



## Method Statement

### TGL Tripod Recovery Subsea Tripod Cutting

Prepared for:



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10507	TGL Tripod Decommissioning	Method Statement	



**Document Title:**  
LSK-TGL02-OP3-MS01-R01 – Subsea Tripod Cutting

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## Table of Content

1	INTRODUCTION.....	5
1.1	Project Overview .....	5
1.2	Document Objective .....	5
1.3	References.....	5
2	OPERATION PARTICULARS .....	6
2.1	Operation Structure .....	6
2.2	Interfaces & Contacts .....	7
2.3	Communications .....	7
3	SITE & WEATHER.....	8
3.1	Site Details.....	8
3.2	Site Controls .....	8
3.3	Project Hazard Identification .....	9
3.4	Weather & Current.....	9
3.5	Access & Site Environment .....	10
3.6	EMEC Requirements.....	11
3.7	Permits / Notification .....	12
4	QHSE.....	13
4.1	Manual Handling .....	13
4.2	COSHH .....	13
4.3	PPE Requirement.....	14
4.4	HSE Medical & First Aid Equipment .....	14
4.5	Personnel Qualifications .....	14
5	DIVING PARTICULARS.....	15
5.1	Diving Tables .....	15
5.2	Diving Team Size.....	15
5.3	Diver Supervisor .....	15
5.4	Helmets .....	16
5.5	Decompression Arrangements.....	16
5.6	Suitability of Air Supply .....	17
5.7	Diver Launch & Recovery .....	17
5.8	Letter of Appointment of Diving Supervisors .....	18

6	VESSELS & EQUIPMENT .....	19
6.1	Main Vessel .....	19
6.2	Line Boat.....	20
6.3	Crane Specification.....	21
6.4	Mooring and Vessel Positions .....	22
6.5	Mooring Specification .....	23
6.6	Tripod Cutting Plan.....	24
6.7	Areas of Interest.....	26
6.8	Equipment List.....	27
6.9	Deck Layout .....	28
7	METHODOLOGY .....	29
7.1	Task Summary .....	29
Task #1	Equipment Mobilisation & Sail to Site .....	30
Task #2	Stage 1 Cut - Upper Central Tube.....	31
Task #3	Stage 2 Cut – Lower Central Node .....	32
Task #4	Stage 3 Cut – Diagonal Bracing Cut / Upper Node Recovery .....	33
Task #5	Lower Central Node Recovery.....	34
Task #6	Stage 4 Cut – Outer Horizontal Members.....	35
Task #7	Mooring Recovery & Demobilisation .....	37
8	RISK ASSESSMENT .....	38
8.1	Generic Risk Assessment.....	38
8.2	Task Specific Risk Assessment .....	40
9	TOOLBOX TALK BRIEFING.....	41
10	CHANGE OF RECORD (Management of Change) .....	42

## 1 INTRODUCTION

### 1.1 Project Overview

Leask Marine Ltd has been involved in the engineering and operations of Tidal Generation Ltd (TGL) Tripod at European Marine Energy Centre (EMEC) Tidal Test Site, in Orkney Isles. In 2006, the Tripod was drilled, piled and grouted to the seabed at Berth 2 in Fall of Warness.



Figure 1 – Photo of TGL Foundation Pre & Thru-Deployment

EMEC has contracted Leask Marine to recover the tripod, developing the methodology and procedures. The Tripod need to be disconnected from the seabed, transported, cut into small pieces and then recycled.

The project is divided in four phases:

1. Pile cutting at Seabed
2. Lifting and Towing
3. Cutting into section at location nearshore Eday
4. Onshore cutting and disposal of Steel & Grout

### 1.2 Document Objective

This document outlines the methodology that Leask Marine will adopt for the execution of Phase 3 of the decommissioning project whereby the tripod will be cut into manageable sections by divers at an inshore location

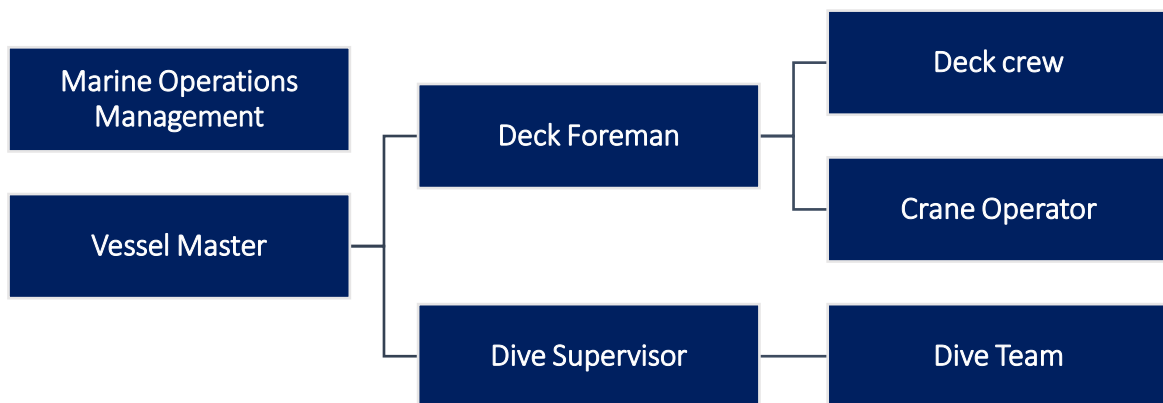
### 1.3 References

All References and information contained in this document is related to information provided by the Client / Contractor:

1. FT-001 – Tripod Areas of Interest – Blackfish – 28/11/17

## 2 OPERATION PARTICULARS

### 2.1 Operation Structure



## 2.2 Interfaces & Contacts

<b>Client</b>	EMEC
<b>Marine Contractor</b>	Leask Marine Ltd.

### Client - EMEC

TITLE	NAME	TELEPHONE	MOBILE
Project Manager	Andy Shanks	+44 (0) 1856 852 001	+44(0) 7961 551 201
Operations & Maintenance Manager	John Skuse	+44 (0) 1856 852 205	+44(0) 7972 033 137
Operation Engineer	Donald Sinclair	-	+44(0) 7789 698 144
Duty Manager	-	-	+44(0) 7624 345 411

### Leask Marine

TITLE	NAME	TELEPHONE	MOBILE
Director	Douglas Leask	+44 (0) 1856 874 725	+44 (0) 7889 651 680
Operation Manager	Oliver Bethwaite	+44 (0) 1856 874 725	+44 (0) 7966 228 830
Commercial Manager	John Macleod	+44 (0) 1856 874 725	-
C-Odyssey	-	-	+44 (0) 7718 424 491

## 2.3 Communications

Internal Communications will be carried out by VHF and UHF radio with the following channels:

- Emergency Channel – VHF Channel 16
- Leask Marine – VHF Channel 74
- VTS – VHF Channel 11
- Harbours – VHF Channel 14

### 3 SITE & WEATHER

#### 3.1 Site Details

Upon the commencement of this operation the TGL tripod will have been recovered from the seabed at Berth 2 of the Falls of Warress Tidal Test Site and wet-stored at a location nearshore Eday; the water depth at this location is approximately 20m

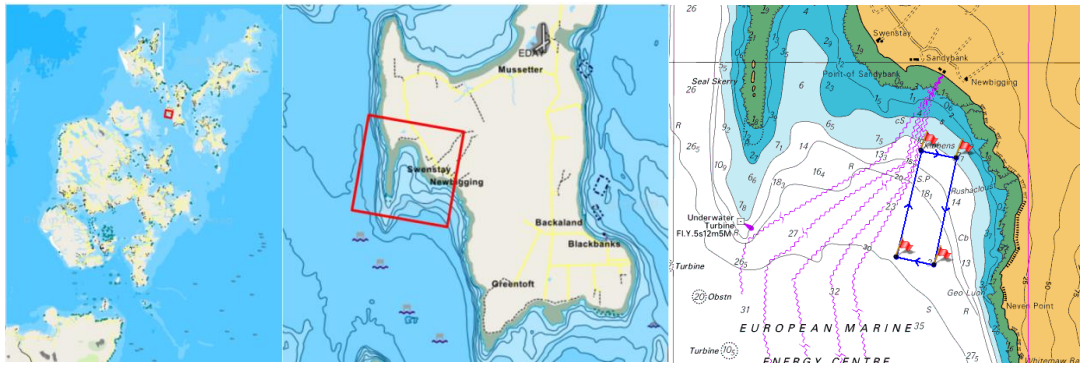


Figure 2 – Nearshore Eday (Orkney Islands)

