

1. COVER SHEET



Operations Phase Emergency Response Cooperation Plan (ERCoP) between Nova Innovation and HM Coastguard CGOC (Shetland) for the Shetland Tidal Array in Bluemull Sound

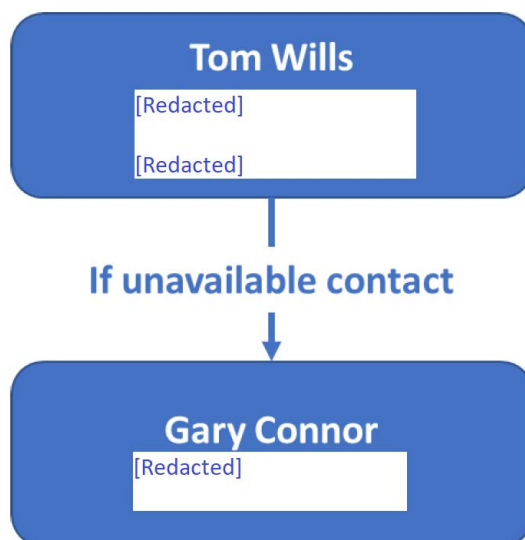
45 Timber Bush
Edinburgh
EH6 6QH

Tel: +44 (0)131 241 2000

www.novainnovation.com

Author:	Tom Wills (Offshore Manager, Nova Innovation)
Version:	4.0
Release Date:	10/12/2018
Total Number of Pages:	34

2. EMERGENCY CONTACT AND QUICK REFERENCE INFORMATION



Nova Innovation: emergency contact information

24 hour Primary Contact number:

Tom Wills, Offshore Manager: [Redacted]/[Redacted]

Alternative contact numbers:

Gary Connor, Engineering Director: [Redacted]

Patrick Ross-Smith, Onshore Manager: [Redacted]

Paul Connor, Senior Engineer: [Redacted]

Simon Forrest, Managing Director: [Redacted]

NOTE: further contact details can be found in Section 3.1.2.

HM Coastguard: emergency and routine contact numbers

Primary emergency and routine telephone: 01595 692976

Secondary emergency telephone contact: dial 999/112 and ask for Coastguard

VHF/MF DSC routine contact MMSI: 002320001

VHF DSC Distress/Urgency alerting: DSC sets will make an "all stations" call in this mode of operation and this will be received by the relevant CGOC

Radio call sign: 'Shetland Coastguard'

MCA Notes: None.

The Nova Innovation Shetland Tidal Array currently consists of three Nova M100 turbines (Figure 1).

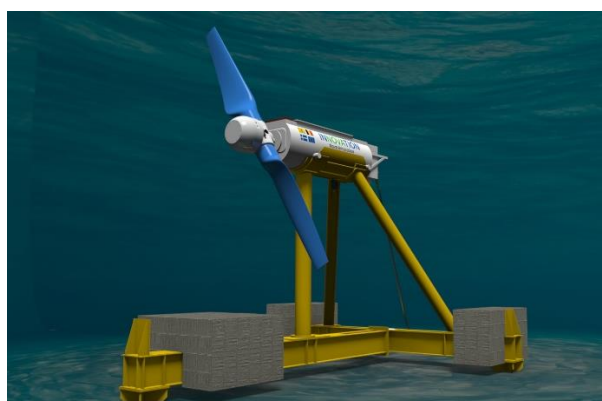


Figure 1: Nova Innovation M100 tidal turbine

None of the structures are visible above water level. Table 1 presents some key dimensions. More details on the tidal array construction are provided in 3.3.1.

Table 1: Key dimension of Nova M100 turbines

Tidal array parameter	Value
Maximum height of turbine blade tip above seabed:	14m
Seabed footprint of each foundation structure:	12.2m wide by 13.5m long
Spacing between turbines	Approximately 30m

Figure 2 shows the relative locations of the three existing T1, T2 and T3 (T1-3) turbines, approximately one kilometre west of Cullivoe pier on the east side of Bluemull Sound in Shetland. The licensed cable corridor and boxed site area are also shown. For details see Figure 4 and Figure 5. The planned locations of the T4-6 turbines are also shown – these are yet to be installed.

