Fall of Warness Berth 2: Removal of Tripod Foundation – Marine Licence Extension Supporting Documentation

August 2018




Document History

Revision	Date	Description	Originated by	Reviewed by	Approved by
0.1	09/08/2018	Originate	CL		CL

Disclaimer

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1 Introduction

The European Marine Energy Centre (EMEC) Ltd acquired a tripod foundation structure from a previous developer, Tidal Generation Limited (TGL), who tested their devices, DEEP-Gen III and DEEP-Gen IV, at the Fall of Warness tidal test site. Consent was gained to install the tripod foundation in 2008 as part of the consent to deploy DEEP-GEN III, under FEPA 3642/08/0-2618. The foundation is currently installed under Marine Licence 06166/16/0 allowing the continued deposit of the infrastructure until 31st December 2019.

Last year, EMEC was granted a marine licence (06439/17/0) to remove the tripod from the site and clear the test berth ready for use for future device or equipment testing. Unfortunately, the work has not been completed within the duration of the licence and the licence expired on 1st July 2018. This document has been prepared to support an application for the extension to the duration of the licence to 1st April 2019.

The tripod has now been cut but remains at the as built location. The remaining tasks of the decommissioning work is the lifting of the tripod to shallower water for forensic testing and dismantling. The cut components will then be transported onshore for further analysis and appropriate recycling and incineration.

The purpose of this document is to provide details of the remaining removal work and indicate the timescales for the proposed works. In addition, there is a description of the infrastructure currently installed at test berth 2 at the Fall of Warness test site.

2 Infrastructure Description

The infrastructure acquired by EMEC from TGL comprises a foundation structure which is currently deployed at test berth 2 on EMEC's Fall of Warness tidal test site. The tripod structure is made from tubular carbon steel with three piled cylindrical feet grouted back to the rock sockets. The equilateral diameter of the tripod triangle on the seabed is 17.3m and the tripod stands 19m above the seabed. The tripod weighs 165 tonnes in the air.

2.1 Location

The EMEC tidal test site is located in the Fall of Warness, to the west of the island of Eday in the Orkney Islands. A description of the facility can be found on the EMEC website[1]. Figure 1 is an extract from the Admiralty Chart 2562, showing the location of the site.

[1] www.emec.org.uk

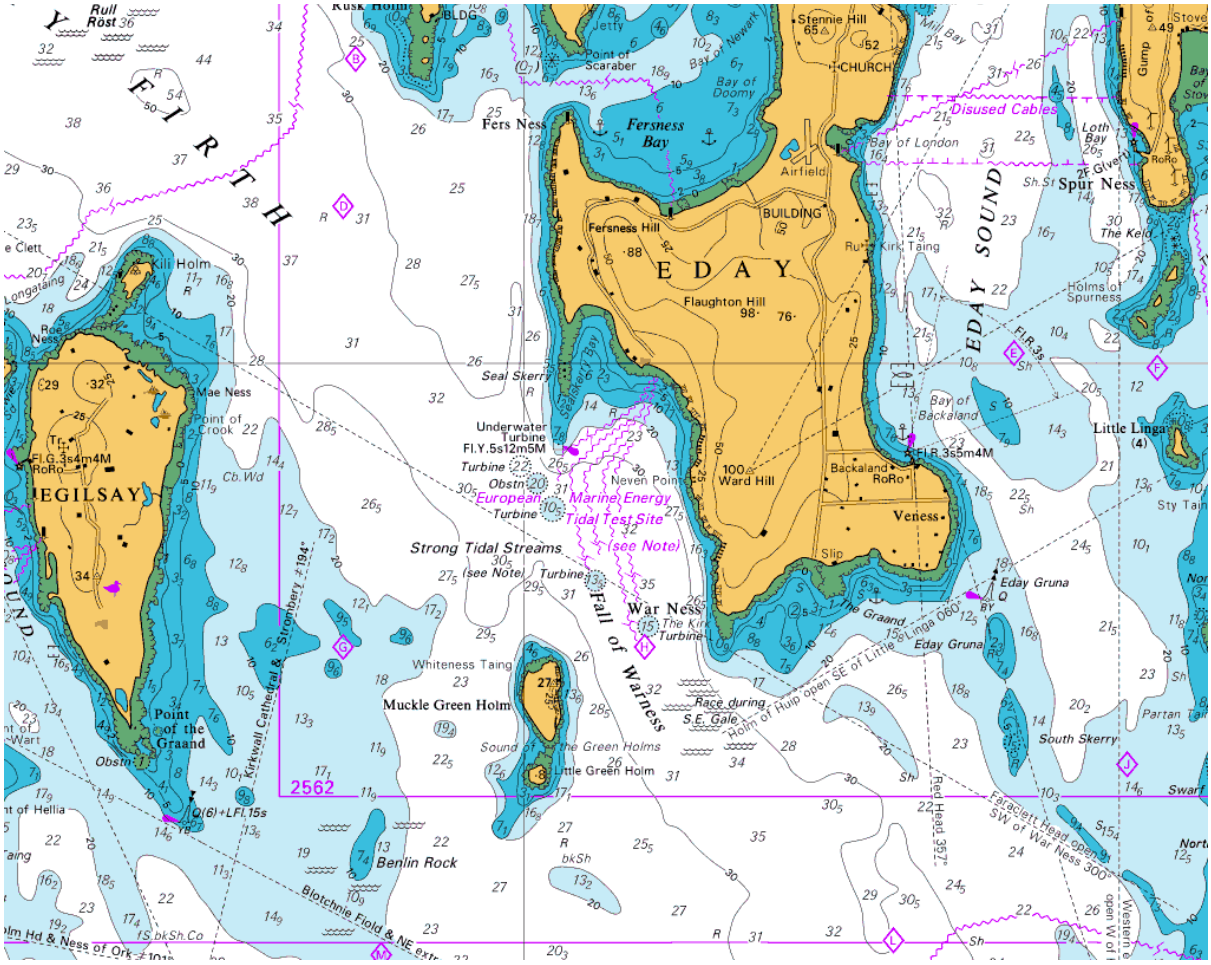

Figure 1. Part of the Admiralty Chart 2565

The tripod foundation is located within EMEC's marked and consented tidal test facility. The foundation is located at test berth 2, which is centred around 59°08.17'N, 002°48.30'W. The test berth is located at a water depth of 42.5m and in tidal speeds in excess of 3.5m/s.

The area required at berth 2, including vessel mooring spread is outlined in Table 1 below.

