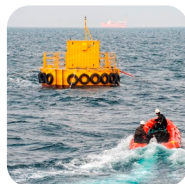


# OpenHydro Platform Decommissioning programme

May 2023



## Document History

Revision	Date	Description	Originated by	Reviewed by	Approved by
0.1	04/04/2023	Draft	AS (EMEC)	DL (EMEC)	DL (EMEC)
1	26/05/2023	Final	AS (EMEC)	DL (EMEC)	DL (EMEC)
2	13/06/2023	Revision	AS (EMEC)	DL (EMEC)	DL (EMEC)
3	26/07/2023	Final	AS (EMEC)	DL (EMEC)	DL (EMEC)

## Disclaimer

In no event will the European Marine Energy Centre Ltd or its employees or agents, be liable to you or anyone else for any decision made or action taken in reliance on the information in this report or for any consequential, special or similar damages, even if advised of the possibility of such damages. While we have made every attempt to ensure that the information contained in the report has been obtained from reliable sources, neither the authors nor the European Marine Energy Centre Ltd accept any responsibility for and exclude all liability for damages and loss in connection with the use of the information or expressions of opinion that are contained in this report, including but not limited to any errors, inaccuracies, omissions and misleading or defamatory statements, whether direct or indirect or consequential. Whilst we believe the contents to be true and accurate as at the date of writing, we can give no assurances or warranty regarding the accuracy, currency or applicability of any of the content in relation to specific situations or particular circumstances.

## Contents

1	Introduction	1
2	Background Information	1
2.1	Device Location	1
2.2	Type and status of any other adjacent facilities	2
2.3	Layout of the facilities to be decommissioned	2
2.4	Site conditions	2
2.4.1	Prevailing weather	2
2.4.2	Sea water temperatures	2
2.4.3	Seascape	2
2.4.4	Currents	3
2.4.5	Seabed conditions	3
2.4.6	Water depths	3
2.5	Navigational activity	3
2.5.1	Shipping activity	3
2.5.2	Fishing vessel activity	3
2.5.3	Recreational vessel activity	3
2.6	Conservation areas	3
3	Scope of decommissioning scheme	4
3.1	Introduction	4
3.2	Methodology for removal	4
3.3	Health and safety considerations	5
3.3.1	Health, Safety, and Environment (HSE)	5
3.3.2	Quality Control (QC)	5
3.3.3	Worksite changes to approved procedure	5
3.4	Proposed waste management solutions	6
4	Environmental Impact Assessment	6
5	Vessel management plan	6
6	Costs	6
7	Financial security	7
8	Schedule	7
9	Seabed Clearance	7
10	Restoration of the site	7
11	Post-decommissioning monitoring, maintenance and management of the site	7

## List of Figures

Figure 1. OpenHydro platform location ..... 1

## List of Tables

Table 1. Location of OpenHydro platform ..... 1  
Table 2. Protected areas in the surroundings of Fall of Warness test site..... 4  
Table 3. Proposed schedule of decommissioning ..... 7

# 1 Introduction

This decommissioning programme covers the removal of the OpenHydro platform, positioned on Berth 4 at the Fall of Warness (FoW) tidal test site, Eday.

# 2 Background Information

## 2.1 Device Location

The platform is in position at the EMEC FoW test site, off the island of Eday, Orkney, in Berth 4.