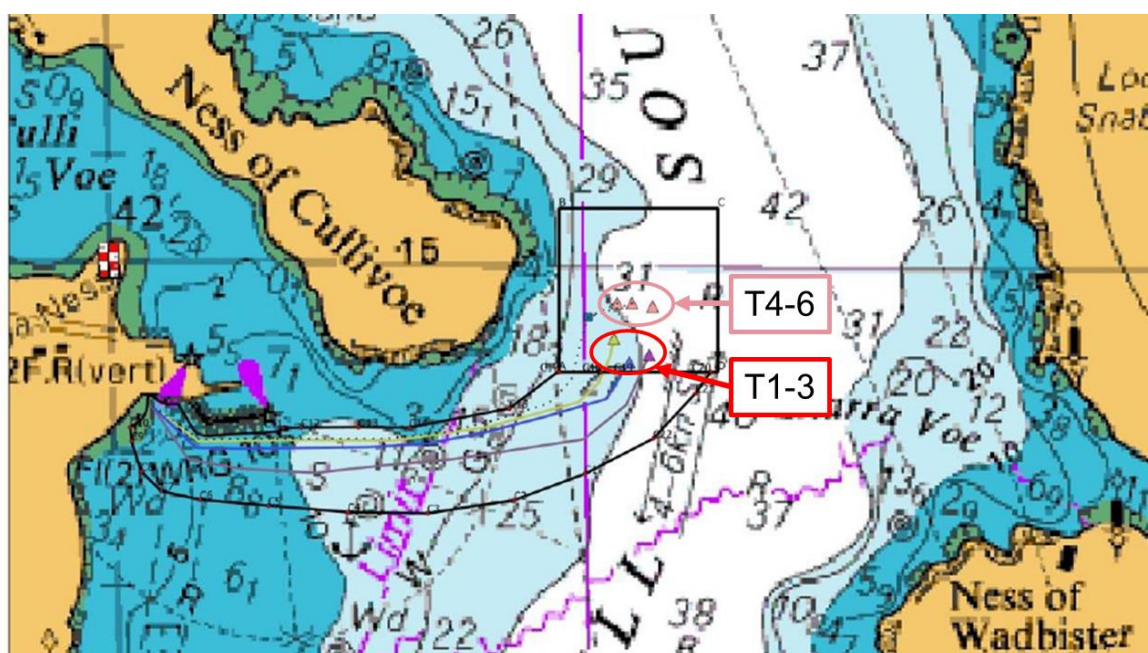


Figure 2: Nova Innovation Shetland Tidal Array, Bluemull Sound

3. DEVELOPMENT INFORMATION

3.1 Nova Innovation

3.1.1 Role and Responsibilities of the Company in an Emergency

In the event of an emergency on an Offshore Renewable Energy Installation (OREI) or at sea involving its personnel and/or vessels, the company is responsible for providing immediate rescue, and first aid medical response to a level appropriate to the circumstances of the OREI and its location. The company is also responsible for immediately alerting HM Coastguard of an emergency and for liaising and cooperating with the relevant Coastguard Operations Centre (CGOC) to resolve the emergency.

The company is also obliged, under international maritime agreements and practices e.g. International Convention for the Safety of Life at Sea (SOLAS convention), to provide assistance, where it is possible to do so, to other vessels or persons in danger at sea nearby or within the OREI field or area and/or when requested to assist by the relevant CGOC.

The company may also need to provide its own vessel(s) and other assets to respond or react to other maritime emergencies e.g. pollution or a drifting vessel which presents an actual or possible threat to the safety of life or property in the OREI field.

Further information is contained in “Offshore Renewable Energy Installations: Guidance on Requirements and Operational Considerations for Search and Rescue and Emergency Response”¹ available on the MCA website.

3.1.2 Contact Information

Full Emergency Response Information including ER organisation	<u>Nova Innovation</u>	
	Primary Contact:	
	Tom Wills, Offshore Manager	[Redacted]
	tom.wills@novainnovation.com	
	Alternative mobile network number:	[Redacted]
	Alternative contacts:	
	Gary Connor, Engineering Director	[Redacted]
	gary.connor@novainnovation.com	
	Patrick Ross-Smith, Onshore Manager	[Redacted]
	patrick.ross-smith@novainnovation.com	
	Paul Connor, Engineer	[Redacted]
	paul.connor@novainnovation.com	
	Simon Forrest, Director	[Redacted]
	simon.forrest@novainnovation.com	

¹

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/578859/OREI_SAR_Requirements_v1.pdf