The area allocated for the tripod cutting operation is outlined by the coordinates in Table 1

	Lat	Long	Easting	Northing
Corner 1	059° 9.696' N	002° 48.329' W	511123	6558062
Corner 2	059° 9.671' N	002° 48.093' W	511348	6558017
Corner 3	059° 9.302' N	002° 48.244' W	511206	6557332
Corner 4	059° 9.329' N	002° 48.244' W	510966	6557381

Table 1 – Decommissioning Area

#### 3.2 Site Controls

Suitable site controls will be put in place which will include but may not be limited to:

- Risk assessment
- Tool box talks
- Ensure all emergency equipment on site is ready for use
- Any additional hazards to be identified and added to change of records form
- Ensure permit to work system is in place
- Sea Swell to be monitored at all times
- Tide to be monitored at all times
- Surface conditions to be monitored at all times
- Leask Marine Permit to work system signed off by client



### 3.3 Project Hazard Identification

- Sea Swell
- Vessel Moorings (stability)
- Tide
- Moving Machinery
- Underwater Crane / Winch Movements
- Heavy Loads (pinch points)
- Structure Stability

All items listed above will have appropriate Risk Assessments which are located in the Risk Assessment document.

### 3.4 Weather & Current

- Dive supervisor and vessel skipper to agree on decisions if conditions are unsafe and not suitable for operations.
- Wave height is less than 1.5 Meters Maximum
- Wind speed is less than 10 knots
- Dive Supervisor and vessel skipper to monitor at all times.
- (Designated communication VHF channel 74 to be kept clear during diving operations)
- Dive working parameters as stated below:

	Current (Knots)					
Dive Method	0-0.5	0.5-0.8	0.8-1.0	1.0-1.2	1.2-1.5	Over 1.5
Surface supply - Mid water	(1)	(2)	(3) + (4)	(4)		
Surface supply - Bottom	(1)	(1) + (2)	(2) + (3)	(3)	(4)	
Basket / Bell - Mid water	(1)		(1) + (2)	(3)	(4)	
Basket / Bell - Bottom	(1)		(1) + (2)	(3)	(4)	
<b>Description:</b>	(1) Suitable for working with local factors taken into account.					
	(2) Some restrictions will apply, observation should be workable.					
	(3) Probably unsuitable, but local factors may permit.					
	(4) Unsuitable without cofferdam protection					

Source - ADC-CoP: 001 – 7.6

The weather limits are:

OPERATION	Sign. Wave Height	Wind Speed	Tidal Current
Vessel Operation	< 2.0 meters	<20 knots	-
Lifting Operation	< 1.0 meters	<10 knots	< 2.0 knots
Diving Operation	< 1.0 meters	-	< 1.0 knots
Towing Operation	< 1.5 meters	<20 knots	< 5.0 knots

Vessel Master to monitor the weather condition all the times and make decision if site conditions are safe for operations and for personnel operating.

### 3.5 Access & Site Environment

All work sites are controlled for the duration of the operation:

- Secure site – All Leask Marine personnel to sign in/out
- Leask Marine permit to work required
- Works to be carried out from Vessel
- Crane / Man basket available if required

<b>HOLD</b>	<b>Daily Operations Meeting</b>	Signed
	Vessel Master / Project Operations Manager to confirm all vessel movements with other site parties and ensure all notifications are in place	 _____  Date ____/____/____

### 3.6 EMEC Requirements

Entry to site is strictly according to EMEC requirements, principally, but not exclusively:

- EMEC SOP-003 - Permit to Access Sit (Reference 13)
- EMEC SOP-063-07-02 – Maritime Safety Information (Reference 18)
- EMEC REQUIREMENTS – PRE-ENTRY:

Permit in Place from EMEC for site access and installation works

- EMEC REQUIREMENTS – ENTRY:

Upon crossing over into the site, as indicated by the Admiralty chart line, the EMEC Duty Officer should be notified via text message to 07624 345 411, the following:

- Name of Submitter
- Name of Vessel
- Time on Site
- Persons on Board
- Permit Number

- EMEC REQUIREMENTS – EXIT

Upon crossing over out of the site, as indicated by the Admiralty chart line, the EMEC Duty Officer should be notified via text message to 07624 345 411, the following:

- Name of Submitter
- Name of Vessel
- Time on Site
- Persons on Board
- Permit Number

- EMEC REQUIREMENTS – RE-ENTRY:

If at any time the vessel leaves site for any duration the same entry protocol must be followed

### 3.7 Permits / Notification

#### CONFIRMATION OF PERMIT TO WORK

<b>HOLD</b>	<b>Permit Number</b> _____
	<b>Permit Holder</b> _____
	<b>Company</b> _____
	<b>Date Valid from</b> _____
	<b>Date expiry</b> _____

<b>HOLD</b>	<b>All personnel onsite notified of operations</b>	<b>Supervisor</b> _____
		<b>Date</b> ____/____/____
		<b>Time</b> _____

<b>HOLD</b>	<b>Communications check</b>	<b>Supervisor</b> _____
	<b>Crane Operator / Banksman (VHF 74)</b>	
	<b>Vessel Master (VHF 74)</b>	<b>Date</b> ____/____/____
	<b>Dive Supervisor (VHF 74)</b>	

<b>HOLD</b>	<b>Vessel Moorings secure/stable Ready for Diving Operations</b>	<b>Supervisor</b> _____
		<b>Date</b> ____/____/____
		<b>Time</b> _____

## 4 QHSE

### 4.1 Manual Handling











- Avoid hazardous manual handling operations so far as is reasonably practicable, for example by redesigning the task to avoid moving the load or by automating or mechanising the process.
- Make a suitable and sufficient assessment of any hazardous manual handling operations that cannot be avoided.
- Reduce the risk of injury from those operations so far as is reasonably practicable. Where possible, use mechanical assistance. Where this is not reasonably practicable, look at ways of changing the task, the load and working environment.
- Any amendments please add to change of records form found in this Method statement.
- For additional information please refer to the company handbook or the HSE website ([www.hse.gov.uk](http://www.hse.gov.uk))












### 4.2 COSHH

**Safety data sheets**

**European symbols**

			
Toxic	Very toxic	Harmful	Irritant
			
Highly flammable	Extremely flammable	Explosive	Dangerous to the environment
			
Oxidising	Corrosive		

**New International symbols**

Products you use may be 'dangerous for supply'. If so, they will have a label that has one or more hazard symbols. Some examples are given here.

These products include common substances in everyday use such as paint, bleach, solvent or fillers. When a product is 'dangerous for supply', by law, the supplier must provide you with a safety data sheet. Note: medicines, pesticides and cosmetic products have different legislation and don't have a safety data sheet. Ask the supplier how the product can be used safely.

Safety data sheets can be hard to understand, with little information on measures for control. However, to find out about health risks and emergency situations, concentrate on:

- Part 15 of the sheet, which tells you what the dangers are;
- Parts 4 to 8, which tell you about emergencies, storage and handling.

International symbols will replace the European symbols in 2009. Some of them are similar to the European symbols but there is no single word describing the hazard. Read the hazard statement on the packaging and the safety data sheet from the supplier.

- Safety data sheets will be provided with any substance in use.
- For additional information please refer to company handbook or the HSE website ([www.hse.gov.uk](http://www.hse.gov.uk))

### 4.3 PPE Requirement

- Relevant PPE to be worn at all times.
- Additional PPE will be provided depending upon the activity being undertaken.



Leask Marine Ltd minimum requirement when working:

- Hard Hat
- Safety Glasses (weather / task dependent)
- Safety Gloves
- Life Vest / Coat / Jacket
- Safety clothing
- Rigger Boots



### 4.4 HSE Medical & First Aid Equipment

Equipment	Location
Mobile O2 Administration Kit	Dive Unit
First Aid Kit	Vessel Galley
Burns Kit	Vessel Galley
Eye Wash Kit	Vessel Galley

### 4.5 Personnel Qualifications

- Full equipment and vessel certification pack is available
- Senior Personnel CV's are made available on request

## 5 DIVING PARTICULARS

### 5.1 Diving Tables

- United States Navy dive tables Rev 7
- Company Procedure +1 safety margin on selected table for working depth.