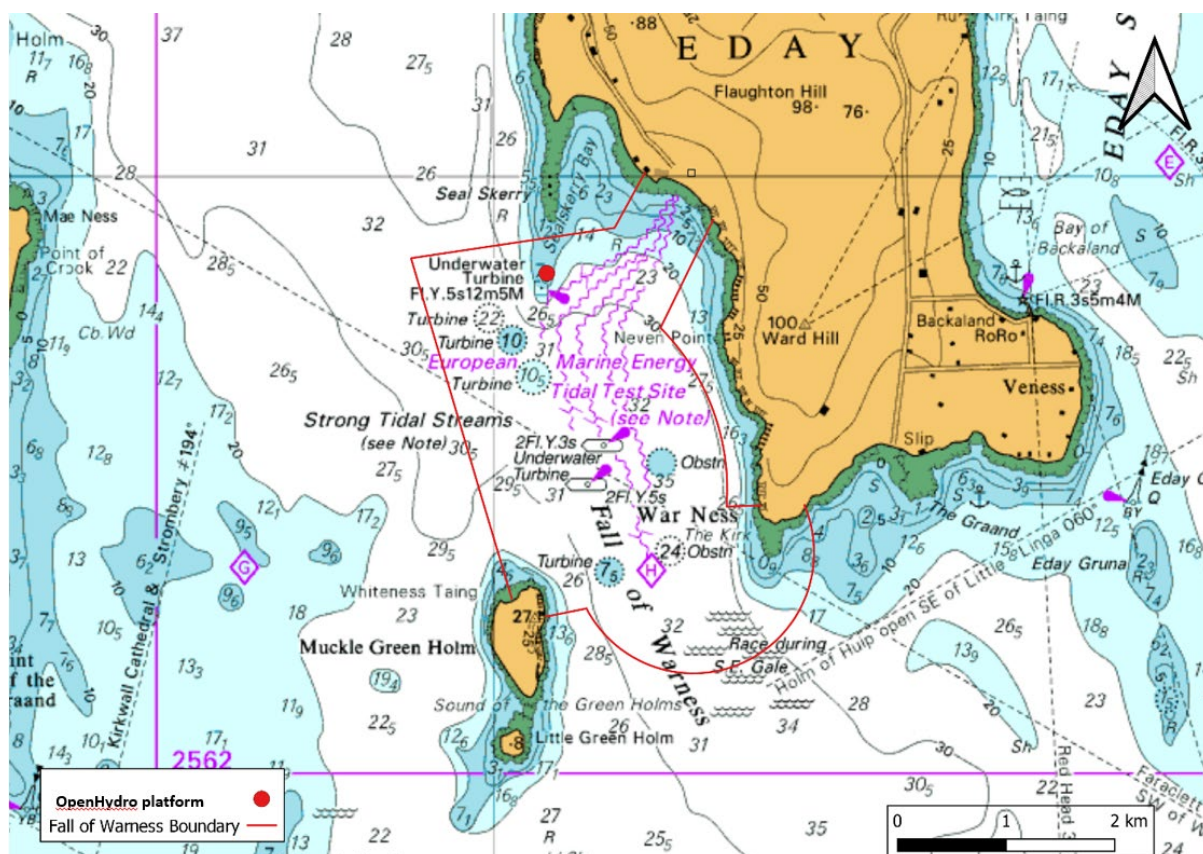


Figure 1. OpenHydro platform location

Location Description	Latitude (WGS 84)	Longitude (WGS 84)
OpenHydro platform	59°09.433'N	002°49.549'W
Test site boundary points (starting from the top west corner and going clockwise)	59°09.590'N	002°50.801'W
	59°09.740'N	002°48.840'W
	59°10.010'N	002°48.550'W
	59°08.370'N	002°47.010'W
	59°07.566'N	002°47.738'W
	59°07.860'N	002°49.110'W
	59°07.910'N	002°49.830'W

Table 1. Location of OpenHydro platform

## 2.2 Type and status of any other adjacent facilities

During decommissioning, any facilities adjacent to the berth will need to be taken into consideration. As the EMEC test site is available for use by other developers, other installations on the site and EMEC-owned infrastructure, must be considered during decommissioning activities. All operations at EMEC's test site must comply with EMEC's Standard Operating Procedures, Emergency Operating Procedures and Health, Safety and Environment requirements. Before activities begin, there should be a review of other planned work due to be carried out at the site with potential to coincide with the decommissioning works. Site access permits will only be issued if the site is safe for the intended work or may be issued subject to a set of conditions.

The relative proximity of the development to other devices and berths at the site will be considered when updating the decommissioning methodology closer to the time of decommissioning.

## 2.3 Layout of the facilities to be decommissioned

The OpenHydro turbine was removed from the platform at the end of 2022 for maintenance due to health and safety concerns. Once removed, it was deemed that the turbine was not in a good enough condition to be reattached to the platform.

The OpenHydro platform itself has been deemed safe enough to remain in place; however, if no further use can be found for it the whole platform will be decommissioned under consent of this application.

