

META, Warrior Way – Porpoise Power Developer Information Document

Emergency Action Card

Date	Reviewed by	Updates required?	Sent to CG?

1.1. Emergency Contact Information

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1.2. OREI Information

1.2.1. Device Description

The device, designed and developed by Porpoise Power, is a Tidal Energy Converter scaled prototype that is intended for use at a range of tidal stream sites including low flow sites opening up new possibilities for tidal stream generation. The device planned for deployment at the META Warrior Way site comprises a floating platform that supports an arm with a 5m blade or fin which when subjected to tidal flow will move up and down in the water column within an amplitude of < 3m. This movement of the arm up and down is then used to power an electrical generator. The blade will be fully submerged at all times with a minimum clearance of 2m from the sea surface. The rated capacity of the device is 5kW. **There is no umbilical / export power cable. The power generated by the device will be consumed on board the barge.**

The floating platform (10m x 6m) will be moored in position with a swinging mooring using two 2.5tn sinkers 10m apart perpendicular to the flow, each with ground chain and octoplait rope risers, attached to a large swivel and hard-shell buoy, to which the floating platform is then tethered to using a bridle. This mooring arrangement will allow the platform to align with the flow on both the flood and ebb tide. The drawing below illustrates the full system (Figure 1).

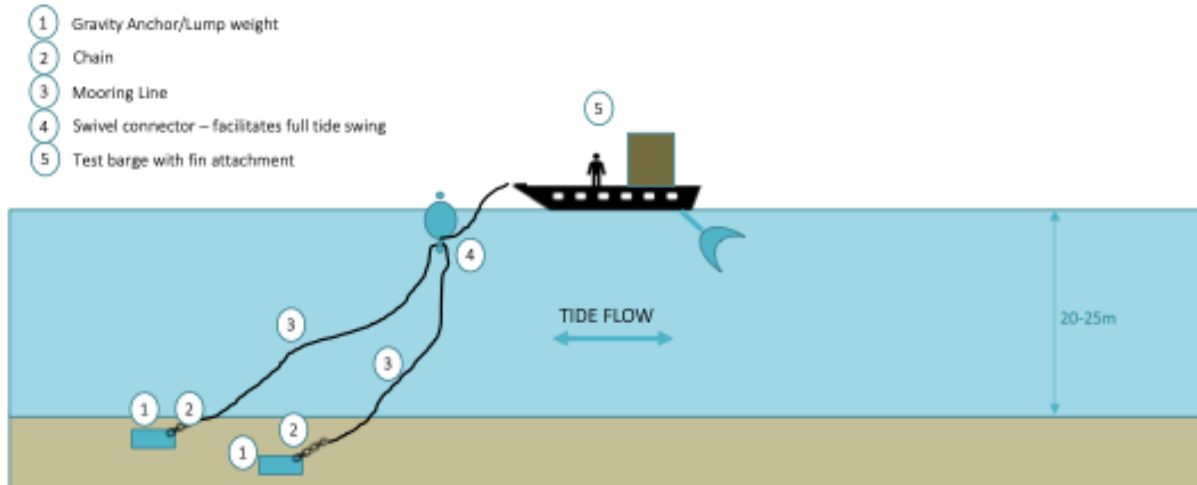


Figure 1 Illustrative drawing of the device and mooring arrangement. Not to scale.

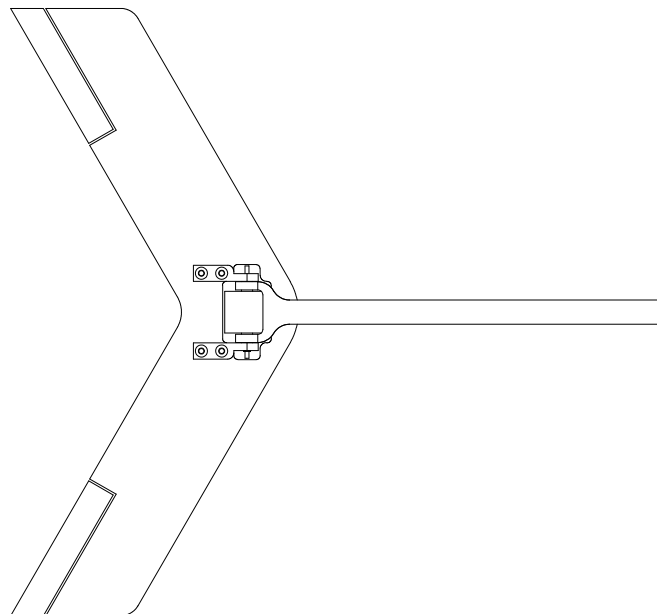


Figure 2 The 5m blade or fin and associated arm that will be attached to the floating platform



Figure 3 The 10 x 6m barge that the blade and arm will be attached to.

