions
- DP Operating Procedures
- Vessel and Equipment FMEAs and Proving Trials
- Site Induction Procedure
- Audits, Inspection, Tours and Sampling Procedures
- Lifting Standards and Lift Planning Procedures
- Procedures for Certification and Control of Rigging and Lifting Equipment
- Diving Manual
- IMCA Industry Standards followed by Subsea 7
- Equipment Management and Maintenance Procedures
- Workforce Competency Assessment Procedures
- Adequate Supervision, including Offshore Management Team Tours
- Normal Effective Communication Equipment and Protocols
- Normal Barriers and Warning Signs as Appropriate
- Regular Emergency Exercises and Drills
- Drills and Exercises Procedures
- Emergency Response Procedures
- Established Medical Facilities and Protocols
- Incident Management Process

ET1130-HSE-00007	NSL4 Water Pipeline	22.06.2026
Revision: 1	NSL4 - Mobilisation & Installation HIRA	Appendix II

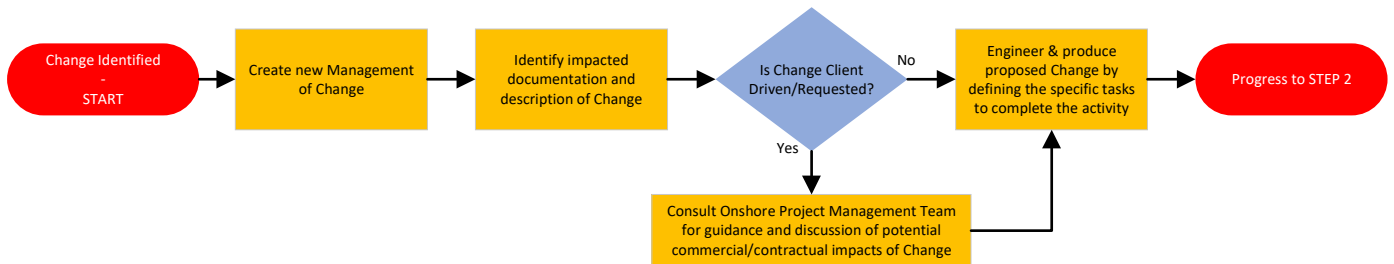
APPENDIX II

MOC Process Flowchart

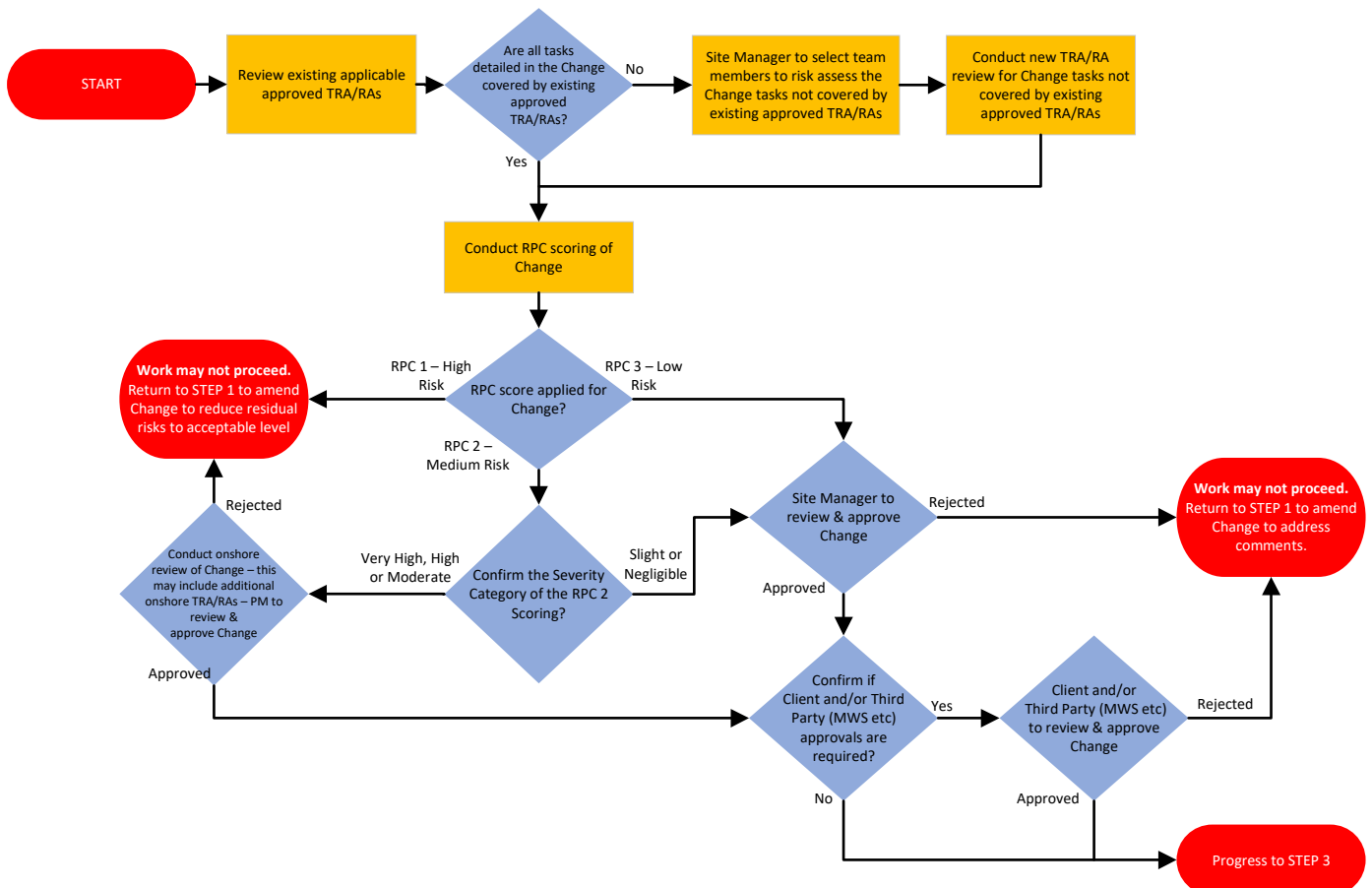
MOC Process Chart

PR-GL-QMI-013 - Appendix A

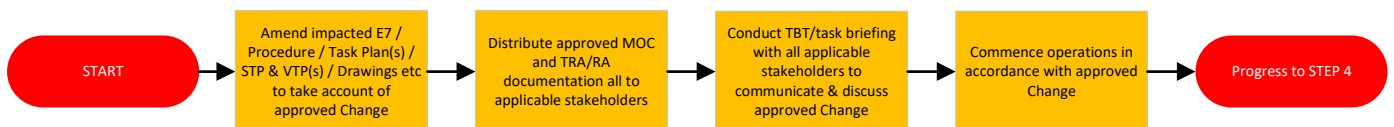
STEP 1: IDENTIFY



STEP 2: RISK ASSESSMENT



STEP 3: IMPLEMENT



STEP 4: COMPLETE

