



BAKKAFROST APPLECROSS LAYING SEAWATER EXTRACTION PIPE METHOD STATEMENT & RISK ASSESSMENT

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A	01	04 TH JUL-25	D. Georgeson	J. Henderson	R. Goudie
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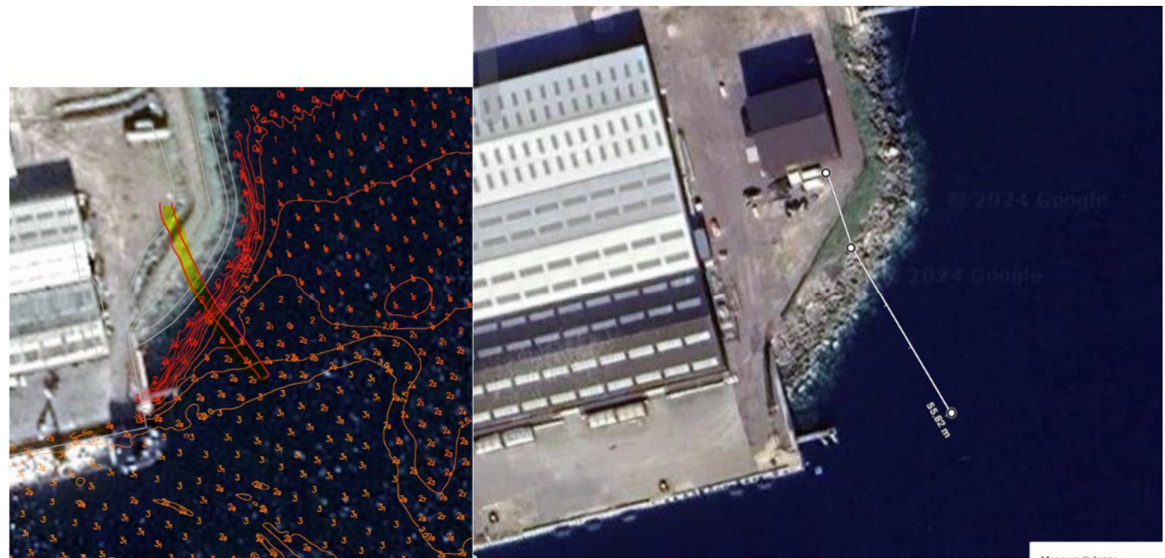
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1. Description

- Ocean Kinetics Marine team will lay a seawater pipe at Bakkafroast Applecross (near Kishorn in Scotland). The pipe will be run from the shore out 60 metres into the sea, concrete saddles shall be bolted to the pipe as its laid. Concrete matts shall be placed over the areas of pipe where it leaves the rock armour to give added protection to the pipe.
- Ocean Kinetics will use the work vessel BK Marjorie and diving team.
- Location shown below



- The diving operations shall be conducted from our work vessel BK Marjorie loaded with a mobile dive trailer fully equipped for two divers. A small cargo barge shall be used to store the concrete weights and pipework while the works are underway.



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- The Dive Team shall consist of a minimum of five, supervisor, diver, standby diver and two diver / tenders.
- The HSE Approved Code of Practice that applies to the diving operation is L104.

2. General Safety Points

- Overalls, hard hats, gloves and safety boots will be worn at all times as a minimum, hearing protection when required.
- Auto Inflation Lifejackets will be worn at all times whilst working over water or within 1 metre of the quayside.
- All personnel employed or subcontracted on the project shall be qualified and experienced in this type of operation. They will be aware that safety is the responsibility of everyone in the team.
- Access & Egress to job site identified and agreed before commencing works but generally using diving ladder fitted to work vessel. Secondary method of egress shall be using ships crane. For the first part of the job access will be by way of the existing ladder on the quayside.
- Safe working practices and HSE guidelines shall be observed at all times
- No unauthorised person to be allowed within the vicinity of the works
- All debris and litter must be cleaned up immediately
- All plant and equipment when not in use shall be secured at all times
- All loose material shall be secured at all times
- Weather Forecast checked daily by Ocean Kinetics Supervisor and staff advised. Workers are reminded that should adverse weather prove problematic, then operations must be suspended until the weather improves.
- Shipping movements in the area will represent the biggest hazard. As a minimum the supervisor shall be in contact by Marine Band VHF radio with mobile phones used as a secondary contact method.
- Decks of vessel will be kept clean and tidy at all times.
- Good communications will be the key to a safe and efficient operation.