Table 1. Proposed licence area for removal activities at berth 2

Location	Latitude	Longitude	Easting	Northing
2A	59° 08.264'N	002° 48.571'W	510900E	6555406N
2B	59° 08.337'N	002° 48.294'W	511164E	6555542N
2C	59° 08.027'N	002° 48.325'W	511146E	6554963N
2D	59° 08.097'N	002° 48.042'W	511406E	6555099N

The piles of the tripod have now been cut, and therefore the next stage of the works is to lift the structure to a sheltered, shallower location further inshore. The boundaries of this proposed location are provided in Table 2 below.

Table 2. Proposed licence area for inshore dismantling activities at Fall of Warness

Location	Latitude	Longitude	Easting	Northing
1A	59° 09.697'N	002° 48.334'W	511118E	6558066N
1B	59° 09.673'N	002° 48.098'W	511343E	6558022N
1C	59° 09.331'N	002° 48.501'W	510961E	6557386N
1D	59° 09.304'N	002° 48.244'W	511206E	6557337N

The following figure, Figure 2, provides an overview of these two licence areas, relative to the tidal test site.

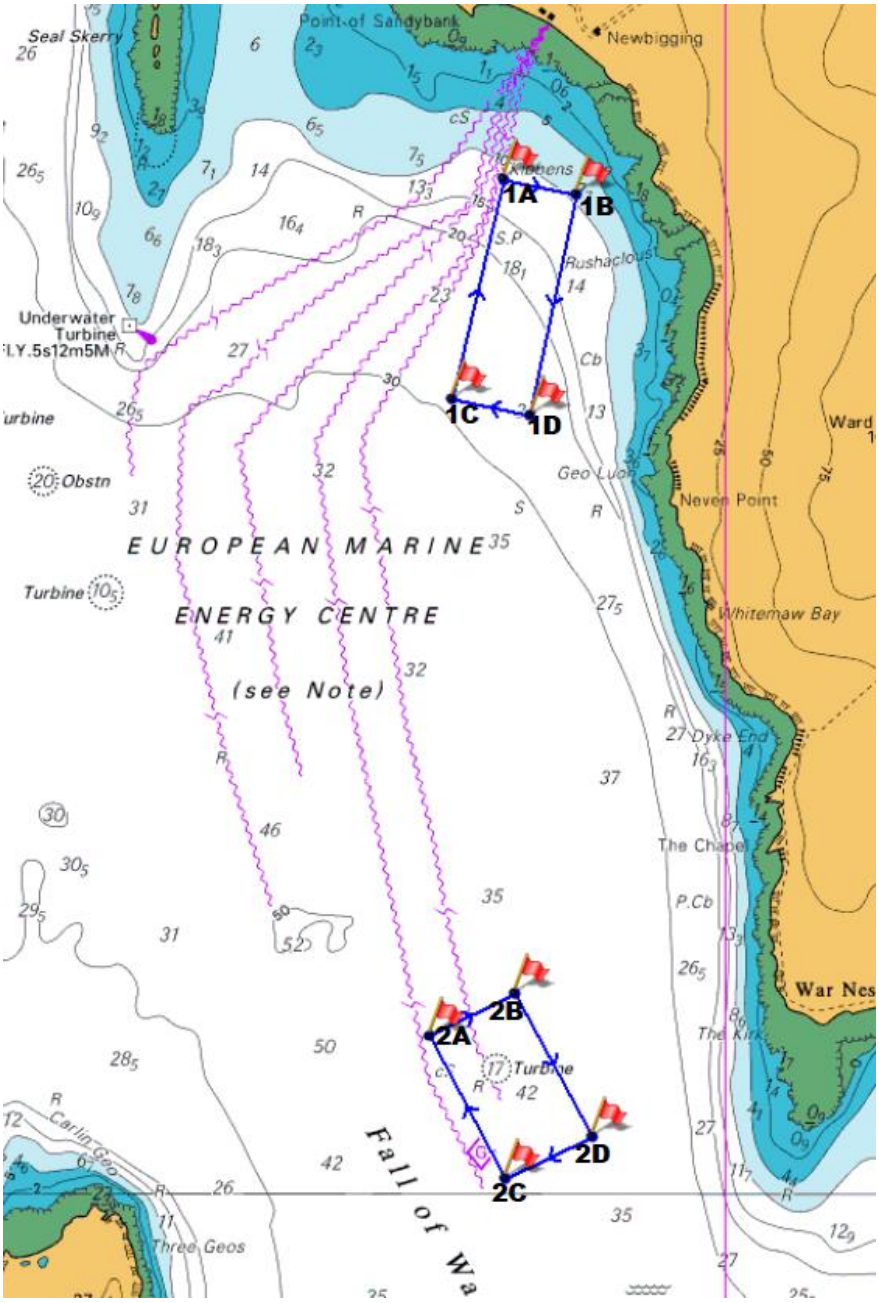

Figure 2. Proposed licence areas at Fall of Warness

In addition, it may be necessary to use EMEC's Shapinsay Sound scale tidal test site, as an area to conduct further dismantling of the tripod substructure. The area selected within the site to conduct such work will be agreed with the regulator prior to conducting the work. Table 3 provides the boundary coordinates of the scale tidal test site which is situated adjacent to Orkney Mainland, within Shapinsay Sound.

Table 3. Boundary coordinates (WGS 84) for Shapinsay Sound scale test site

Test Site	Corner 1	Corner 2	Corner 3	Corner 4
Shapinsay Sound	59° 00.45'N 002° 53.35'W	58° 59.72'N 002° 52.05'W	59° 00.20'N 002° 51.75'W	59° 00.00'N 002° 53.56'W

Figure 3 below shows the location and depth range of the test site.