The OpenHydro platform consists of two steel piles grouted into sockets drilled into the seabed, with a platform suspended from the piles to provide a working area. During installation, the piles were filled up to a certain level with left over concrete / grout from the pile socket grouting operation.

## 2.4 Site conditions

### 2.4.1 Prevailing weather

Strong winds and gales are very common in Orkney, predominately from the west to the southeast. In the spring and early summer there is a marked increase in the frequency of easterly winds, and in May south-easterly winds are more frequent than winds from any other direction.

### 2.4.2 Sea water temperatures

Pursuant to sea surface temperatures collected by EMEC from various sources around Orkney and other sources of sea temperature data available from Marine Scotland, satellite, modelled data and The Crown Estate, among others, it can be concluded that temperature ranges from 6.5 °C to 13.5 °C in an annual cycle, with maximum temperatures recorded around August and September and minimum temperatures around February.

### 2.4.3 Seascape

Most of the Orkney Islands are composed of sedimentary rocks of Devonian age (410 - 360 million before present) and are predominantly Middle and Upper Old Red Sandstone. There are older metamorphic rocks and younger dykes in some places. The nature of the rock and the glacial features help to determine the present-day landscape of the coast.

Whilst the west coast of Orkney is particularly renowned for cliffs, arches, stacks and geos, the lower lying coastal features likely to be found in the vicinity of Scapa Flow (such as tilted flags, sand dunes and sandy bays) are considered important for recreation and accessibility. The coastlines also contain sites of built and natural heritage interest; prehistoric remains are characteristic features, and the cliffs and adjacent heaths are key seabird nesting sites.

#### **2.4.4 Currents**

The Fall of Warness area is subject to strong tidal streams, with peak spring tide speeds in excess of 3.5 m/s.

#### **2.4.5 Seabed conditions**

The swathe bathymetry, geophysical, ROV and dive surveys undertaken by Aquatera (Aquatera 2005) reveal that bedrock is exposed throughout most of the test bay area, with occasional boulders but is swept of any potentially mobile sands or gravels.

#### **2.4.6 Water depths**

The chart depth readings decrease steadily from 1 m at the coast to between 34 and 51 m in the main channel where the tidal devices are usually deployed.

### **2.5 Navigational activity**

#### **2.5.1 Shipping activity**

The Fall of Warness test site has been established since 2006 and its selection was made based on the local traffic features. In addition, its boundaries are defined on navigational charts; this allows vessels to plan their passage taking into account the test site. In fact, local vessels in the area, such as inter-island ferries, have good awareness of the test site location.

#### **2.5.2 Fishing vessel activity**

Fishing vessel traffic within the test site is occasional throughout the year and mainly transiting NW-SE between the Westray Firth and Stronsay Firth. Fall of Warness is a transit route for pelagic trawlers enroute to and from fishing grounds, e.g., West of Shetland.

The most common gear type was pots/creels. Creelers operating off Eday tend to be small craft of typically less than 12 metres in length and draughts below 3 m. Demersal trawlers were the next most common type.

#### **2.5.3 Recreational vessel activity**

Fall of Warness test site is located within the general sailing area around Orkney. There are no cruising routes passing through the test site, although there are two light-use cruising routes with most recreational craft transit to the west of the site between Kirkwall and Westray or to the south-east between Kirkwall and the north-western islands

Recreational boating, both under sail and power is highly seasonal and highly diurnal. Nevertheless, due to the strong tides, the Fall of Warness area is not popular with recreational users; in fact, nautical almanacs and sailing directions recommended small recreational vessels avoid the area in general.

### **2.6 Conservation areas**

It is worth mentioning that within the boundaries of Fall of Warness test site, no area is catalogued as Special Area of Conservation (SAC) under the Habitats Directive, or as Special



Protection Area (SPA) under the Birds Directive. Nevertheless, there are protected sites in the surroundings, listed in Table 2.