Deployment and Decommissioning of the device and anchors will be performed by one vessel with appropriately sized lifting capability. Anchors and mooring lines will be deployed first, then the device will then be towed to site and connected to the pre-laid moorings. Decommissioning can then be performed in the reverse order.

1.2.2. Key Locations

The device and moorings are to be located at the following co-ordinates in decimal degrees:

	Latitude:	Longitude:	Approx Depth (LAT):
Swinging mooring position	51° 42.222' N	4° 55.61' W	16m

Table 1 - Device and mooring deployment co-ordinates

The device will be deployed on a swinging mooring therefore the device will move upstream and downstream of the mooring depending on whether the tide is coming in or out. This mooring design has been chosen so the device always aligns with the current direction and so it can operate in both an incoming and outgoing tide.

For the proposed swinging mooring arrangement, the maximum swing radius from the central mooring position (51.703731N 4.926829W) to the end of the device will be ~43m (Figure 4). **For clarity this distance of 43m relates to the radius i.e. the distance from the central mooring point to the circumference.** This is the worst-case scenario for a LWS (Low Water Spring) when there is the most slack in the mooring lines. The device will only be swinging during slack water as the tide turns. Once the tide turns the device will find a settled position either upstream or downstream of the mooring depending which way the tide is flowing. The two mooring blocks will be positioned around 10m apart perpendicular to the tide to minimise lateral movement in relation to the tidal flow direction so the swing radius across the channel will actually be less than the worst-case scenario.

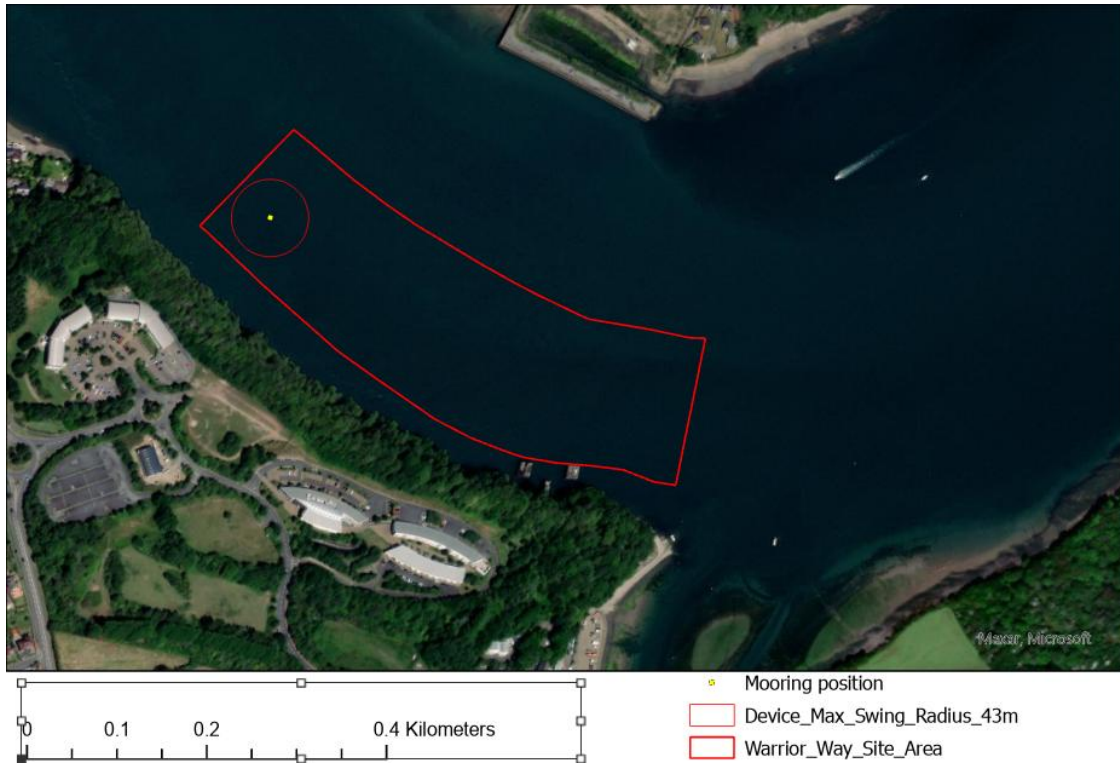


Figure 4 Device position and worst-case scenario (Low Water Springs) swing radius of the swinging mooring. For clarity the distance of 43m relates to the radius i.e. the distance from the central mooring point (yellow dot) to the circumference (red circle).