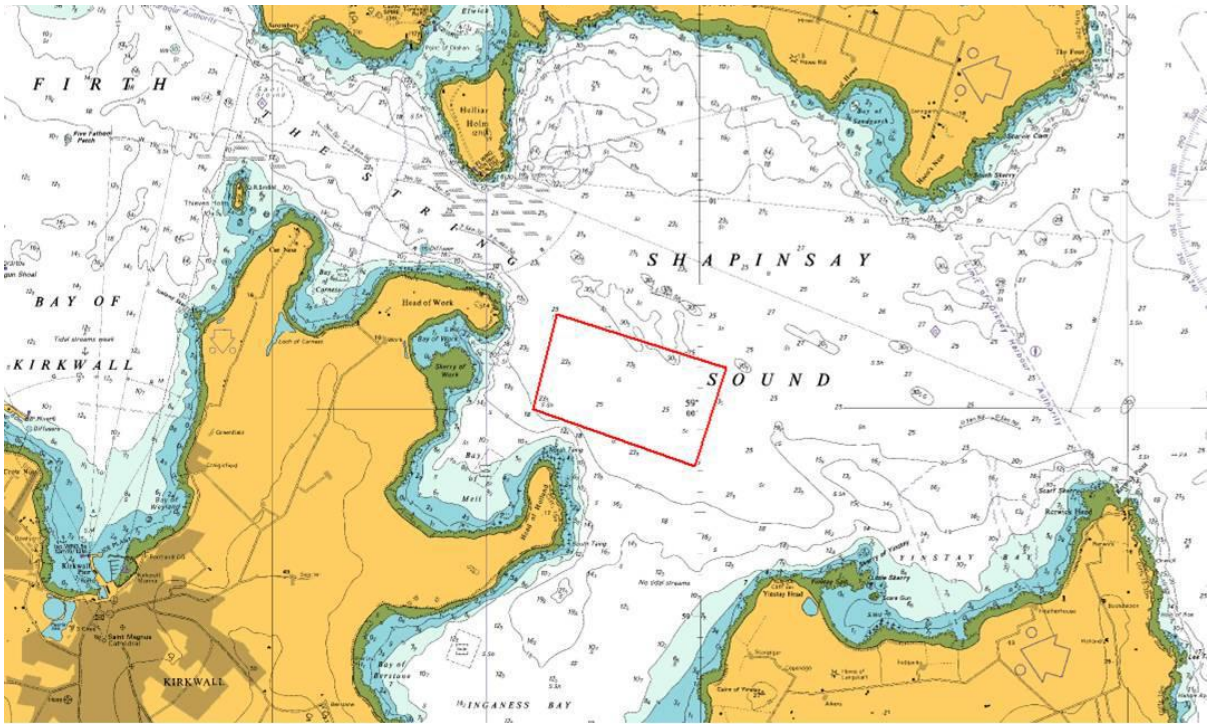

Figure 3. Crown Estate leased area for Shapinsay Sound scale test site (marked in red)

2.2 Description

In accordance with standard offshore structural practices, the foundation is of welded steel construction with an internal concrete ballast. The tripod is approximately 19m high to the hub attachment section. The structure is protected by a cathodic protection system comprising aluminium sacrificial anodes. The tripod structure was attached to the seabed at its feet by three piles grouted into rock sockets. The piles have been attached through pile attachment sleeves (i.e. the cylindrical feet at the three corners) and are less than 1.00m in diameter embedded 3.5m into the seabed.

The structure is painted with glass-reinforced epoxy paint which is yellow in colour at the top of the pile feet and at the top of the central tower. This will ensure that the infrastructure fits with IALA recommendations for above-surface marine energy devices, when it comes to removal of the structure.

The turbine structure is illustrated schematically in Figure 4, which shows the J-tube that guides the turbine umbilical to the seabed.

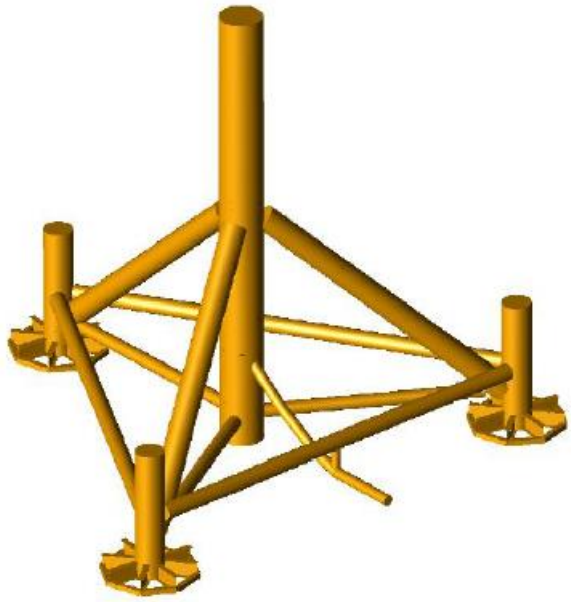

Figure 4. Tripod structure showing J-tube and rock mats

The main parameters of the support structure are provided in Table 4. The foundation structure has a seabed footprint of 129.6m^2, with gaps of exposed seabed within this area, as the foundation is not a solid base covering the seabed.

Table 4. Summary dimensions for key parameters of tripod foundation

Parameter	Dimension
Length between corners (equilateral)	17.3m
Hub centerline height above seabed	19m
Weight in air	165t

Further diagrams of the tripod structure are provided below.

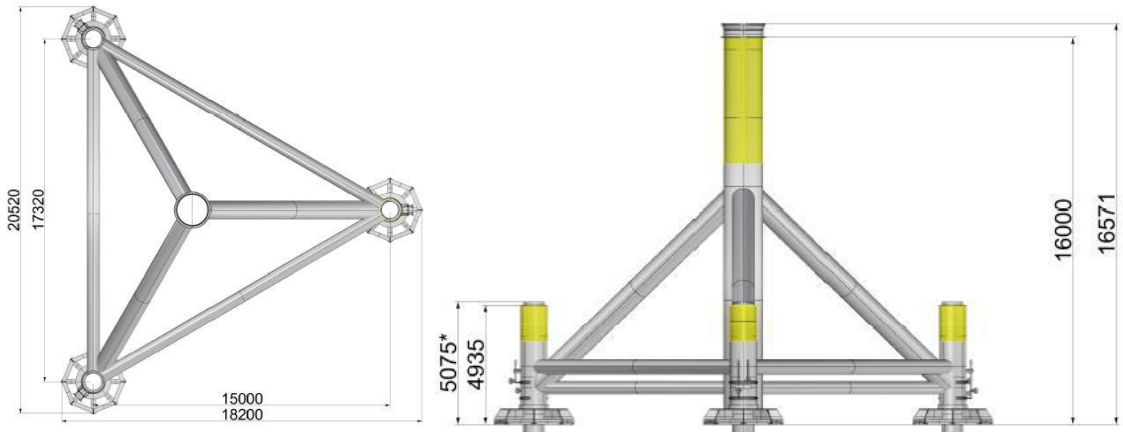

Figure 5. Plan and elevation view of the tripod

The following diagram, Figure 6, shows the key features of the tripod foundation.