Site Code	Site Name	Designation	Distance from FoW	Qualifying interest
8254	Faray and Holm of Faray	SAC	15	Grey seal ( <i>Halichoerus grypus</i> )
1683	Faray and Holm of Faray	SSSI		
8372	Sanday	SAC	4	Harbour seal ( <i>Phoca vitulina</i> ), intertidal mudflats and sandflats, reefs and subtidal sandbanks.
1205	Muckle and Little Green Holm	SSSI	0 (immediately adjacent)	Grey seal ( <i>H. grypus</i> )
10481	North Orkney	SPA	0 (immediately adjacent)	Red-throated diver ( <i>Gavia stellata</i> ), common eider ( <i>Somateria mollissima</i> ), European shag ( <i>Phalacrocorax aristotelis</i> ), Great northern diver ( <i>Gavia immer</i> ), long-tailed duck ( <i>Clangula hyemalis</i> ), Red-breasted merganser ( <i>Mergus serrator</i> ), Slavonian grebe ( <i>Podiceps auratus</i> ) and velvet scoter ( <i>Melanitta fusca</i> ).

Table 2. Protected areas in the surroundings of Fall of Warness test site

## 3 Scope of decommissioning scheme

### 3.1 Introduction

This section aims to describe the measures to be taken for decommissioning the OpenHydro platform.

### 3.2 Methodology for removal

It is expected a multi-cat will be utilised as the decommissioning vessel along with a safety vessel which will act as a guard vessel.

The EMEC subsea cable will be disconnected and returned to its original pre-project state on the seabed at Berth 4.

After a topside inspection, the OpenHydro platform, and any material currently stored on the platform, will be removed in a safe sequence by cutting and removing sections up to the waterline, stowing each cut section on board the decommissioning vessel. When cutting the platform from the piles, the platform will be held in place by a crane from the decommissioning vessel. Personnel will perform the topside cutting from the crane basket and platform. Rigging personnel will stand clear of the lift areas at such times as the sections are being recovered onto the decommissioning vessel. The safety vessel will be deployed with recovery capability for personnel and equipment if required.



A lifting eye will then be welded to the top of each of the two piles and will be held by the crane in turn. A subsea diamond wire cutting (DWC) tool will then be deployed remotely from the vessel onto the piles under the sea surface and held in place with the manufactured cutting tool clamping frame. In turn, the two steel piles will be cut flush or very close with the seabed by the DWC tool. If there are any protrusions, then these will be removed to avoid any snagging risk.

All removed equipment from this operation will be stowed on deck and returned to the appropriate harbour. It will be temporarily dry stored before being re-used, recycled or disposed of.

All moorings that are deployed for this operation will also be removed.

### 3.3 Health and safety considerations

The marine contractor, Leask Marine Ltd, is at all levels responsible for ensuring that the offshore and dive operations to achieve the decommissioning scope, are conducted in accordance with the HSEQ Policy and that, as a minimum, the marine contractor management system is applied on all vessels and sites the operations, were the marine contractor take responsibility for employees and subcontractors. In addition, Leask Marine Ltd will be working under the EMEC Permit to Work.

#### 3.3.1 Health, Safety, and Environment (HSE)

- All work will be carried out in accordance with the “Project HSE Plan”.
- All Risk Assessments will be performed in accordance with the “Project HSE Plan”.
- Risk Assessments will be performed for all tasks detailed in this procedure.
- Risk Assessment Report / Task Risk Assessments should be read prior to carrying out the tasks in order to make sure that hazards, risks and mitigating actions have been identified and understood. As a minimum, Toolbox Talk are to be carried out to convey this.

#### 3.3.2 Quality Control (QC)

- Activities will be monitored in accordance with the Quality Plan and applicable sections of the Inspection & Test Plan.
- The Project Engineer and work site Supervisors are responsible for monitoring the progress of the work and recording pertinent information as dictated in the task plan. Each task should be signed off as the work progresses.
- On completion of the works, the Project Engineer must collate the completed task plans and the related Task Completion Certificates (where identified for permanent works).

#### 3.3.3 Worksite changes to approved procedure

In the event of any unplanned operation or required change to the procedure offshore which has not been subject to an onshore Hazard Identification and Risk Assessment (HIRA), reference should be made to Management of Change (MOC) procedures.

The Shift Supervisor responsibility to ensure that MOC is clearly communicated to all on shift personnel. During shift handover, minutes should be taken and documented to identify that all parties have understood and agreed to continue operations after handover of responsibility is completed.