Rudders Boatyard will be the vessel contractor. The chart below shows the tow route that will be taken from where the device is launched at Rudders Boatyard and the mooring location (Figure 5)

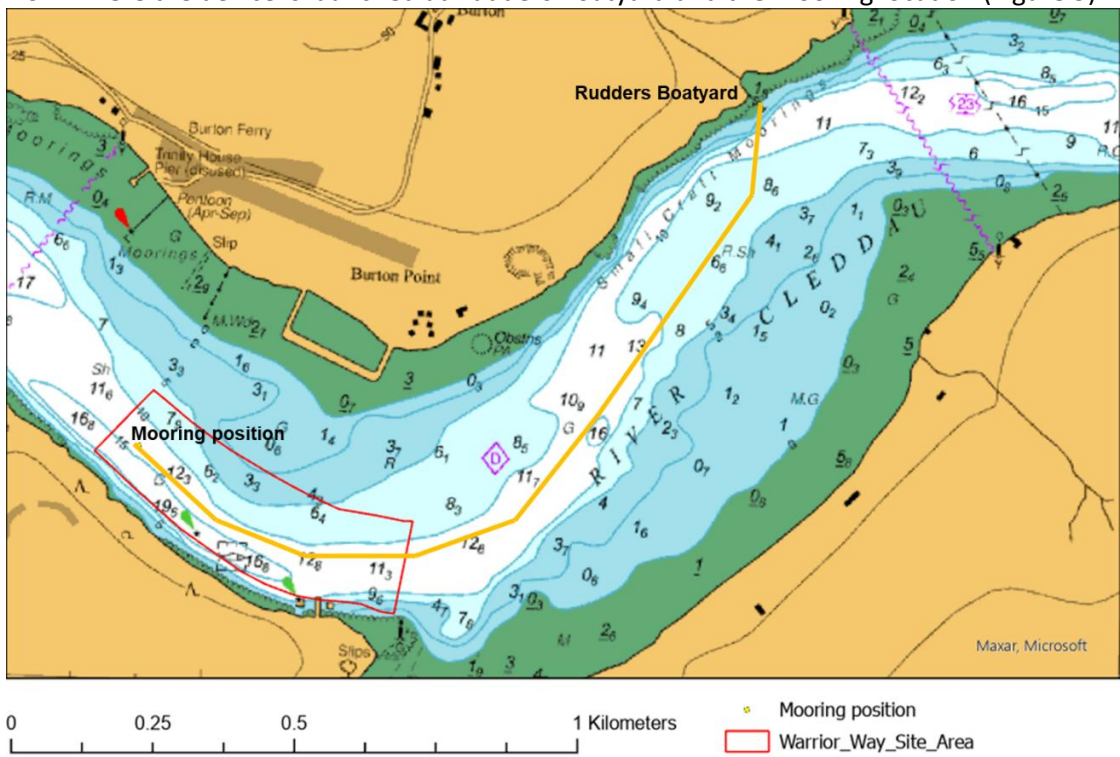


Figure 5 Tow route between the mooring location and the vessel contractor Rudders Boatyard.

1.2.3. Device Technical Information:

Parameter	Description/Value
No. of OREIs	1
Device Dimensions (Floating Platform), LxWxH	18m x 6m x 5.5m
Device Height above sea level	3m
Turbine Rotor Diameter	5m
Turbine blade maximum depth below sea level	5m
Temporary safety zone around device	N/a
Mooring type	Gravity anchor (clump weight)
Mooring weight	2.5 tonnes
No. of moorings	2
Device markings and signage	<ul style="list-style-type: none"> - Yellow cross day mark fitted at height above top platform - - Device to be lit as per appropriate COLREG Rule 30 (Lights for vessel at anchor). - All Mooring equipment to be clearly marked with yellow marker buoys marked: WARNING MARINE ENERGY DEVICE NO MOORING - Signage on device access points: WARNING MARINE ENERGY DEVICE NO MOORING NO CLIMBING OR BOARDING
Device monitoring/tracking	<ul style="list-style-type: none"> - GPS Tracker - Device is visible from shore, and will be checked regularly throughout the deployment - Remote monitoring of onboard computers
Operational Safety measures	<ul style="list-style-type: none"> - Third Party Verification (TPV) of the mooring system prior to deployment - All electrical equipment is in a lockable offshore cabin - Safe system of work in place - <p>During any (limited) unmanned testing, remote control will be managed through internet connection with onboard computers via mobile phone signal.</p>
Real time weather info available	N/a – Mobile data signal available on site