### 5.2 Diving Team Size

Dive Team 5 Personnel:

- Dive Supervisor
- Diver 1
- Standby Diver
- + 1 Extra Diver
- Tender

Minimum team size 5 personnel. Team size maybe increased, or divers exchanged depending on job requirements. Dive supervisor to amend as required.

### 5.3 Diver Supervisor

- A standby diver will always be available at immediate readiness to provide any necessary assistance to the diver, whenever a diver is in the water, as instructed by the supervisor.
- The standby diver shall be fully dressed to enter the water, but does not need to be wearing the mask or helmet, but this does need to be fully operational and be immediately to hand, i.e. connected to the bail out and harness, properly tested and held by the diver or supported at or close to chest height.
- Where there are two working divers in the water at any one time, there must be a standby diver available on the surface for each pair of divers, to render assistance as instructed by the Supervisor.

## 5.4 Helmets

Diver 1	-	KM 27 SL
Diver 2	-	KM 27 SL
S/Diver	-	KM 28
Spare	-	KM 27 SL

## 5.5 Decompression Arrangements

### Emergency Time response Breakdown:

#### Emergency Response Transport

##### IN WATER DCI

On-site	0	Minutes
Incident on-site casualty recovered / Stable	10	Minutes
Coast Guard Notified	5	Minutes
On-site Vessel Heading to Stromness	90	Minutes
Ambulance waiting at Stromness Pier, transfer time (or company van)	5	Minutes
Casualty transferred to Stromness Facility	5	Minutes
<b>Total Time Frame</b>	<b>Plan 115</b>	<b>Minutes</b>

### Stromness Hyperbaric Facility Location

- Old Academy, Back Road, Stromness, Orkney





## 5.6 Suitability of Air Supply

### Diver 1

- 3 x 50 litre cylinders 232 Bar (Primary) - (21%)
- 1 x 50 litre cylinder 232 Bar (Secondary) - (21%)
- 1 x 50 litre cylinder 232 Bar (Emergency) - (21%)
- Bailout Cylinder 12 litre (Emergency 2) - (21%)

### Diver 2

- 1 x 50 litre cylinders 232 Bar (Primary) - (21%)
- 1 x 50 litre cylinder 232 Bar (Secondary) - (21%)
- 1 x 50 litre cylinder 232 Bar (Emergency) - (21%)
- Bailout Cylinder 12 litre (Emergency 2) - (21%)

### Standby Diver

- 1 x 50 litre cylinders 232 Bar (Primary) - (21%)
- 1 x 50 litre cylinder 232 Bar (Secondary) - (21%)
- Bailout Cylinder 12 litre (Emergency 2) - (21%)

## 5.7 Diver Launch & Recovery

- Primary - Dive ladder for access and egress (Maximum height 1.5 meters)
- Secondary - Crane available in emergency.
- Emergency Harness located on-board vessels.

## 5.8 Letter of Appointment of Diving Supervisors



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January 1, 2018

To whom it may concern

### Appointment of Diving Supervisor

In accordance with the Diving Operations at Work Regulations 1997 – Regulation 9 (1), 9(2) And Regulation 10(1), (9) (i)

Mr Oliver Bethwaite

Is appointed to act as Diving Supervisor for Diving Projects conducted by Leask Marine.

Yours faithfully,



Douglas Leask

Managing Director

January 1, 2018

To whom it may concern

### Appointment of Diving Supervisor

In accordance with the Diving Operations at Work Regulations 1997 – Regulation 9 (1), 9(2) And Regulation 10(1), (9) (i)

Mr Andrew Stewart

Is appointed to act as Diving Supervisor for Diving Projects conducted by Leask Marine.

Yours faithfully,



Douglas Leask

Managing Director

Making Marine Renewables Work

Registered in Scotland, No SC282128  
Haston Office  
First Floor, Pier House, Pier Road, Pentlands Dock,  
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## 6.1 Main Vessel


**LEASK  
MARINE**

# MV C-Odyssey

## Specifications

### General

Type of vessel	Multitower Twenty6
Year built	2011
Category	MCA Cat 1
	Up to 150 miles
	(from safe haven)
Passengers	12 plus crew
Flag state	UK
Port of registry	Kirkwall
MMSI No.	235088132
IMO No.	9636307
Call Sign	2ETW7
Official Number	917987

### Dimensions

Length	26m
Beam	10.5m
Depth	3.5m
Draught	2.5m
Air draught – mast up	13.8m
Air draught – mast down	8.2m
Gross tonnage	150t
Free Deck Space	120m²

### Deck Equipment

Towing winch	60 t
Anchor handling	60 t
(Combined lift)	120 t
Tugger winch	3 x 15 t
Towing hook	SWL 25 t
Capstan	5 t
Bow roller	5m SWL 120 t
Aft roller	3m SWL 60 t
Deck carrying capacity	100 t
Deck crane	Hs 1850m 5530kg @ 18.5m
Deck crane (aft)	Hs 600m 4630kg @ 10m

### Hydraulics towing pins/stopper

Pins	
SWL	50 t
Design load	105 t
Hub	400 mm
Stopper	
SWL	75 t
Design load	150 t
Hub	400 mm

### Tank Capabilities

Fuel/oil	100m³
Black/grey water	9m³
Fresh water	45m³
Dirty oil	0.9m³
Ballast water	88m³

### Accommodation

Cabins	2 off twin berth
	2 off single berth
Large mess room	
Galley and laundry	

### Generators

1 off 78 KVA
1 off 35 KVA
K.W. 1790


### Propulsion System

Main engines	2 x caterpillar C32
Total power	2,400bhp at 1,800 rpm
Propulsion	2x fixed pitch propellers
	Nozzles 1,500mm



### Performance

Bollard pull	27 t
Speed	10 knots

## 6.2 Line Boat



# Fusion 490 Workboat

**Specifications**

**Fusion 490 Workboat**

Length 4.92m

Beam 2.08m

Height 1.1m

Dry weight 420kgs

Maximum H.P. 25HP

Maximum Load 800kgs (7 persons)

**www.leaskmarine.com**

6 Crowness Road, Hatston Industrial Estate, Kirkwall, Orkney, KW15 1RG

T: +44 (0) 1856 874725 E: info@leaskmarine.com

- The safety rescue boat is fitted with a 25bhp outboard
- The safety rescue boat will be in a constant state of readiness when the MV C-Odyssey is moored onsite, a designated operator and crew man will be assigned during the TBT.
- The vessels aft crane is used to launch and recover the emergency recovery vessel.