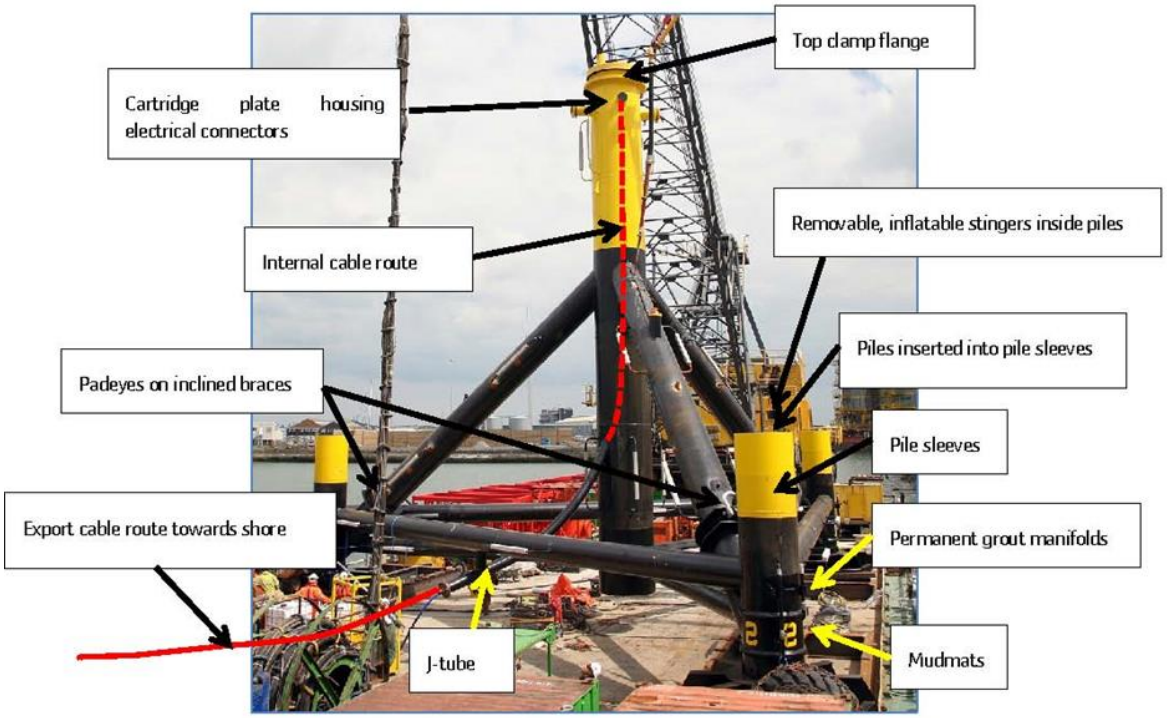

Figure 6. Tripod foundation key structures

The following diagrams provide an overview of the pile design, showing the first and second stage grouting.

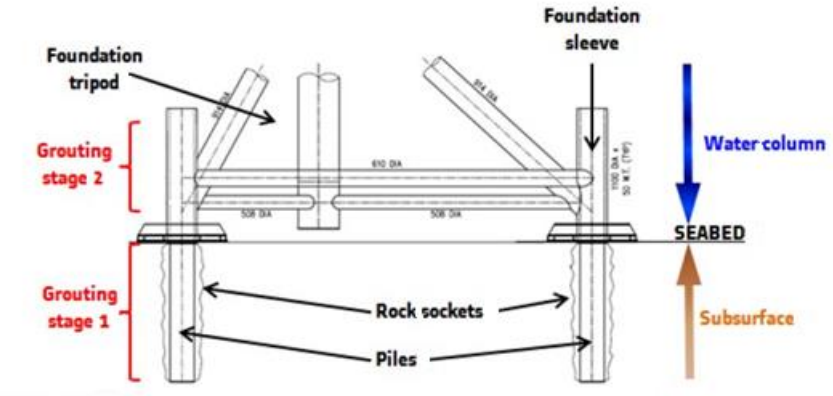

Figure 7. Pile design

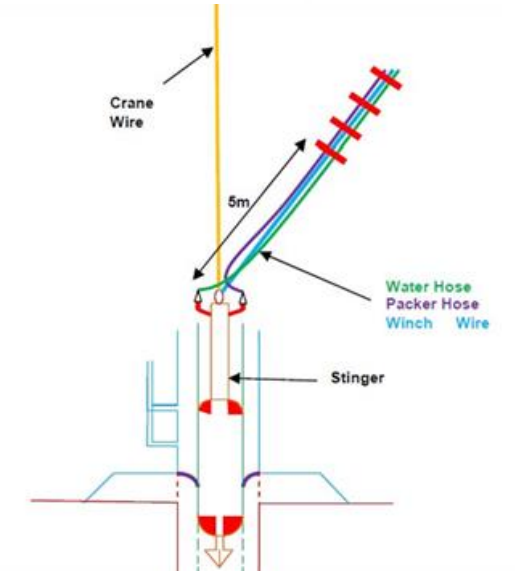

Figure 8. First stage grouting (rock socket)

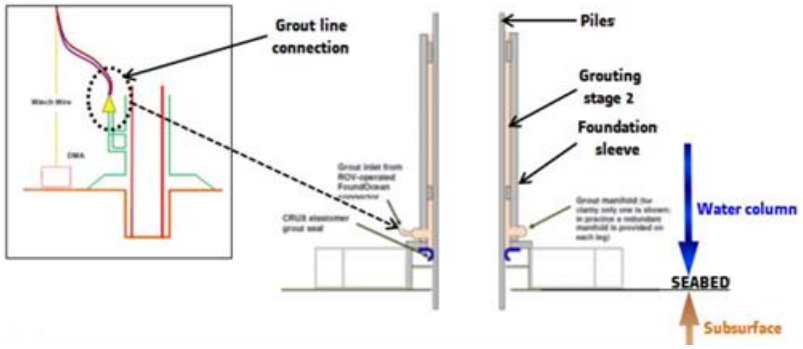

Figure 9. Second stage grouting (pile sleeve annulus)

3 Removal Works

3.1 Works to date

Over the last year progress has been made on the removal works. In order to remove the tripod structure, the pile sleeves have been cut above the rockmat, below the horizontal spar and grout pipes.

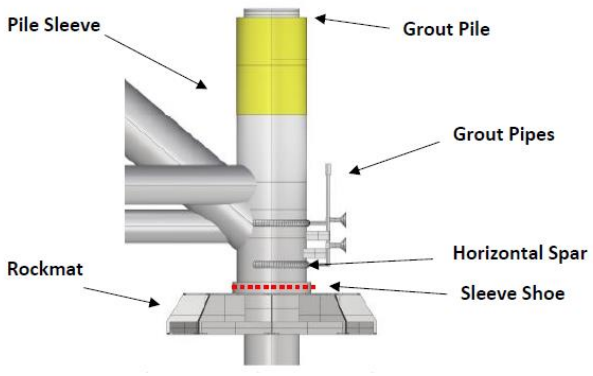

Figure 10. Pile section marked with cut location (red line)

The original proposed cutting option was to conduct an internal cut however, this was dependent on successfully removing the 3 grout delivery stingers. Due to a structural failure, it was only possible to partially remove the stingers and therefore, it was not possible to insert internal pile cutting equipment. A proportion of each stinger remains protruding inside each pile. Instead, the external cutting tool was used to cut through shaft of each stinger. An external Diamond Wire Saw (DWS) tool was used to the pile from the outside. The tool was clamped around the pile at the pre-set location and then the pile was cut.