1.2.4. Device Recovery method in event of mooring failure: The device location will be tracked using the onboard GPS tracker. An automated notification will be sent to Porpoise Power staff when the GPS moves outside of the designated area, the vessel contractor will then be alerted instructed to retrieve the device and tow it safely back to the vessel contractor’s dock for further investigation/repair.

1.3. Emergency Response

1.3.1. Equipment stored on Porpoise Power Floating Tidal Energy Device:

- First Aid Kit

1.3.2. PPE while working on Floating Tidal Energy Converter:

- Lifejackets
- Immersion suits/or offshore coveralls
- Safety Boots

1.3.3. Emergency Communications

- Vessel/s to be fitted with VHF radios
- Handheld VHF radios will be carried by the crew on the barge. If required there is power available on board the barge to recharge batteries.
- procedures agreed between the MRCC and operator, for calling for assistance.
 - Vessels engaged in activities at META sites, or in transit to these sites, will monitor VHF channels 12 (Milford Haven Port Control) and 16 (initial calling and emergency) at all times.
 - The primary form of emergency communication will be via Marine VHF on channel 16, either through verbal communication or by DSC alert.
 - In case of an emergency that requires MCA support, the MRCC (Marine Rescue Coordination Centre) will coordinate the response and will advise on the appropriate form and channel for continued communication after the initial contact.
 - Depending on the nature and severity of an incident, mobile phones will be used to facilitate further communications to shore, where this appears to be appropriate.
 - Ship to Ship communications on site will be normally on VHF channel 6 or 8, or as otherwise agreed. Deck to bridge communication onboard the vessels will be via the agreed working channels using handheld VHF radios as carried by the crew.

1.4. Emergency Shutdown Procedures and Processes

For the test, the fin (blade) will be controlled by an electromechanical control system

The connected computer can be controlled manually in person on the test barge, or remotely using an internet connection via mobile phone signal. This allows the system to be switched to “off” in a controlled manner, in the event of an emergency.

Furthermore:

1. There will be an inbuilt fail-safe system, which will result in the equipment halting in the event of a (battery) power interruption.
2. And a battery override option, creating a power interruption and causing the equipment to halt.

Unlike turbines, the fin has very low inertia and no resonance. Therefore, time from “STOP” signal via computer or battery override will be 1 fin flap cycle – circa 5 seconds

1.5. Deployment/recovery Activities

NOTE: information during any deployment or recovery phase is dynamic and should be sent in periodic (e.g. daily, weekly) emails and/or verbal update reports to HM Coastguard. Notices issued should be copied to oeo@mcga.gov.uk and renewables@hmcg.gov.uk .

1.5.1. Table indicating the day-to-day operations taking place on the site during the entire deployment:

Installation		Target Date
Task	Description	
1.1	Vessel contractor to make up and install mooring.	1 st Feb 2025
1.2	Assembly of barge and Porpoise Power tidal energy convertor hardware at Rudders Boatyard.	Barge – Jan 2025 Tidal fin – 1 st – 4 th Feb 2025
1.3	Vessel contractor to tow the assembled device to the test site and connect it up to the pre-installed moorings	1 st – 4 th Feb 2025
Operations and Maintenance		
Task	Description	
2.1	Porpoise Power staff to be transported to the device and, onboard the platform, run a series of performance tests on the device (This operation will be repeated a number of times over the course of 4 weeks)	1 st – 25 th Feb 2025
2.2	During the test programme the vessel contractor may detach the device from the moorings and tow it back to the contractor's dock to conduct maintenance and optimisation tasks that cannot be conducted at sea. Following the completion of the necessary works at the dock the vessel contractor will tow the device back to site and reconnect it to its moorings	1 st – 25 th Feb 2025
Decommissioning		
Task	Description	
3.1	Once testing is complete, the vessel contractor is to detach the device from the moorings and tow it back to the contractor's dock	25 th – 26 th Feb 2025
3.2	All hardware and equipment are to be removed from the barge. Heavy objects, i.e. turbine and container/cabin, are to be crane lifted from the barge	26 th Feb 2025
3.3	The barge is then to be disassembled and crane lifted from the water by the vessel contractor	26 th – 28 th Feb 2025
3.4	The vessel contractor is to lift and remove the moorings from the test site, leaving no equipment on the seabed.	26 th – 28 th Feb 2025