### 3.4 Proposed waste management solutions

Recycling will be the preferred method of disposal where possible. All options, reuse, recycle, incinerate or dispose will be explored.

Waste management will be carried out in accordance with all relevant legislation at the time of decommissioning. Furthermore, particular regard shall be had to the waste hierarchy (reuse, recycle, incinerate, disposal).

At the end of each phase, all decommissioned items are transported to shore by construction and/or support vessel. They are offloaded on quayside and transported to a storage area.

All chemical, liquids/fluids, fuels and oils will be properly and safely isolated, drained/removed and stored properly to avoid pollution at sea or onshore, until they are collected for disposal.

The sub-contractor in charge for waste management will collect all decommissioned items and transport them to the disposal site. The sub-contractor and disposal site will be determined when the project starts.

No object will be left on seabed or quayside once all operations are completed, except the two remaining pieces of piles within the seabed as mentioned above.

## 4 Environmental Impact Assessment

Impacts to receptors during decommissioning was considered during the application stage for installation of the device. Appropriate mitigation measures were identified at the time as part of the programme and were reported to the regulator if required. During decommissioning of the device, there is the possibility of disturbance to marine species due to vessel traffic. For that reason, special effort will be made so that those operational activities will be accomplished in the shortest time possible and minimum number of vessels. In addition, all vessel transits and activities onsite will be conducted as far as possible in line with the Scottish Marine Wildlife Watching Code (SMWWC).

The materials used for construction of the device have been chosen for their suitability for use at sea, both in terms of durability and their impact on the environment. The materials are all non-toxic. Environmental acceptable lubricants will be used, and all hydraulic fluids used within the device will be certified as suitable for marine environment.

## 5 Vessel management plan

The vessels to be used for offshore operations will be determined in advance of the operation depending on availability. It is expected a multi-cat will be utilised as the decommissioning vessel along with a safety vessel which will act as a guard vessel. When cutting the platform from the piles, the platform will be held in place by a crane from the decommissioning vessel.

All vessels involved in decommissioning will be local and will transit to site via Kirkwall harbour. It is expected vessel will transit to the site 4 days on average per month dependent on weather conditions and vessel availability.

## 6 Costs

The costs of the decommissioning are considered commercially sensitive data.

## 7 Financial security

Financial security details are considered commercially sensitive data.

## 8 Schedule

Stage	Month					
	1	2	3	4	5	6
Inspection						
Decommissioning						

Table 3. Proposed schedule of decommissioning

## 9 Seabed Clearance

No seabed debris will be produced by the decommissioning process. The piled structures will be cut such that they are flush to the seabed and pose no hazard to the marine environment or navigation. An ROV survey will be performed of the site to confirm the as-left condition of the seabed adjacent to the platform. Surveys will be undertaken in accordance with EMEC procedures and independent, third party will be involved when providing evidence that the site has been cleared.

## 10 Restoration of the site

Provided that it is only the decommissioning of a single device it is not expected that there will be significant disturbance to the site during the decommissioning of the platform. Thus, it is not anticipated it will be necessary to implement a specific site restoration programme.

The portions of the piles just below the seabed, would only have influence in a quite limited zone (of several square meters) and would not impact on areas to be conserved.

## 11 Post-decommissioning monitoring, maintenance and management of the site

Assuming the small potential area of impact on the seabed and the small amount of steel left in-situ, no post-decommissioning monitoring, maintenance or management of the site is considered to be necessary. The site and berth will remain active and so surveys will be periodically performed as part of other devices or projects using the site.

Following the decommissioning of the facilities a seabed survey will be undertaken so as to confirm that the dismantling has been done correctly. The survey will be carried out as per EMEC procedures and third party will be involved when providing evidence that the site has been cleared.

The European Marine Energy Centre Limited

The Charles Clouston Building, ORIC, Back Road, Stromness, ORKNEY, KW16 3AW

**Tel:** 01856 852060

**Email:** [info@emec.org.uk](mailto:info@emec.org.uk)

**Web:** [www.emec.org.uk](http://www.emec.org.uk)

Registered in Scotland no.SC249331

VAT Registration Number: GB 828 8550 90