## 6.3 Crane Specification

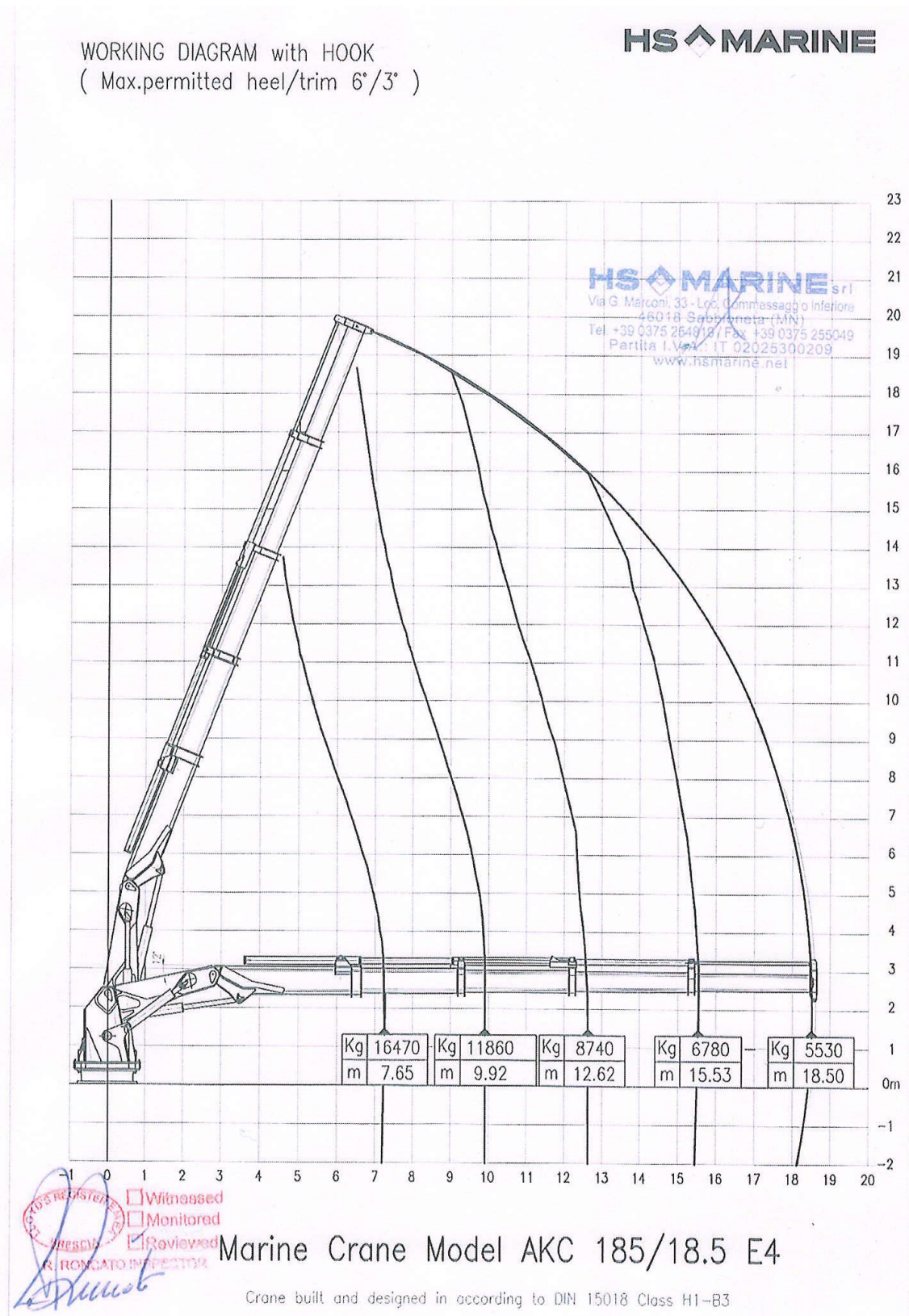


Figure 3 – Crane Specification

## 6.4 Mooring and Vessel Positions

The C-Odyssey will set-up on a 3-point mooring throughout pile cutting activities

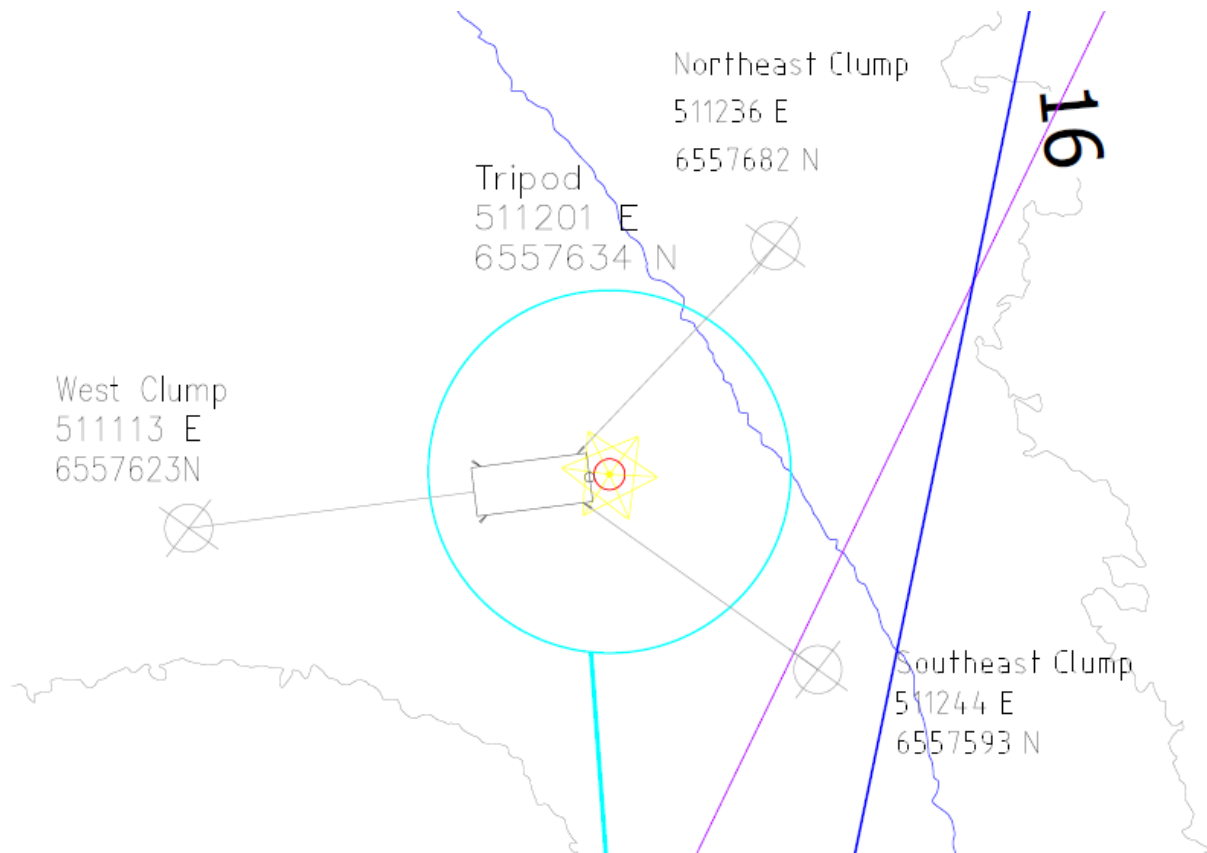
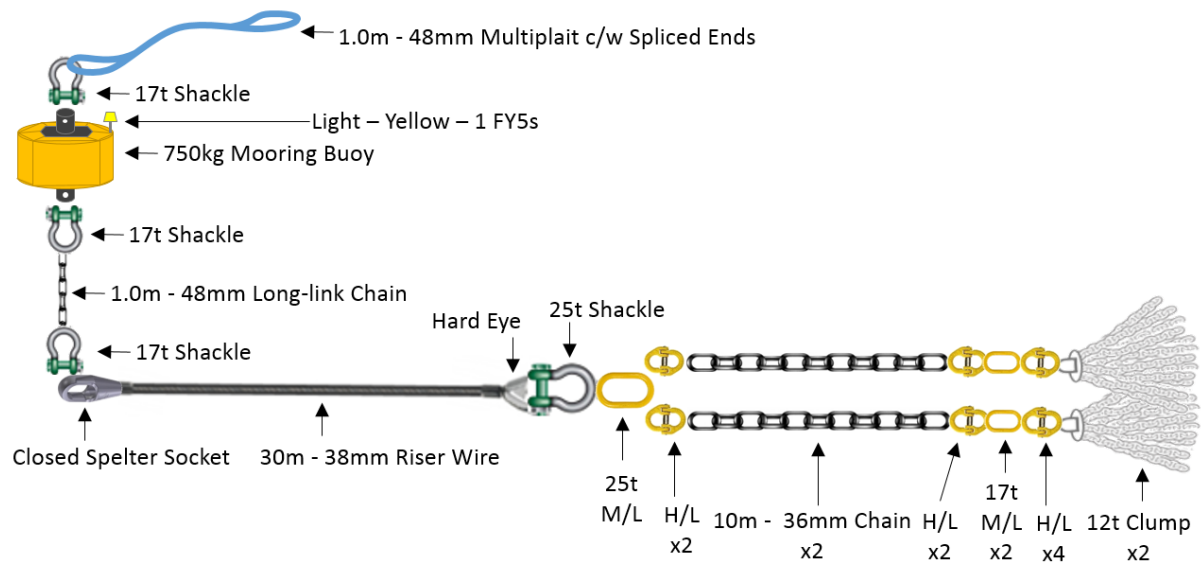


Figure 4 – Mooring and Vessel positions

	EASTING	NORTHING
Target Tripod location	511201	6557634
Northeast Clump Weight	511236	6557682
Southeast Clump Weight	511244	6557593
West Clump Weight	511113	6557623