It was only possible to locate the cut location above the rockmat. Therefore, the rockmat portion of each pile will be left on the seabed following the removal of the tripod. The maximum protrusion of the tripod remnant is 800mm however the expected protrusion is 760mm. The following diagram demonstrates the as-left portion of the tripod.

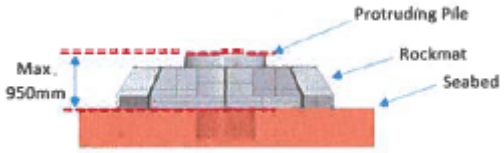

Figure 11. As-left tripod elevation view

The following diagrams provide a schematic comparison of the as-found condition compared to the as-left. The as-left condition of the tripod will pose no hazard to shipping or navigation. Bottom trawling is not carried out in the Fall of Warness and, therefore, there is not expected to be any impact on fisheries. As the seabed is comprised of exposed bedrock and large boulders, the parts of the piles that are left are expected to be now larger obstructions than those naturally found within site.

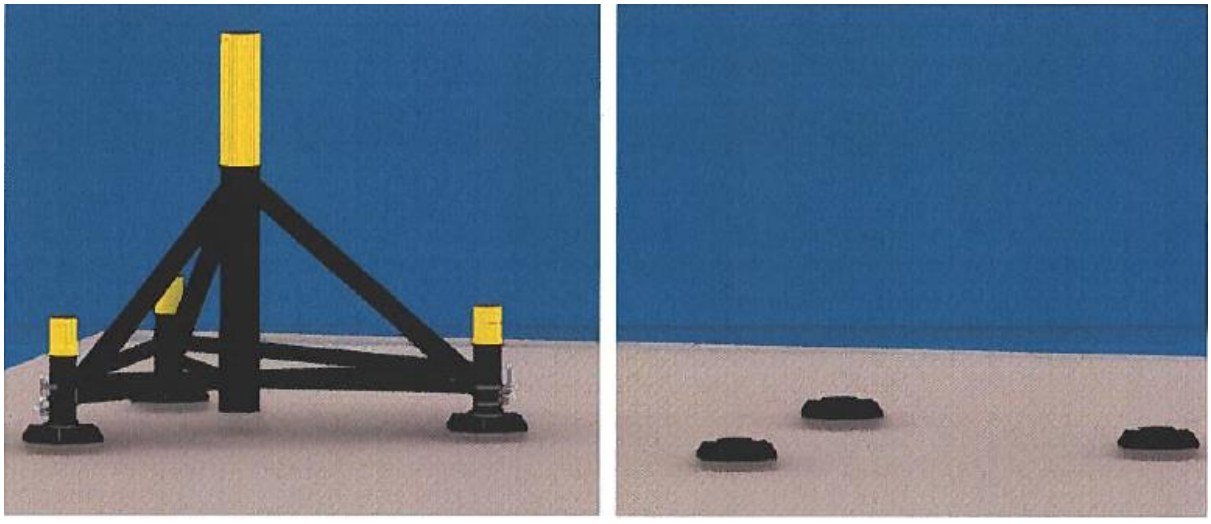

Figure 12. Comparison isometric view of the as-found and as-left condition

The cable disconnection has already been completed. The seabed cable has been cut off and an electrical test end reinstated. The cable was then placed back on the seabed in preparation for the next user.

3.2 Remaining works

The remaining works include the lifting of the tripod and inspection and dismantling works in the defined sheltered, shallow location.

The entire tripod will be lifted from its current location and transported to the sheltered location for decommissioning. The tripod will be lifted by securing a bespoke frame to the tripod, which shall house commercially rated lifting bags that will be inflated, taking a percentage of the weight of the tripod. The control of the lift, and any remaining weight, will be carried out using the winches of the attending vessel.

Prior to being cut apart for disposal, the tripod will be subjected to inspection before making it wholly or partly available for analysis and forensic testing.

The following provides a stepped breakdown of the remaining decommissioning procedure:

1. A work vessel will deploy rigging for the lift – using a bespoke lifting frame with lifting bags to reduce the total weight, and then using the vessel winches to secure the lift.
2. The foundation will be moved to a suitable sheltered, shallow water location for cutting and scrapping of the steel structures (if there is potential to reuse or recycle any of the infrastructure this will be prioritised). Note, the tripod structure will be made available for analysis when at the sheltered, shallow water location.
3. Finally, an ROV survey of the seabed condition and the cable infrastructure will be conducted.

In planning the decommissioning of the infrastructure, the presence of other installations at the site and the existing seabed cables and infrastructure will be accounted for. The EMEC survey guidelines (EMEC, 2013) will be applied during seabed clearance survey to ensure best practices for the site are maintained at all times.

3.3 Detailed method statement

A fully detailed method statement for the works is provided in the following supporting documents:

- LSK-TGL02-OP2-MS01-R01 – Tripod Lifting & Towing
- LSK-TGL02-OP3-MS01-R01 – Subsea Tripod Cutting

3.4 Reuse, recycle and disposal

EMEC are committed to the reuse, recycle and dispose hierarchy. As EMEC has already attempted to reuse the tripod to support developers coming to the site, but no interested parties have been identified.

The tripod will be made available for inspection and forensic analysis. It is also anticipated that a biofouling survey will be completed. Certain components, such as the cartridge plate, of the tripod will be recovered for further inspection, however the remainder of the tripod will be scrapped.

4 Schedule

The key milestone dates for the remaining works are outlined below in Table 5.

Table 5. Key milestone dates

Activity	Date*	Comments
Marine activity begins	T0	Due to commence mid Sept 2018
Vessel mobilisation and vessel mooring installation	+ 1 day	
Tripod cleaning	+ 1 day	Necessary to allow frame installation
Tripod frame installation	+ 1 day	
Tripod frame bag inflation	+ 1 day	
Transportation to inshore area	+ 1 day	
Vessel mooring recovery	+ 1 day	
FOLLOWING NEAPS		
ROV survey of the structure	+ 1 day	
Forensic and biofouling analysis	+ 3 days	Needs to occur as soon as possible once transportation complete – due to changes in biofouling.
FOLLOWING NEAPS		
Vessel mobilisation and vessel mooring installation	+ 1 day	
Tripod top cutting preparation and operation	+ 1 day	
Transportation to further inshore	+ 1 day	
Vessel mooring recovery	+ 1 day	
FOLLOWING NEAPS		
Cut preparation, operation, dismantling and transportation to shore	+ 5 days	
FOLLOWING NEAPS		
Final seabed survey of berth 2 and selected inshore cutting area	+ 1 day	Drop camera survey

** works may not be undertaken over consecutive days*

Due to the high cost of working in the marine environment, the method statement for this work has been developed to reduce the amount of subsea time as possible, whilst ensuring works remain safe. The work will be undertaken in phases. The inshore area at the Fall of Warness has been selected to provide dive teams the longest and safest possible working period. The seabed at berth 2 and at the selected inshore area will be surveyed on completion of works to ensure all debris has been removed from the area.