3. Ocean Kinetics Method

- Prior to starting the project all personnel shall familiarise themselves with the RAMS. A toolbox talk shall be undertaken by all persons on the works, details to be recorded with staff names and signatures.
- The site of the inspection works is located within an operational Harbour area. Ocean Kinetics shall in no way interfere with or obstruct the normal port operations. Ocean Kinetics shall contain their activities within the allocated areas.
- Mobilise workboat BK Marjorie with Dive Trailer on board.
- Mobilise cargo barge which shall be manoeuvred by the workboat.
- Materials will be transported to site by cargo barge including pipework and concrete weights.
- BK Marjorie and barge shall steam to work site location.
- Temporary anchors shall be placed to position workboat and barge.
- During diving operations shut down all BK Marjorie engines, thrusters and pumps before diver enters water.
- Divers will operate using Surface Demand equipment with a main supply of air from an LP Diving Compressor. HP storage cylinders will be on-line as an emergency back up to the LP. These cylinders will be checked as part of the pre-dive checklist. All HP bottles will be filled from a dedicated offsite HP compressor when they contain less than 180 bars. All Divers will also carry an emergency air supply in their Arvests connected to their Diving Helmets. The divers will be in constant hardwire communication with the Supervisor, with the provision of a dedicated separate communications box in the dive station.
- After the pre dive checks are done, the diver shall get into the water on say of the Dive Supervisor once the Alpha flag is hoisted and that it is clear that no vessels pose any danger to diving operations.
- General Diver Safety Controls
 - The Diver shall move slowly and steady at all times staying alert for the potential hazards ensuring good communication with the dive supervisor by remote speaker at all times
 - Diving operations shall be ceased immediately if there is a loss of communications.
 - The dive supervisor shall inform the diver of any passing shipping that is close enough to cause a hazard and inform him if he is required to come back to the workboat.
 - Monitoring of vessel movements and underwater conditions is essential to allow adequate time to remove diver from water.
- The crane on the workboat shall be used to handle the pipes onboard the workboat and barge, pipes shall be welded together onboard the barge, concrete bracelet weights shall be fitted as the pipe is laid.
- An observation ROV will be used to monitor the pipe laying as it progresses.
- When the pipeline is laid to its full length the diver shall fit the inlet filter.
- Only trained and competent personnel will operate the crane on the workboat.
- Only certified lifting equipment to be used.
- Additional concrete matts shall be placed on the pipe where it leaves the shore and enters the water.
- Concrete weights would be placed over the pipe at regular intervals as required.
- Concrete matts will be lifted down only while diver is clear, diver guides from a safe distance. The crane operator on the workboat will take signals from the Dive Supervisor only. The dive supervisor to be in constant contact with the diver at all times.
- **At no time will there be any load over the diver**
- Process to be repeated until all matts are laid.

It is estimated that the works will take 10 days to complete.

The pipeline and all concrete weights shall be laid in a manner that enables easy recovery of all parts in the future.

4. Emergency Procedure

- The nearest dive chamber is at Strathcarron - Seafeld Recompression Chamber – 01520 722221

Name of chamber Seafeld Recompression Chamber
Address Seafeld College Kishorn Strathcarron IV54 8YA
Principal medical director Dr D Murray (01520 722221)
Day time phone numbers 01520 722215
(Lochcarron Medical Centre, answerphone when surgery closed)
Emergency phone numbers 999 (coastguard) 01520 722221
24 hour cover Yes
Chamber proximity to supporting hospital 70 miles (Raigmore)
Name and address of supporting hospital Raigmore Hospital, Inverness Aberdeen Royal Infirmary 01224 681818 ext 52524 01224 662990 (fax)
Chamber proximity to helicopter/winch point 100 yards
Time to mobilise chamber Less than 30 minutes
Category of chamber Category 3
Responsible health authority or trust Highland Health Board

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- The nearest hospitals are Raigmore Hospital 01224 681818, Broadford Hospital 01471 822491 & Portree Community Hospital 01478 613200.
- Any diving incident that requires medical advice shall call TAC Healthcare, details below, this is a 24 hour emergency assistance service.



Emergency Procedure to Recover Injured Diver

In the event of a trapped diver or any event where the diver requires assistance the following procedure will be followed:

- All personnel will assist in recovery of the driver where required.
- Notify emergency services by mobile phone, seek medical advice if required.
- Establish communications quickly with the injured diver, if this is possible and the diver is capable follow the normal diver recovery procedure.
- If the diver is trapped or injured in such a way that he cannot be safely recovered then the standby diver must assist. He shall have his equipment in immediate readiness and after donning his equipment and carrying out his pre-dive checks enter the water and follow casualty diver's umbilical until he reaches the diver.