Table 2 – Mooring Positions

## 6.5 Mooring Specification

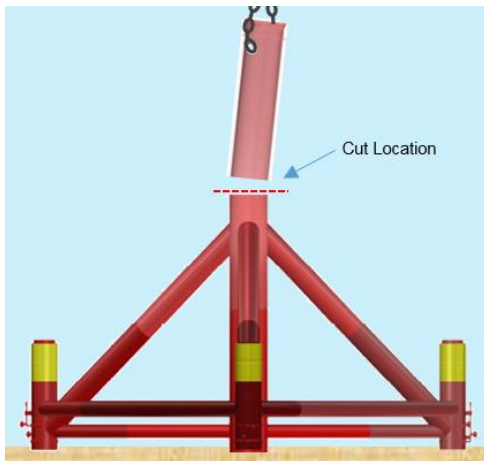


## 6.6 Tripod Cutting Plan

Due to the complex geometry and varying member weights, the tripod is to be cut in a sequence that will ensure diver safety throughout the operation

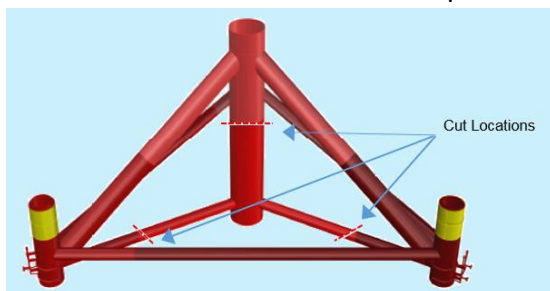
### Stage 1 Cut – Tower

The first stage of the cutting operation will remove approximately 5.8m from the upper part of the central tube



### Stage 2 Cut – Lower Central Node

Following removal of the central tower section, the lower central tube will be cut at a position 4.0m from the base, the 3 x Ø508mm horizontal tubes will be cut mid span to completely free the lower central node from the tripod

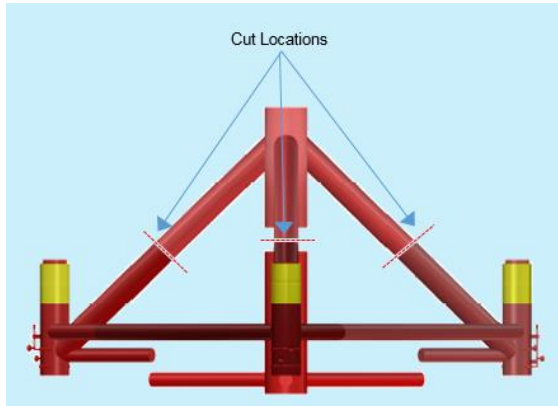


Removal of these sections requires access to the internal region of the tripod and should therefore be performed whilst the frame still retains its structural integrity.

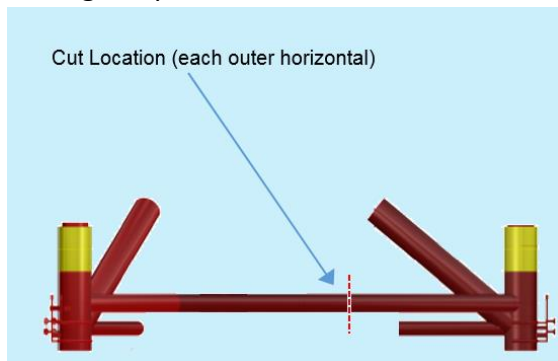


**Stage 3 Cut – Diagonal Bracing**

The three grout filled diagonal members will be cut mid span and the upper central node section removed; following this, the lower central node can be removed

**Stage 4 Cut – Outer Horizontal Members**

The three horizontal members that form the perimeter of the tripod will be cut at a location allowing the piled corners to be recovered individually



## 6.7 Areas of Interest

Certain areas of interest have been identified for later biofouling analysis typically located at welds and anode entry points; cutting through these locations is to be avoided.

Figures 5 & 6 indicate the areas that are to be avoided when cutting, reds areas are to be avoided, green areas are safe to cut.

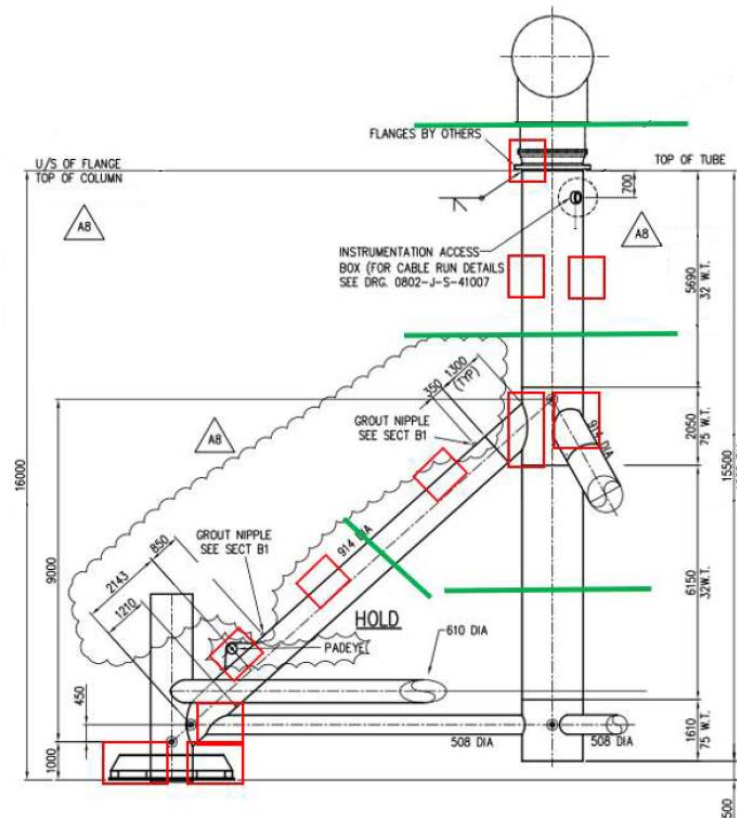


Figure 5 – Areas of Interest

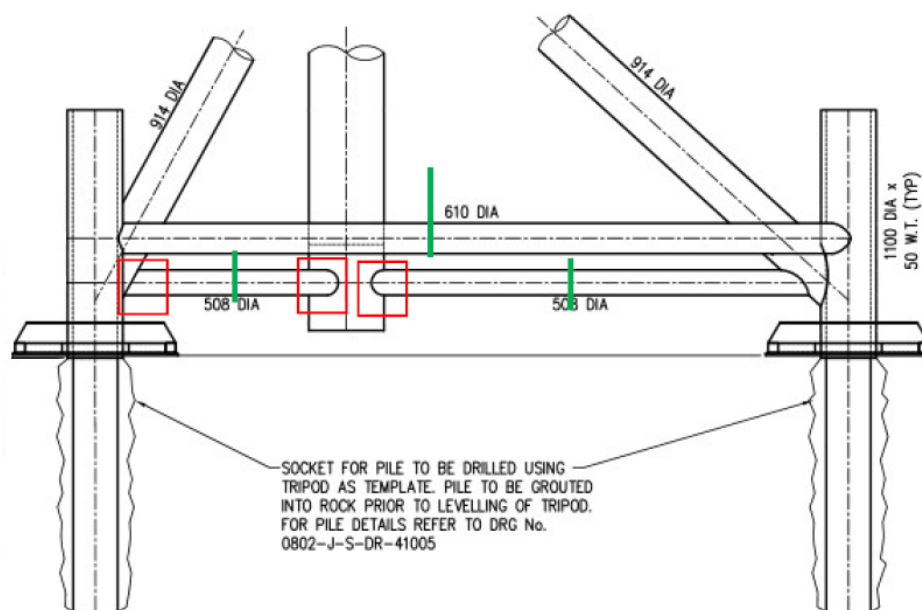


Figure 6 – Areas of Interest

## 6.8 Equipment List

Equipment	Quantity	Supplied
<b>Moorings</b>		
24t Chain Clumps	3	LM
Hammerlock connection	3	LM
35t Safety Shackle	3	LM
36mm Ground Chain 10m Long	3	LM
38mm Riser Wire 30m	3	LM
25t Safety Shackle	3	LM
750kg Balmoral Float c/w Light	3	LM
12.5t Safety Swivel Hook	3	LM
17t Shackle	3	LM
48mm Eurosteel 150m	3	LM
<b>Other Equipment</b>		
Dive Unit & Equipment	-	LM
Dive Basket	-	LM
Gas	-	LM
Broco Underwater Cutting Gear	-	LM
25t Bow Shackle	1	LM
55t Bow Shackle	1	LM
6.0m EWL Polyester Roundsling – 100t SWL	1	LM

Table 3 – Equipment List

## 6.9 Deck Layout

The equipment mentioned before will be arranged onto deck as in the picture below.