5 Environmental Receptors

The environmental conditions at the Fall of Warness tidal test site have been described in an Environmental Statement prepared by Aurora in 2005 (Aurora, 2005), as well as an Environmental Description of the site (Aurora, 2004).

5.1 Seabed conditions

The Fall of Warness test area is known to be a region of exposed bedrock, confirmed by surveys and core sampling conducted by TGL in 2007. ROV footage of the test berth was

gathered during the TGL installation and operation phases between 2009 and 2012. EMEC surveys imply that the seabed ranges from eroding sublittoral sandbanks in the east to smooth, scoured bedrock ridges and platforms with occasional boulders towards the centre of the test site.

In May 2008, pre-installation ROV surveys of the foundation site and surrounding area were carried out. Around test berth 2, the seabed is predominantly bedrock and mostly devoid of mobile sediments. Sublittorial areas are sparsely inhabited. These observations were confirmed during regular ROV surveys during turbine operation in the period 2009 – 2014.

5.2 Environmental conditions

The Fall of Warness is shown on Admiralty Chart 2240 which identifies the tidal range (~3.0m MSR) and tidal flows (up to 3.7m/s). The tidal channel runs roughly NW-SE from the Westray Firth out to the Stronsay Firth. The channel can be exposed to winds and swells from either of these directions but is generally better protected from wind from other directions.

From the test site's conception, detailed metocean data have been gathered for the site and TGL collected tripod site-specific data using an ADCP. Further information regarding the metocean and geophysical conditions at the test berth are available (EMEC, 2015).

5.3 Acoustic Output

In the sheltered area, it is proposed to use BR-22 underwater Broco cutter. The cutting device is surface fed with oxygen and uses a 9mm diameter and 46mm long exothermic cutting rod. This cutting method has previously been used for decommissioning activities at the site. In 2013, a study by Alliance Consulting International was conducted on the sound intensity of a similar cutting device onshore. During the study, it was found that at a distance of 0.6 metres the sound intensity from the cutting device was 80dBA for the majority of the length of the rod, however towards the end of the rod the sound intensity peaked at 92dBA.

Due to the cutting rod requiring to be changed out frequently, the sound produced from the cutting device will not be continuous. It is expected that the cutting rod will last approximately 1 minute.

During the proposed work, the period with greatest acoustic output is anticipated to be during the inshore dismantling works when the Broco cutter is being used. The area outlined to conduct this work is predicted to have higher harbour and grey seal densities due to its close proximity to the Seal Skerry, a designated seal haul out site. The results from the Alliance Consulting International study would suggest that the impact to the seal populations should be minimized to localised behavioural impacts and no harm or injury should be caused. There is no proposed monitoring associated with the potential acoustic output from the works.

6 Environmental Assessment

An environmental appraisal of the test site has been conducted by Scottish Natural Heritage to assess the potential environmental impacts arising from the operation of the site (EMEC, 2014). The environmental appraisal and project envelope for site operation are available online[2].

[2] www.gov.scot/Topics/marine/Licensing/marine/scoping/EMEC/Fall-of-Warness

6.1 Environmental monitoring

An Environmental Monitoring Plan (EMP) was developed by TGL in consultation with Marine Scotland and Scottish Natural Heritage (TGL, 2012). The contents of the environmental appraisal for the site and the original EMP have been taken into account when developing mitigation and monitoring measures for the removal works. Table 6 outlines the mitigation and monitoring measures that EMEC and its contractors commits to complying with whilst conducting the removal works onsite.

Table 6. Proposed mitigation and monitoring measures

Measure summary	Description
During all vessel movements to and from site, a minimum approach distance will be adhered to when passing designated seal haul-outs.	A distance of greater than 500m from any designated seal haul-out site (see Figure 13) will be maintained. Such an exclusion zone around haul-out site will be maintained unless personnel or vessel safety does not permit.
	The sensitive periods for both grey and harbour seals will be considered when planning maintenance work. The sensitive period for grey seals is understood to be between September and December whereas, for harbour seals, it is late May to August.
During all works onsite and vessel movements to and from site, the relevant measures within the Scottish Marine Wildlife Watching Code (SMWWC) will be adhered to.	Vessel speeds will be reduced to 6 knots when marine mammals or birds are sighted within or near transit routes, where personnel or navigational safety is not compromised.
	In the event of a marine mammal approaching a vessel associated with the works, the course of the vessel will be maintained at a steady speed.
	Particularly care will be taken to ensure groups and mothers and young are not disturbed/split.
	As stated in the SMWWC, minimum approach distances for vessels will be adhered to.
	Sudden changes in speed, duration and engine noise will be avoided to reduce any disturbance to marine mammals in the vicinity.
	Rafts of birds will not be intentionally flushed.
	If maintenance activity is undertaken during the seabird breeding season (likely to be between April and August), a vessel transit corridor of at least 50m from the shoreline will be maintained.

All the above proposed mitigation and monitoring measures will be adhered to throughout the deployment duration and any necessary changes will be agreed with Marine Scotland in advance. If there are any unexpected deviations from the proposed monitoring measures, these will be reported on no later than four weeks from the event.