1.6. Vessels/Installations on Site during Deployment or Work and Safety Boats during Operations.

Please see the table above for a summary of the main activities involved in the deployment/installation operation of the Porpoise Power tidal energy device. Only one vessel will be required at any one time. The vessel will have a tender/safety boat onboard for emergencies and the vessel contractor will be able to mobilise further vessels from nearby base to respond to an emergency.


For the deployment, O&M and decommissioning of the Porpoise Power tidal energy device, the vessel contractor shall provide an adequately sized workboat with lifting capability. The vessel will be kept at the vessel contractor’s dock, which will be in the Pembroke Dock area/Milford Haven estuary.

A coded RHIB operated by Rudders Boatyard will be used as a support and crew transfer vessel.

Details of the vessels to be used for deployment, O&M and decommissioning is provided in the table below:


Vessel 1:


Item	Description/Value
<i>Vessel Name</i>	RB1
<i>Vessel callsign and Maritime Mobile Service Identity (MMSI) number</i>	Vessel Name RB1 Call Sign MHLJ2 MMSI 235024988
<i>Type of vessel</i>	11M Workboat
<i>Speed and endurance</i>	<u>24H <12Knts</u>
<i>Personnel capacity</i>	4
<i>Normal number of crew carried</i>	2
<i>Weather and/or other operational limitations including turbine transfer limits</i>	Operating limit F5, Turbine Transfer Limit F3
<i>Medical and/or other ER capabilities including relevant equipment and/or medication</i>	Cat C first aid kits onboard, along with qualified first aider
<i>Telephone contact numbers (mobile and/or satellite)</i>	07940 008 145 Office Number - 01646 600 288
<i>Communications equipment fitted e.g. VHF, MF and HF Marine band radios, satellite systems, fitted, etc.</i>	GPS & VHF
<i>Communications channels/frequencies monitored during normal and abnormal operations e.g. when</i>	16 & 12

Item	Description/Value
<i>at sea proceeding to and working in the wind farm</i>	
<i>Pictures and (if available) drawings of the craft.</i>	

Vessel 2:

Item	Description/Value
<i>Vessel Name</i>	KITCAT
<i>Vessel callsign and Maritime Mobile Service Identity (MMSI) number</i>	Call Sign: MGZE8 MMSI: 235074502
<i>Type of vessel</i>	Multicat Length – 20.2m Beam – 6.54m Draft (loaded) – 1.3m
<i>Speed and endurance</i>	6knt cruising speed 3,200L Fuel Capacity
<i>Personnel capacity</i>	5 + 3 crew
<i>Normal number of crew carried</i>	3
<i>Weather and/or other operational limitations including turbine transfer limits</i>	20nm Offshore
<i>Medical and/or other ER capabilities</i>	Cat C First Aid + all additional equipment required for Cat. 3 Coding

Item	Description/Value
<i>including relevant equipment and/or medication</i>	
<i>Telephone contact numbers (mobile and/or satellite)</i>	07969552006
<i>Communications equipment fitted e.g. VHF, MF and HF Marine band radios, satellite systems, fitted, etc.</i>	2 x Fixed VHF, 2 x Handheld VHF Koden Class A AIS
<i>Communications channels/frequencies monitored during normal and abnormal operations e.g. when at sea proceeding to and working in the wind farm</i>	16 & 12
<i>Pictures and (if available) drawings of the craft.</i>	

Item	Description/Value
	 A photograph showing a red and black workboat, likely a barge or tugboat, equipped with a large hydraulic excavator. The boat is on a body of water, possibly a lake or reservoir, with a rocky shoreline in the foreground. A person in an orange safety suit is visible on the deck. In the background, there are hills and a small white boat on the water. The sky is overcast.

NOTE: The immediate rescue and emergency response capability for developer personnel or other contractors working on or in the OREI are the work and safety boats provided by the developer/site owner.

1.6.1. Guard Vessel

N/A – no guard vessel required for this site/deployment.

1.6.2. Rescue Boat Capabilities

If the workboat is **on site** initial SAR capabilities will be provided by this vessel.