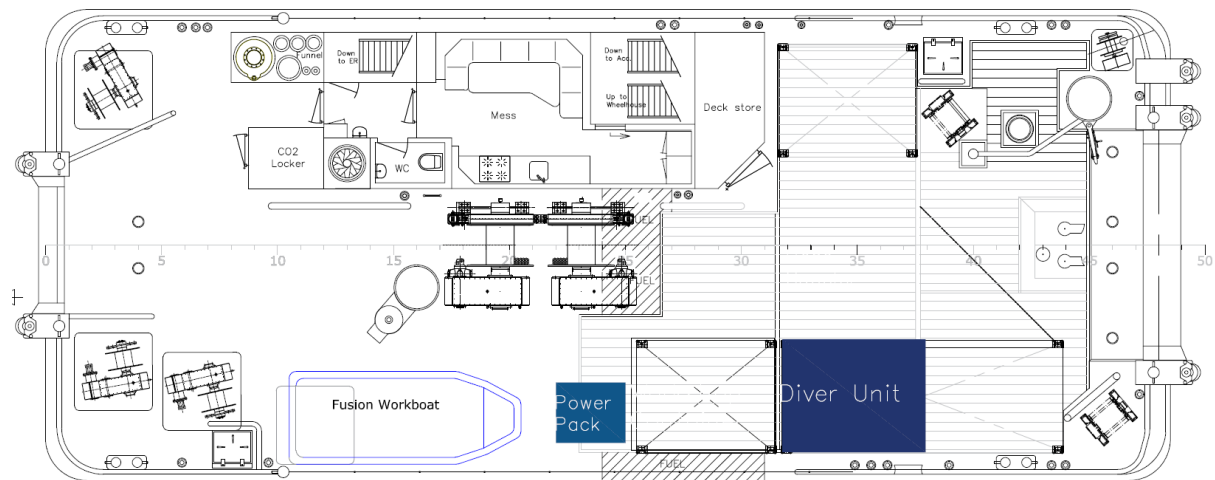


Figure 7 – Deck Layout

## 7 METHODOLOGY

### 7.1 Task Summary

No.	TASKS
1.	Equipment Mobilisation & Sail to Site
2.	Stage 1 Cut – Upper Central Tube
3.	Stage 2 Cut – Lower Central Node
4.	Stage 3 Cut – Diagonal Bracing / Upper Node Recovery
5.	Lower Central Node Recovery
6.	Stage 4 Cut – Outer Horizontal Members
7.	Mooring Recovery & Demobilisation

**Task #1 Equipment Mobilisation & Sail to Site**

<b>HOLD</b>	<b>Toolbox Talk</b>	Supervisor Signature and Date
	1. Equipment required 2. Equipment Seafastening	

Task 1	Task Summary	Comments	Check
<b>1.01</b>	Crew to prepare and check the equipment at Leask Marine yard	See Equipment List in Table 3	
<b>1.02</b>	From Hatston Pier, load the equipment on the C-Odyssey using the vessel crane		
<b>1.03</b>	Vessel Master to ensure the boat is stable during operations		
<b>1.04</b>	Crew to seafasten the equipment on the vessel		
<b>1.05</b>	Vessel Master to ensure deck is secure before departing port		
<b>1.06</b>	Vessel to depart from Kirkwall Pier		
<b>1.07</b>	Vessel to sail to Eday	EMEC Permission (07624 345 411) as per Section 3.6	
<b>1.08</b>	Multicat to arrive on site and pick-up moorings: <ul style="list-style-type: none"> <li>• Prepare tugger winch with Multiplait rope</li> <li>• Pass rope to line-boat crew</li> <li>• Line-boat crew to deliver rope end to target mooring buoy</li> <li>• Connect rope to mooring buoy</li> </ul> Repeat for next moorings (see Table 2 – Mooring Positions)		

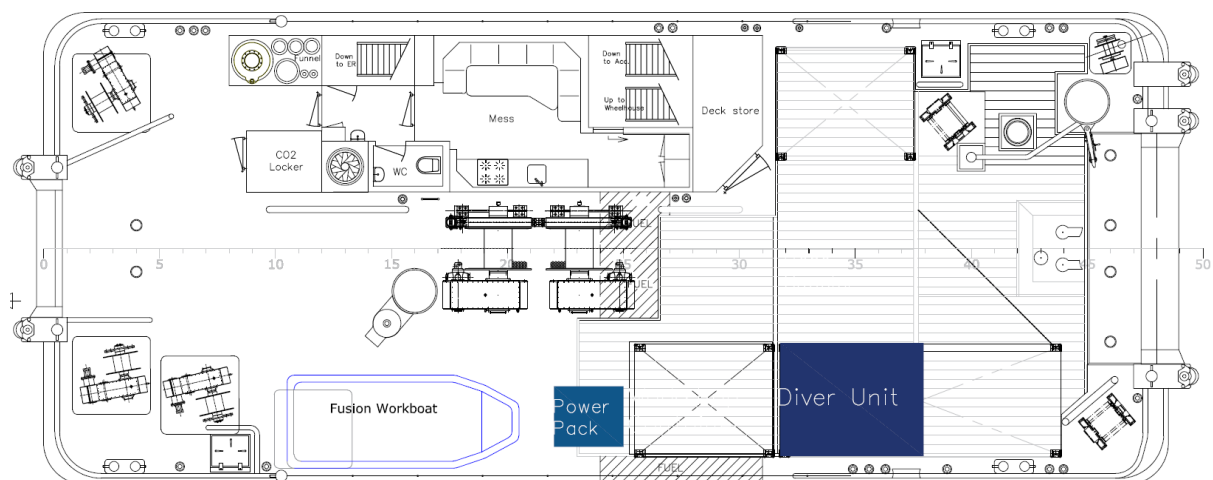



Figure 7 – Deck Layout

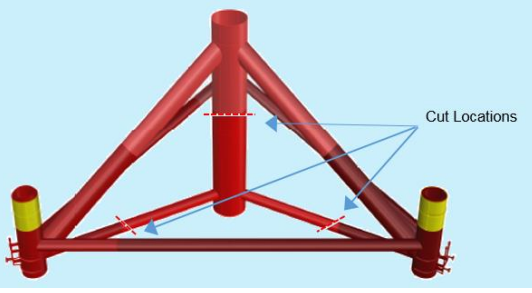

## Task #2 Stage 1 Cut - Upper Central Tube

<b>HOLD</b>	<b>Toolbox Talk</b>	Supervisor Signature and Date
	1. Broco Cutting	

Task 2	Task Summary		Check
<b>2.01</b>	<ul style="list-style-type: none"> <li>Main winch wire rigged with 25t shackle and chain strop</li> <li>25t sling connected to shackle and cable tied to winch wire for later retrieval with crane</li> <li>Rigging overboarded and lowered towards top of tripod</li> <li>Vessel to move as required to ensure that bow roller is directly above centre of tripod</li> </ul>		
<b>2.02</b>	<ul style="list-style-type: none"> <li>Diver to enter water and swim to the top of the tripod</li> <li>Diver to burn Ø100mm hole through wall of tubular with Broco gear</li> </ul>		
<b>2.03</b>	<ul style="list-style-type: none"> <li>Diver to Feed chain strop through hole and connect to 25t shackle</li> <li>Main winch paid in to take up slack in wire</li> </ul>		
<b>2.04</b>	<ul style="list-style-type: none"> <li>Diver to relocate to 1<sup>st</sup> cut location and mark approx. 700mm above diagonal tubulars</li> <li>Begin cutting around circumference of tube at marked location, continuous communication between diver and supervisor required</li> </ul>		
<b>2.05</b>	<ul style="list-style-type: none"> <li>Diver to advise when last 200mm of cut is approached</li> <li>Ensure that weight of tube is taken by the main winch wire</li> </ul>		
<b>2.06</b>	<ul style="list-style-type: none"> <li>Diver to Broco cut final 200mm from a safe location</li> <li>Diver advise when tube has been completely cut and return to surface</li> </ul>		
<b>2.07</b>	<ul style="list-style-type: none"> <li>Crew &amp; divers to locate to safe area</li> <li>Pay-in on main winch to lift tubular towards bow roller</li> <li>Retrieve tied off sling and connect to forward crane hook</li> </ul>	Tubular approximately 7.0t dry weight	
<b>2.08</b>	<ul style="list-style-type: none"> <li>Crane to lift tubular section on deck of multicat</li> <li>Deck crew to fasten tubular to deck and release lift rigging &amp; winch wire from tubular</li> </ul>		