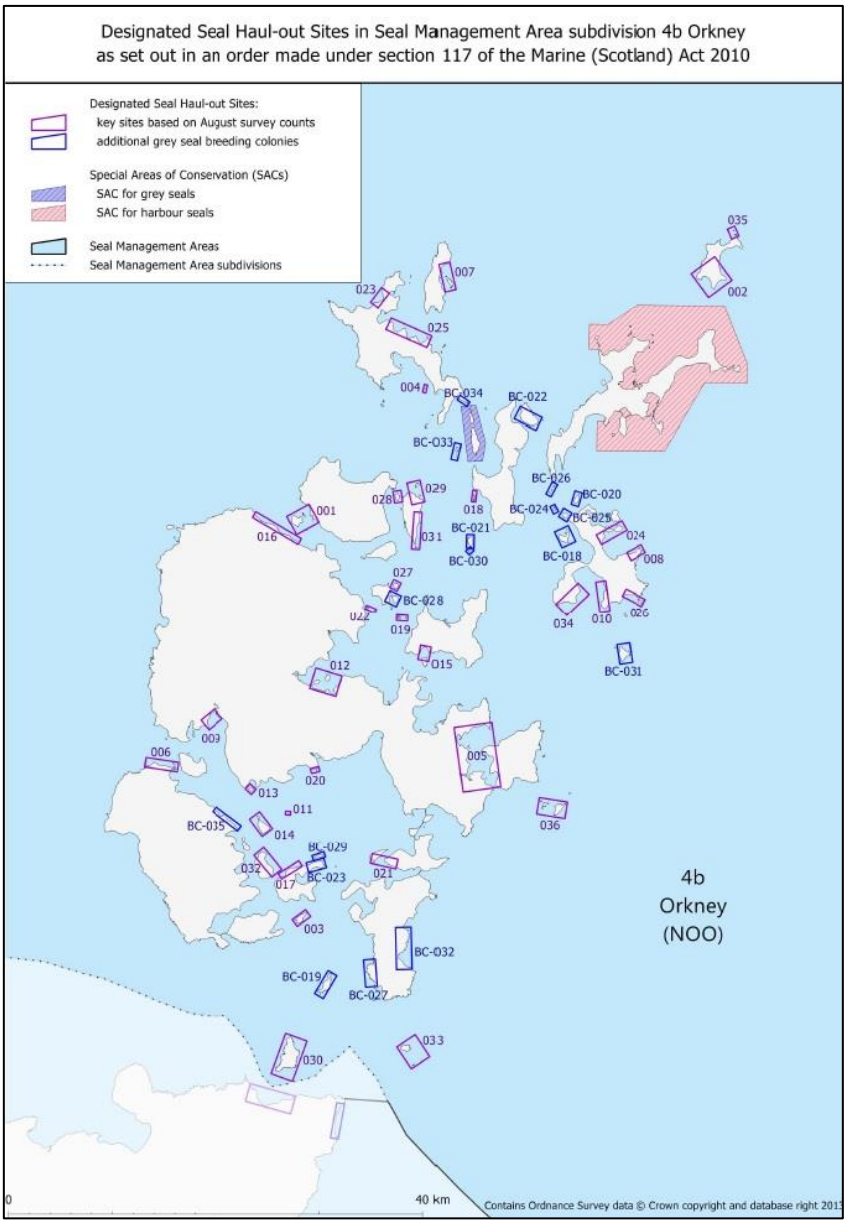

Figure 13. Designated seal haul-out sites in Seal Management Area subdivision 4b Orkney as set out in an order made under section 117 of the Marine (Scotland) Act 2010

7 Navigational Risk Assessment

A Navigational Risk Assessment of the Fall of Warness test site (Anatec, 2010) has already been conducted. This NRA was undertaken in accordance with General Guidance Notice MGN 275, now replaced by MGN 371 (M+F) - Offshore Renewable Energy Installation (OREI): Guidance on UK Navigational Safety and Emergency Response Issues.

The structure is painted with glass-reinforced epoxy paint, which is yellow in colour to ensure that it fits with IALA recommendations for above-surface marine energy devices, when it comes to removal of the structure.

7.1 Shipping and fishing activity/other users

The findings of the NRA (Anatec, 2010) demonstrated that the vessel traffic in the Fall of Warness consisted of the following significant groups:

- fishing vessels on passage to/from fishing grounds;
- cruise vessels on passage;
- inter-island ferries; and
- local fishing activity (creeling).

Leisure users were identified as using the area, but not on an identifiable regular basis.

The vessels which pass through the Fall of Warness area are mostly cruise liners and pelagic fishing boats. Ferries also use a number of routes through the Fall of Warness during periods of strong flood and easterly gales. The tidal test site is located within a chartered area to be avoided by vessels larger than 5000 grt.

Although creel fishermen do work within the Fall of Warness area, their operations are usually restricted to within the 30m contour. Test berth 2 is in 43m of water and is therefore considered to be beyond their normal areas of operation. However, as the majority of the dismantling work is expected to be conducted in the identified inshore area at the Fall of Warness, there is the potential for spatial overlap with creel fishing activities. It is proposed to issue a Notice to Mariners 2 weeks prior to the remaining operations commencing. This should ensure that all other users in the area, are aware of the extent of activities and temporary nature of the works.

7.2 Assessment

Given the highest point of the foundation structure is 19m from the seabed, it is expected that a clearance of greater than 20m will be maintained. It is therefore not, in normal circumstances, expected to present a potential hazard to vessels traversing the Fall of Warness.

The activities associated with the removal works may, however, increase the risk of vessels undertaking passage or other activities in the waters. Table 7 presents the potential navigational risks and proposed mitigation measures.

Table 7. Navigational risks and associated mitigation measure

Summary of navigational risk	Description and associated mitigation measures
Vessel collision with infrastructure	Under the EMEC NRA (Anatec 2010), it was recommended that bottom sited devices posed less risk of collision than mid-water column or floating devices. Vessel operators will be driven due warning of all works associated with the infrastructure removal including issuing of Notice to Mariners, including details of vessels involved, duration and location of works.
Failure of the infrastructure	The structural components to be lifted are not buoyant and, therefore, any failure in the structure or lifting operation would result in the structure remaining on the seabed. The vessel winches can support the whole weight of the tripod, so any failure of the lift bags during either mid lift or transport will not result in the dropping of the tripod onto the seabed.
Removal works	All activities associated with the removal works will be undertaken in appropriate and suitable environmental conditions e.g. slack water and low sea states. The inter-island ferries would be highly unlikely to be using the adverse weather/tide routes in the conditions in which removal works would be taking place. In addition, the coincidental presence of transiting vessels, given the traffic levels at the site, is also unlikely. However, if this occurred, there would continue to be adequate navigable waters within the channel for passage to be unimpeded.
Fishing activity	Creel fishermen operate within the Fall of Warness, usually within the 15m contour but occasionally out to the 30m contour. The initial removal works will be undertaken in water depths of 43m which is considered to be outwith their normal areas of operation. As identified in the EMEC NRA, the inshore area situated to the south of Seal Skerry, has been identified as the normal area of operation for creel fisheries at the Fall of Warness. The inshore dismantling area, outlined in Table 2, has the potential to spatially overlap with this area. EMEC and their selected marine contractor, Leask Marine, plan to employ the following mitigation measures to reduce any potential impact: early issuing of Notice to Mariners (at least 2 weeks prior to activities commencing) and individually discussing the works with the creel fisheries in the area, to ensure they are aware of the planned works and their associated schedule.
Effects of tide and tidal stream	Orkney Ferries' inter-island ferry services utilise the Fall of Warness but only in those circumstances where combinations of tidal stream and wind give rise to areas of water which the ferries wish to avoid. The conditions in which work will be conducted should reduce the risk of ferries using the water body for transiting whilst works are ongoing. However, Notice to Mariners will be issued prior to all work onsite to ensure sufficient notice is provided for the vessel operators to plan a safe route around the area of work.