If required, the vessel contractor will mobilize a rescue boat via radio.

In the event an emergency the Developer or their contractor will firstly, immediately notify the coastguard and secondly, immediately notify Milford Haven Port Authority (MHPA) Port Control.

*Coastguard Contact:
VHF Channel: 16
Tel: 0344 382 0748 / 999*

*MHPA Port Control:
- VHF Channel: 12
- Tel: 01646 696137*

If the vessel operator has no vessels available or if the emergency occurs outside of the vessel operators usual working hours assistance from MHPA or the Coastguard may be required.

1.7. Locating Aids Used by Personnel or Vessels Working at the Site

N/A:- personnel or vessel locating devices will not be required as the test area is situated in the Milford Haven estuary where there is clear visibility from shore and work will take place during daylight hours.

1.8. Electronic Surveillance and Monitoring Systems

GPS tracker onboard the device will provide a live location to the Porpoise Power team for the full duration of the deployment. The GPS tracker will send an automated text message to a member of the Porpoise Power team to notify if the device has moved outside of its planned position.

A member of the team will carry a phone/device linked to the GPS tracker at all times, and the alert will be sufficient volume to wake the duty person if outside waking hours and the alert will be set to repeat until it is read.

1. Emergency Action Card

EMERGENCY ACTION CARD

For Porpoise Power

Device specific information can be found in section [1.2](#). Secondary contact should also be made with the Site Owner using the main ERCoP (*HMCG to insert link to SharePoint folder*)

Emergency Contact	
One of the following or a combination of both, must be 24/7	
Duty Holder name	Porpoise Power
Primary Emergency Number	07771 787 011 (Adrian Thomas – Developer Test Manager)
Secondary number	07944 839 332 (Saul Yong – META Ops)
Media relations	07956 829 289 (Jess Hill - META Comms Manager)
Coastguard	0344 382 0748
Police	01267 222020 (Milford Haven)

Location Summary	
Phase	Construction/ Operation
Range & Bearing from land	51° 42.222' N 4° 55.61' W
Number of devices	1

Device Specific information <i>(include an additional table if more than 1 device type)</i>					
Heights (above LAT, in m & ft)		Lights <i>Incl. flash, IR, colour, etc.</i>		Helicopter Winch	
Total height to blade tip	<i>n/a</i>	Aviation lights	<i>n/a</i>	Suitable for winching?	Yes
Height of Nacelle	<i>n/a</i>	SAR lights	<i>n/a</i>		
Height of Transition Piece	<i>n/a</i>	Other lights	One all-round white light (COLREG Rule 30)		
Height above sea level	<i>3m</i>				
Depth below surface	<i>5m</i>				
Height above seabed	<i>11m LAT</i>				

Communications		
VHF	Aviation	Additional comms
<i>channel 16, VHF handheld radio</i>	<i>n/a</i>	<i>n/a</i>

Electronic Monitoring <i>(include details if feeds are provided to HM Coastguard)</i>		
AIS	Radar	CCTV
<i>n/a</i>	<i>n/a</i>	<i>n/a</i>

Site Rescue Teams

Site rescue will be performed by the vessel onsite at the time: No personnel are to be left onboard the device without a vessel present. And work onboard the device is only performed during daylight hours. Therefore, rescue will be performed by the vessel present at the time.

If an additional vessel/rescue team is required, this will be mobilised from Rudders Boatyard, who are based 10 minutes from the device location.

Shutdown procedure

Manual

- System can be halted either through the computer control system, or through the battery override switch,
- The fin will come to a halt in 1 fin flap cycle, estimated at 5 secs

Remotely

- The system can be halted through the computer control system, and the internet modem/mobile phone connection.
 - The fin will come to a halt in 1 fin flap cycle, estimated at 5 secs
- In the event that mobile service is interrupted then shutdown will need to be controlled manually and timeline would be extended by the time to access the barge.
 - This likelihood will be reduced by test planning and preparation taking into consideration weather and mobile service conditions.

In emergency shutdown mode, the device will be set to minimise its impact area. This means the arm hanging vertical below the barge and the fin moving with the tidal flow behind

Any contact information contained in the EAC and provided to the Maritime and Coastguard Agency (MCA) will be used solely for the purposes of emergency response as part of the Agency's functions and by the MCAs SAR helicopter provider. The information will be kept secure and will not be used for any other purpose without their permission. The information will be stored by the MCA and the SAR helicopter provider until the company provides updated information or the development ceases to exist, at which point the information will be deleted.