**Task #3      Stage 2 Cut – Lower Central Node**

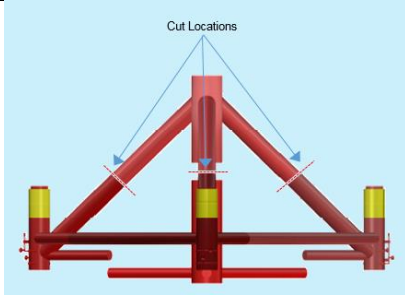

<b>HOLD</b>	<b>Toolbox Talk</b>	Supervisor Signature and Date
	1. Access to internal portion of Tripod	

Task 3	Task Summary	Comments	Check
<b>3.01</b>	<ul style="list-style-type: none"> <li>Diver to swim to internal area of tripod with Broco gear</li> </ul>		
<b>3.02</b>	<ul style="list-style-type: none"> <li>Mark cut line 6.5m from base of central tube</li> <li>Cut central tube around full circumference</li> </ul>	Ensure that cut location does <u>not</u> coincide with weld or anode entry location (see Section 6.7)	
<b>3.03</b>	<ul style="list-style-type: none"> <li>Once cut on central tube is complete, diver to mark each of the three Ø508mm horizontal tubes at 5.0m from central tube</li> </ul>		
<b>3.04</b>	<ul style="list-style-type: none"> <li>Diver to cut each of the Ø508mm tubes</li> <li>Diver check that umbilical is not in a position where it could get trapped when the central node drops</li> <li>When the final cut is almost complete, diver to keep at safe distance in preparation for steel drop</li> <li>Lower central node weight approx. 16.5t</li> </ul>	 	
<b>3.05</b>	<ul style="list-style-type: none"> <li>Diver to return to surface</li> </ul>	<ul style="list-style-type: none"> <li>Section is to be left in place until surrounding sections of tripod have been removed</li> </ul>	



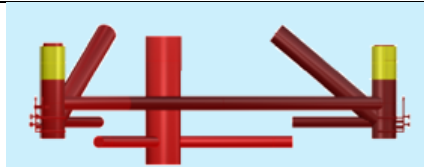

## Task #4 Stage 3 Cut – Diagonal Bracing Cut / Upper Node Recovery

<b>HOLD</b>	<b>Toolbox Talk</b>	Supervisor Signature and Date
	1. Grout filled members	

Task 4	Task Summary	Comments	Check
<b>4.01</b>	<ul style="list-style-type: none"> <li>Diver to swim to tripod with Broco gear</li> </ul>		
<b>4.02</b>	<ul style="list-style-type: none"> <li>Mark 6.0m from the top of the brace for each of the three diagonal braces</li> <li>Ensure that cut location does <u>not</u> coincide with weld or anode entry location (see Section 6.7)</li> </ul>		
<b>4.03</b>	<ul style="list-style-type: none"> <li>Use Broco gear to burn a hole through the central spine for connecting a 55t shackle</li> <li>Deck crew to prepare main winch wire with 55t shackle, connect 100t 6.0m EWL Roundsling to shackle and cable tie to winch wire for later retrieval</li> <li>Lower main winch wire to central spine of tripod, diver connect shackle to burned hole</li> <li>Pay-in on main winch wire to take up slack</li> </ul>		
<b>4.04</b>	<ul style="list-style-type: none"> <li>Diver to Broco cut through grout filled diagonal brace at marked locations</li> <li>When the final cut is almost complete, diver to keep at safe distance in preparation for steel weight shift</li> </ul>		
<b>4.05</b>	<ul style="list-style-type: none"> <li>Diver return to surface, recover all Broco gear on deck</li> <li>Pay-in on main winch to lift section towards bow roller (Approx. dry weight 30t)</li> </ul>		
<b>4.07</b>	<ul style="list-style-type: none"> <li>Multicat to release its moorings and tow section to Hatston pier (Draft up to 8.0m)</li> <li>Upon arrival at Hatston pier, lower section onto seabed and connect onshore crane hook to previously tied off sling</li> <li>Onshore crane to lift section onto pier</li> </ul>		

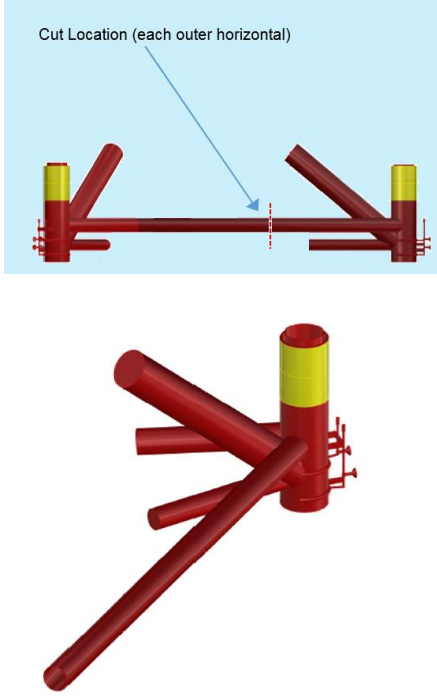
## Task #5 Lower Central Node Recovery

<b>HOLD</b>	<b>Toolbox Talk</b>	Supervisor Signature and Date
	1. Grout filled members	

Task 5	Task Summary	Comments	Check
<b>5.01</b>	<ul style="list-style-type: none"> <li>Deck crew to prepare main winch wire with 55t shackle, connect 100t 6.0m EWL Roundsling to shackle and cable tie to winch wire for later retrieval</li> <li>Lower main winch wire to central spine of tripod</li> </ul>		
<b>5.02</b>	<ul style="list-style-type: none"> <li>Diver to swim to tripod with Broco gear</li> <li>Use Broco gear to burn a hole through the central spine for connecting a 55t shackle</li> <li>Diver to connect 55t shackle to new hole</li> </ul>		
<b>5.03</b>	<ul style="list-style-type: none"> <li>Diver return to surface, recover all Broco gear on deck</li> <li>Pay-in on main winch to lift section towards bow roller (Approx. dry weight 16.5t)</li> </ul>	 	
<b>5.04</b>	<ul style="list-style-type: none"> <li>Multicat to release its moorings and tow section to Hatston pier (Draft up to 8.0m)</li> <li>Upon arrival at Hatston pier, lower section onto seabed and connect onshore crane hook to previously tied off sling</li> <li>Onshore crane to lift section onto pier</li> </ul>		

**Task #6 Stage 4 Cut – Outer Horizontal Members**

<b>HOLD</b>	<b>Toolbox Talk</b>	Supervisor Signature and Date
	1. Grout filled members	

Task 6	Task Summary	Comments	Check
<b>6.01</b>	<ul style="list-style-type: none"> <li>Diver to swim to lower half of tripod with Broco gear</li> </ul>		
<b>6.02</b>	<ul style="list-style-type: none"> <li>Diver to mark location on horizontal member 4.3m from pile leg</li> </ul>	Ensure that cut location does <u>not</u> coincide with weld or anode entry location (see Section 6.7)	
<b>6.03</b>	<ul style="list-style-type: none"> <li>Use Broco gear to burn through tube</li> <li>Diver to cut internal side of horizontal member first, the final stage of the cut should be performed from the <u>outside</u> of the tripod to ensure that steel falls <u>away</u> from the diver</li> </ul>		
<b>6.04</b>	<ul style="list-style-type: none"> <li>Repeat Broco cutting process for remaining piles</li> <li>Maintain safe distance from</li> <li>Ensure that care is taken to avoid entrapment when steel section falls away following cutting</li> </ul>		
<b>6.05</b>	<ul style="list-style-type: none"> <li>Deck crew to prepare main winch wire with 55t shackle, connect 100t 6.0m EWL Roundsling to shackle and cable tie to winch wire for later retrieval</li> <li>Lower main winch wire to pile portion of steel section</li> </ul>		