- The dive tender assisting by pulling in slack umbilical and pulling when asked to by either diver. Any decompression sickness is unlikely but there may be the possibility of AGE which may require recompression.
- An assessment of the casualty should be then made. CPR may be required and must be administered quickly and efficiently. Casualty will be taken to Gilbert Bain Hospital with an injury unless there is any suspension of decompression illness. We have 460 litres of O₂ in the trailer and another 460 litres in the van. If decompression sickness is suspected Ocean Kinetics will contact their dive medical assistance doctor – TAC Healthcare – number above for assistance and take diver to Ocean Kinetics decompression chamber at Lerwick for treatment.

5. Tool Box Talks

The Dive supervisor will deliver toolbox talks to all operatives on the work. The talks will be specific to the site activities and will be held each morning prior to the commencement of the day's activities. Subjects will include all the items included in the risk assessment and method statement as well as the following general items: working over water, PPE, manual handling, mobile cranes/forklifts and site restrictions.

All personnel on the work site must have read the method statement and risk assessment and signed the tool box talk sheet.

6. First Aid

There will be a minimum of two accredited first aiders on site at any given time. A first aid box will be kept within dive control. Emergency numbers shall be listed and kept by the telephone within the dive control.

7. Dive Supervisor

The dive supervisor will be responsible for ensuring the day to day compliance and management of health, safety and welfare on site. Also responsible for routine monitoring of activities during site work and ensuring that operatives and contractors are competent and have adequate training. The Dive Supervisor on this works will be Mr Roger Goudie

8. Risk Assessment

Risk Rating Matrix

	SEVERITY	Multiple Fatality	Single Fatality	Major Injury	Lost Time Injury	Minor Injury	Delay
		Env. Catastrophe	Very significant env. impact	Somewhat significant env. impact	Significant env. impact	Env. impact	Insignificant env. impact
		10	8	6	4	2	1
LIKELIHOOD							
Certain	10	D	D	D	D	NAC	AC
Very Likely	8	D	D	D	NAC	NAC	AC
Likely	6	D	D	NAC	NAC	NAC	AC
May Happen	4	D	NAC	NAC	NAC	AC	T
Unlikely	2	NAC	NAC	NAC	AC	T	T
Very Unlikely	1	AC	AC	AC	T	T	T

RISK LEVEL	ACTION AND TIMESCALE
DANGEROUS STOP WORK	Work should not be <i>started or continued</i> until the risk has been reduced. If it is not possible to reduce the risk even with unlimited resources, work has to remain prohibited
NOT ADEQUATELY CONTROLLED	Health & Safety risk - work should not be started until the risk has been reduced. Environmental risk – objectives and targets MUST be set to reduce the environmental impact. Considerable resources may have to be allocated to reduce the risk.
ADEQUATELY CONTROLLED	No additional controls are required. Consideration may be given to a more cost-effective solution or improvement that imposes no additional cost burden. Monitoring is required to ensure that controls are maintained
TRIVIAL	No action is required and no documentary records need to be kept

Hazard	Hazard effect	Risk			Control Measures required	Action		Residual			Result
Use checklist as guide	Type of Injury	Refer to APP			Include existing and proposed	Person Responsible	Date	Refer to APP			Y / N
	Damage/Env. Impact	L	S	R			Comp.	L	S	R	Result
Persons not familiar with site	Injury	6	8	48	RAMS communicated before work starts.	All Personnel	Before work starts and during	1	4	4	AC
Use of Ocean Kinetics BK Marjorie Working Near or Over Water whilst on the workboat during all activities	Passing shipping could crash into boat. Drowning	8	6	48	Full communications with pier users at all times. VHF to be used for direct communications to the ships. Daily communications with pier users, all appropriate telephone numbers to be made available at the site. All personnel to wear lifejackets while working over or near water. Ensure means of exit from water. Life ring to be close by. In event of emergency SIC to be alerted by mobile phone so they can halt shipping movements/alert emergency services	Supervisor	Before work starts	2	4	8	AC
Use of BK Marjorie crane for all lifting activities	Severe Injury Damage to pier/other vessels	8	6	48	Only trained operatives to use crane. Tested lifting equipment to be used. Crane used in accordance with manufacturers guidelines. Don't overload crane. All equipment to be lifted is below SWL of crane. Ensure crane is stowed away properly	Supervisor	Before work starts	2	4	8	AC
Manual handling operations	Musculoskeletal disorders and other injuries	6	4	24	Manual Handling instruction, environment walk-through identifying hazards. All operatives moving materials experienced and mindful of their capabilities.	All Personnel	Before work starts and during	4	2	8	AC