Summary of navigational risk	Description and associated mitigation measures
Aids to navigation	The use of buoys to mark the site of the infrastructure in accordance with IALA O-131 is considered impracticable given the tidal characteristics of test berth 2. However, the current location of the infrastructure, at test berth 2, is appropriately marked on charts in order to provide mariners with navigational information with regard to the reduction in depth and obstruction present. As the tidal flow rates are less at inshore dismantling areas, it is proposed that surface buoys will be used to mark the location of the infrastructure. The characteristics of the surface buoys will be provided in the Notice to Mariners to ensure all other sea users are aware of the hazard.
Charting	Information regarding the status on the test berth will be provided to the UK Hydrographic Office once removal works have been completed to allow navigation charts to be updated. Whilst works are ongoing the tripod structure will be marked as an 'Underwater Installation, depth known', in line with Admiralty Chart 5011 – Symbols and abbreviations used on Admiralty Charts. The symbol will be accompanied by an appropriate legend e.g. tidal turbine structure.

7.3 Hazard Identification and Risk Assessment (HIRA)

A Hazard Identification and Risk Assessment (HIRA) was conducted as part of the EMEC Tidal Test Site NRA (Anatec, 2010). This HIRA identified the hazards and necessary controls associated with the test site infrastructure and the range of devices considered likely to be deployed at the test site. HIRAs will be conducted at appropriate points along the work schedule to ensure all contractors involved are aware of the plan of work and course of action to be taken in an unforeseen event.

8 References

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Appendix A: Vessel Mooring Specifications

Introduction

Leask Marine will be deploying a total of four moorings on each of the allocated decommissioning sites at the Fall of Warness. The moorings will be located as required but not exceeding the boundaries allocated. The moorings will only be deployed on the offshore site during neap tidal periods. Each mooring specification is described and displayed below. During the inshore decommissioning, a single mooring will remain onsite, this will be a visual marker informing other sea users of the shallow hazard.

Mooring Specification

Each mooring will be composed of a chain clump (24T) with Hammerlock connection. This will be connected to 10 meters 36 mm stud link chain with an additional Hammerlock connection to 30 meter 38mm wire riser. A 17Tt safety shackle will attach the 750kg subsea marker buoy (yellow) (YF.4). A diagram of this is provided in Figure 14.

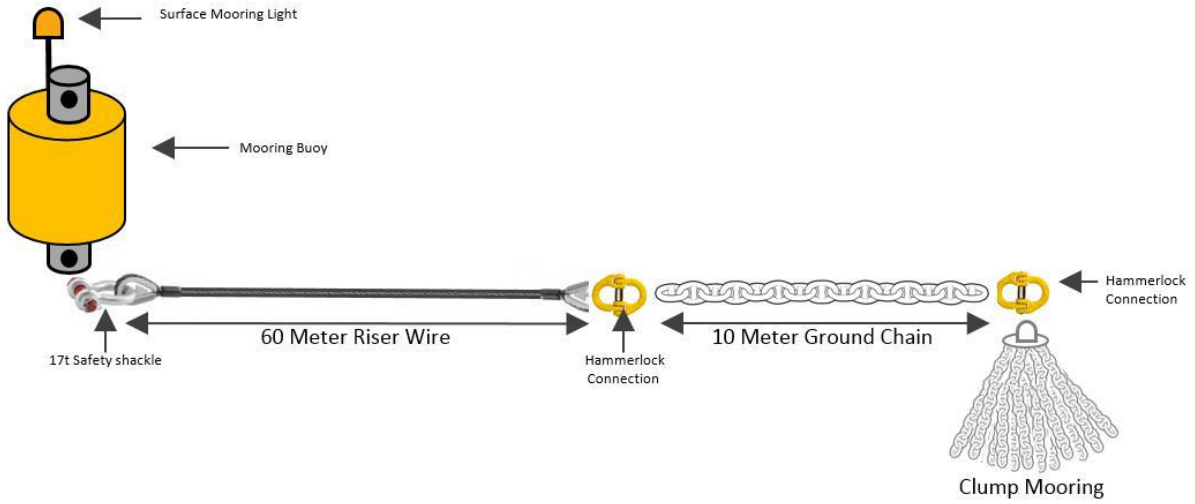

Figure 14. Single mooring specification

The mooring lines will connect the vessel to the mooring buoy. The mooring lines are composed of 220meters of 48mm Euro steel. There are four mooring lines in total.

Appendix B: Vessel Management Plan

Leask Marine have been selected as the marine contractor for conducted the work, after EMEC undertook a comprehensive procurement process. As Leask Marine are a local Orcadian company with extensive experience in marine operations, their knowledge of the test site should prove invaluable for this work. Leask Marine will require to produce detail procedures and method statements for the work, and undertaken appropriate HIRAs. It is anticipated that Leask Marine newest addition to the fleet, the multicat C-Fenna, will undertake the majority of the work. However, other vessels from Leask Marine fleet may also be required.

Table 8 below provides a summary of all potential vessels that could be involved in the works.

Table 8. Vessel specifications

Name of Vessel or Vehicle Registration	Operator	Type(s)
MV C-Fenna (IMO No. 9675963)	Leask Marine Ltd	Neptune Eurocarrier 2611
MV C-Odyssey (IMO No. 9636307)	Leask Marine Ltd	Multiworker Twenty6
MV Uskmoor	Leask Marine Ltd	Workboat
MV Challenge	Leask Marine Ltd	Landing Craft
MV Sunrise	Leask Marine Ltd	Workboat
MV Explorer	Leask Marine Ltd	Ferryman FRM720 Workboat (RHIB)

To ensure vessel traffic to and from site and onsite is kept to a minimum, vessel movements will only be made if necessary. It is only expected that there will be one transit to and from site per day by the multicat vessel. Smaller vessels may be required to undertake additional movements to facilitate crew transfer.

All vessels that will be involved in the works will comply with the International Regulations for Preventing Collisions at Sea (COLREGS). Note, Notices to Mariners will be issued stating all vessels involved in each set of works.

European Marine Energy Centre (EMEC) Ltd
Old Academy Business Centre, Back Road, Stromness, ORKNEY, KW16 3AW
Tel: 01856 852060 **Fax:** 01856 852068
Email: info@emec.org.uk **Web:** www.emec.org.uk
Registered in Scotland no.SC249331 VAT Registration Number: GB 828 8550 90