<b>6.06</b>	<ul style="list-style-type: none"> <li>Following cut of steel diver use Broco gear to burn a hole through the pile section for connecting a 55t shackle</li> <li>Diver to connect 55t shackle to new hole</li> </ul>	A chain strop may be required if the thickness of the piled leg does not allow connection of 55t shackle	
<b>6.07</b>	<ul style="list-style-type: none"> <li>Diver return to surface, recover all Broco gear on deck</li> <li>Pay-in on main winch to lift section towards bow roller (Approx. dry weight 20t)</li> </ul>		
<b>6.08</b>	<ul style="list-style-type: none"> <li>Multicat to release its moorings and tow section to Hatston pier (Draft up to 8.0m)</li> <li>Upon arrival at Hatston pier, lower section onto seabed and connect onshore crane hook to previously tied off sling</li> <li>Onshore crane to lift section onto pier</li> </ul>		
<b>6.09</b>	<ul style="list-style-type: none"> <li>Transit back to Eday</li> <li>Repeat Tasks 6.05 to 6.08 for remaining piled leg sections</li> </ul>		

## Task #7 Mooring Recovery & Demobilisation

<b>HOLD</b>	<b>Toolbox Talk</b>	Supervisor Signature and Date

Task 7	Task Summary	Comments	Check
<b>7.01</b>	Vessel to sail to site		
<b>7.02</b>	Vessel to locate to mooring buoys		
<b>7.03</b>	Moorings recovery	<ul style="list-style-type: none"> <li>• C-Odyssey to approach mooring buoy bows on. Buoy and riser recovered to C-Odyssey deck utilising forward crane</li> <li>• Chain stopper from 50 t aft winch to be connected to wire riser below swaged fitting</li> <li>• Buoy to be disconnected from wire riser, stowed on deck and secured</li> <li>• 100 t winch to be connected to riser wire and tensioned</li> <li>• Chain stopper from 50 t winch to be disconnected</li> <li>• Crew to relocate to safe area</li> <li>• Take up on 100 t winch till chain masterlink is below bow roller</li> <li>• 12 t chain bundle to be lifted over bow utilising forward crane and landed on deck</li> <li>• Chains and buoys to be sea fastened prior to departure from site.</li> </ul>	
<b>7.04</b>	Use the same procedures for all the other mooring lines		
<b>7.05</b>	Once the mooring is recovered, C-Odyssey to depart the site	Previous Communication Protocol	
<b>7.06</b>	Vessel to arrive to Kirkwall and onshore crane to demobilise equipment		

## 8 RISK ASSESSMENT

### 8.1 Generic Risk Assessment

In the following tables are summarized the Generic Risk Assessment and mitigation measures related to this project.

#### Vessel Operation

<b>Access routes and working area</b>	
Vessel Access & Egress	TRA VO - 001
Personnel Transfer	TRA VO - 002
Personnel Transfer via Man Riding Basket	TRA VO - 003
Transfer of Equipment between Vessels	TRA VO - 004
<b>Working Spaces and Location</b>	
Confined Spaces	TRA VO - 011
Working Overboard	TRA VO - 012
Working On Deck	TRA VO - 013
<b>Environmental Conditions</b>	
Working in Darkness	TRA VO - 020
Sea State	TRA VO - 021
High Wind Conditions	TRA VO - 022
<b>Plant &amp; Equipment</b>	
Crane Operations	TRA VO - 031
Crane operations without Remote Control	TRA VO - 032
<b>Operational Works</b>	
Anchoring Operations	TRA VO - 050
Anchor Handling on Deck	TRA VO - 051
Berthing Operations	TRA VO - 052
Diving Operations	TRA VO - 054
Support Boat Launch & Recovery	TRA VO - 055
Towing Operations	TRA VO - 056
<b>Other Operations &amp; equipment</b>	
Man Overboard	TRA VO - 081
<b>Personnel</b>	
Crew New Starts	TRA VO - 100
Crew Health	TRA VO - 101

## Diving Operation

<b>Working Spaces and Location</b>	
Working Area – Quay, Dock, Soffit	TRA DO - 001
Working over Water	TRA DO - 002
Stern Gear	TRA DO - 006
<b>Non-mechanical Environment</b>	
Noise Underwater	TRA DO - 020
Vibrations Underwater	TRA DO - 021
<b>Environmental Conditions</b>	
Diving in High Wind Conditions	TRA DO - 031
Weather Conditions for Diving Operations	TRA DO - 032
Working in Tidal Conditions	TRA DO - 033
<b>Plant &amp; Equipment</b>	
Crane Underwater	TRA DO - 040
Dive Ladder	TRA DO - 041
Man basket	TRA DO - 048
Underwater Pneumatic Chainsaw	TRA DO - 049
<b>Hazardous Materials, Chemicals &amp; Substances</b>	
Charging Cylinders (HP)	TRA DO - 110
Diving Operations Compressed Air	TRA DO - 111
<b>Operational Works</b>	
Hot Tapping	TRA DO - 121
Hydraulic Cable Cutting	TRA DO - 122
Hydraulic Subsea Drilling Rig	TRA DO - 123
Underwater Broco Cutting	TRA DO - 126
Underwater Camera Strobe	TRA DO - 127
Underwater High Pressure (HP) Water Jet	TRA DO - 129
Underwater Jackhammer	TRA DO - 130
<b>Manual Handling</b>	
General	TRA GO - 130
Heavy Loads	TRA GO - 132
Awkward Loads	TRA GO - 133
<b>Operational Works</b>	
Form-working	TRA GO - 140
Crane Lifting Operations	TRA GO - 142
<b>Other Operations &amp; equipment</b>	
Rotating & moving equipment	TRA GO - 150
Cutting & shearing parts	TRA GO - 151
Slips, Trips, & Falls	TRA GO - 153

## 8.2 Task Specific Risk Assessment

To consult the Task Specific Risk Assessment, please see refer to document ***LSK-TGL02-OP3-RA01-R01 - Subsea Tripod Cutting***



## 9 TOOLBOX TALK BRIEFING

Date \_\_\_\_/\_\_\_\_/2018

<b>Project Briefing</b>	<b>Details of Project:</b>	
<b>Safety:</b> All PPE to be worn at all times		<b>RA No.</b>
<b>Site Location</b>	<b>Documentation Numbers:</b>	<b>Communications</b>
<b>Generic Task Hazards</b>		
<input type="checkbox"/> Slips, trips & falls <input type="checkbox"/> Lifting operations <input type="checkbox"/> Entrapment <input type="checkbox"/> Man overboard <input type="checkbox"/> Working at height	<input type="checkbox"/> Dropped Objects <input type="checkbox"/> Access on deck <input type="checkbox"/> Hot works <input type="checkbox"/> Swinging loads <input type="checkbox"/> Wire / Chains under tension	<input type="checkbox"/> Manual handling <input type="checkbox"/> Restricted access <input type="checkbox"/> Flammable gases / liquids <input type="checkbox"/> Deck operations <input type="checkbox"/> Visibility

### Attendance Record

Name (print)	Job	Sign	Date

<b>Briefing Feedback Remarks:</b>	<b>Mitigation / additional requirements</b>
<b>Induction / TBT conducted by :-</b>  <b>Signed:</b>	<b>Date:</b> ____/____/2018

## 10 CHANGE OF RECORD (MANAGEMENT OF CHANGE)

<b>01</b>	<b>Risk Assessment Review Update</b>		
1.			
Date:	Name:	Why?	Sign:
2.			
Date:	Name:	Why?	Sign:
3.			
Date:	Name:	Why?	Sign:

<b>02</b>	<b>Method Statement Revision</b>		
1.			
Date:	Name:	Why?	Sign:
2.			
Date:	Name:	Why?	Sign:
3.			
Date:	Name:	Why?	Sign:

<b>03</b>	<b>Emergency Plan Update</b>		
1.			
Date:	Name:	Why?	Sign:
2.			
Date:	Name:	Why?	Sign:

**END OF DOCUMENT**