					Operatives fully aware of current regulations, and their own abilities						
Shallow Diving	Risk of drowning or diver related disease. Limited headroom under quay.	2	10	20	Follow diving procedures and only use competent, qualified divers. Close liaison with Kishorn Port Control to ensure dive supervisor is aware of all harbour traffic and operations. Divers to wear diving helmet, no band masks.	Diving supervisor and operator	Before work starts	1	4	4	AC
Diver In gestation of contaminated water and biological contamination	Legion Ella, Hepatitis B	2	6	12	Proper use of PPE. Seek medical help. Diving helmet to be used rather than mask. Only the divers hands will get wet, gloves to be worn.	Diving supervisor and operator	Before work starts	1	1	1	T
Suction Pumps and unscheduled movements of thrusters and propellers	Diver fatality or severe injury,	6	8	48	Ensure no diver is in the water if any shipping can enter the operational area.	Dive Supervisor	Before work starts	1	6	6	AC
Diver and Umbilical Entanglement.	Diver becoming trapped, hypothermia, loss of breathing air, diver being dragged into place of danger by umbilical.	4	10	40	Care to be taken by diver to ensure that they do not become entangled especially when leaving basket. Tender to ensure that the umbilical is kept tidy and not left too long. Plan entry and exit to ensure umbilical is kept clear. Diver shall take care not to become entangled.	Diving supervisor, diver and tender	During operations	3	1	3	T
Poor sea conditions or wake from passing vessels.	Diver being forced against solid objects, uncomfortable working conditions, risk of finger or body entrapment due to sea movement	2	6	12	Diving supervisor to pay special attention to sea state and weather changes. If in doubt diver to be removed from water. Carry out deeper dives in poorer weather. Anticipate any wash from vessel and warn diver.	Diving supervisor	Before work starts and during operations	1	2	2	T

Gas on site	Gas cylinders falling over, explosion, burns, fire hazard	4	8	32	Clean work area, no combustible material, secure all cylinders, use proper gloves, all equipment tested, good ventilation, fire extinguisher, cylinders segregated from other gases and any hot works. All cylinders stored in suitable cage.	All personnel	Before work starts and during operations	2	4	8	AC
Slips, trips and falls. Wet Slippery conditions	Injury slips, trips and falls	6	6	36	Good housekeeping to avoid potential trip hazards, correct manual handling. Only personnel carrying out work to access site. Monitor weather forecast every day and assess the working area such as slippery surfaces. No work will be permitted in high winds or wet conditions if considered unsafe by Supervisor.	All personnel	Before work starts and during	1	4	4	AC
High Winds – Wet Weather Conditions	Materials / equipment being blown from high-level. Damage to scaffolding / edge protection. Wet Slippery conditions	6	8	48	Monitor weather forecast every day and assess the working area such as slippery surfaces and any damage or movement to the scaffold. No work will be permitted in high winds or wet conditions if considered unsafe by Chargehand/Supervisor. Secure storage of materials / equipment. All materials to be removed from storage area as and when required. No equipment to be left insecure overnight.	All Personnel	Before work starts and during	4	2	8	AC
Air Emissions Particle matter and / or dust. Fumes.	Damage to health. Damage to health, pollution of air.	5	3	15	Control all grinding and cutting; ensure all plant is well maintained. Plant to be maintained, do not cut or weld coated materials.	All personnel	Before work starts and during.	1 2 1	4 4 4	4 8 4	AC AC AC

Carbon monoxide fumes	Damage to health, pollution of air				Service plant effectively, reduce petrol engine use, ensure discharge is downwind of any air intakes.						
Energy and Utilities. Over use of natural resources	Depletion of natural resources	5	2	10	Use minimum of natural resources, switch off machines, auto idle, reduce wastage and recycle spent materials.	All personnel.	Before and during works	4	2	8	AC
Waste Production of waste on site	Waste on site, packaging, messy if left.	5	2	10	Reduce materials on site, re-use where possible. Only landfill as a last resort, re-cycle steel.	All personnel.	Before and during works	3	2	6	AC

9. Toolbox Talk

To be signed by each member of the team.

Project: Bakkafrøst Applecross Laying Seawater Extraction Pipe

I confirm that I have read and understood the attached Method Statement, Risk Assessment and Hazard Identification documents:

PRINT NAME	SIGNATURE	DATE
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