	<p>The first point of contact for offshore emergency response will be Tom Wills. In the event that Tom cannot be reached then the next point of contact is Gary Connor. They can be reached on the numbers above.</p> <p><u>Emergency response organisation:</u> HM Coastguard (Shetland CGOC) Knab Road LERWICK Shetland ZE1 0AX</p> <p>Primary emergency and routine telephone: 01595 692976 Secondary emergency tel. contact: dial 999/112 and ask for Coastguard Email: zone1@hmcg.gov.uk Fax: 01595 694810 (24hrs) Watch kept: 24 hours</p> <p>VHF/MF DSC routine contact MMSI: 002320001 VHF DSC Distress/Urgency alerting: DSC sets will make an “all stations” call in this mode of operation and this will be received by the relevant CGOC Radio call sign: 'Shetland Coastguard'</p>
Office responsible for the operations taking place during the construction phase	<p>Nova Innovation 45 Timber Bush Edinburgh EH6 6QH</p> <p>Tel: +44 (0)131 241 2000 Email: info@novainnovation.com</p>
National office	As above
Owner organisation	Nova is fully owned by its board of Directors
Principal director-level contact at owner	<p>Gary Connor, Engineering Director gary.connor@novainnovation.com [Redacted] 0131 241 2000</p>
Contact information for any key contractors during the construction phase	<p>Leask Marine Ltd (vessel providers) Hatston Industrial Estate Kirkwall KW15 1RE Tel: 01856 874 725 Offshore Operations Manager: Olly Bethwaite Mob: [Redacted] Email: olly@leaskmarine.com</p>
OFTO details	n/a
ERCOP author	<p>Tom Wills, Offshore Manager Email: tom.wills@novainnovation.com Mob: [Redacted]</p>

3.2 Liaison arrangements between Nova Innovation and HM Coastguard

3.2.1 Nova contact roles

In the event of an emergency, the Nova Innovation Primary Contact or duty substitute (see Contact Information, 3.1.2) will be available by mobile phone or Marine VHF to provide CGOC with any pertinent information.

Nova Innovation will have 24/7 access to the array control and will be able to provide full detail of the situation, personnel and construction work as required.

Nova Innovation can also provide a liaison officer at the site or to CGOC at Lerwick as appropriate should it be required.

In normal non-emergency situations, the Primary Contact will act as the single point of contact between the Company and CGOC during the construction phase.

3.2.2 Information exchange and reporting

During construction the Primary Contact will have access to all information regarding engaged personal, operations and equipment deployed or deployable. This is available as a paper copy on site, or electronically by email.

The local SAR capabilities will be those of the deployment vessel plus those outlined in 4.2.

Initial communication would be by Marine VHF on the appropriate channel and subsequently that deemed suitable by CGOC.

3.2.3 Provision of liaison officer(s) to the CGOC in the event of an emergency.

Initial Company liaison in the event of an emergency would be best provided through the Primary Contact via marine VHF or telephone. This will provide the fastest response in terms of operational information and control of the turbine.

Should CGOC deem there to be a need for a liaison officer to be locally available at Lerwick or elsewhere on Shetland, it should be possible to make either our Onshore or Offshore Manager available within a few hours (allowing for travel time from the Nova Innovation site in Yell).

Alternatively and in addition to the 2 arrangements above, if a more technical or director-level representative is required they can normally be on site within around 12 hours by air from mainland Scotland.

3.2.4 Alternative arrangements

Where appropriate, the CGOC may elect to send a local Coastguard Officer to the relevant company coordination centre to act as a liaison representative.

3.3 The Installations

3.3.1 Details of the installations

Three 100kW Nova M100 turbines are currently installed. Each consists of an upper nacelle unit attached to a steel substructure with additional concrete ballast. An electrical cable is connected to the nacelle: a separate cable runs to shore from each turbine. The cable and nacelle can be removed from the base for routine service and repair.

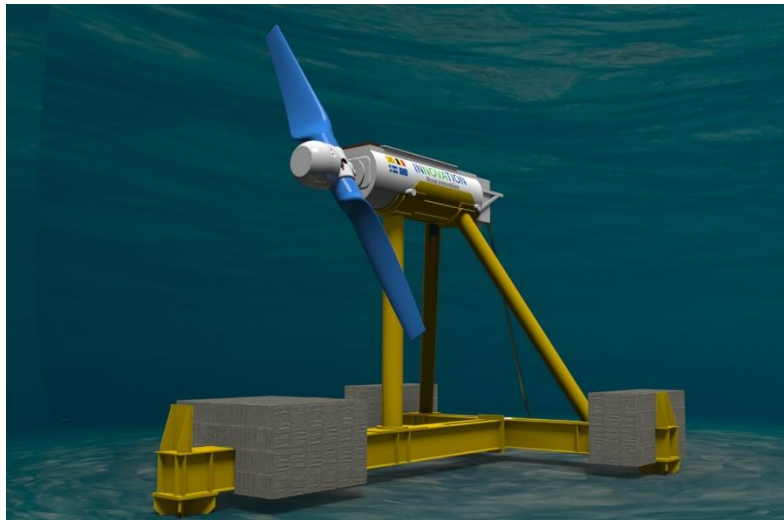


Figure 3: Nova Innovation M100 tidal turbine

Figure 4 provides another view of the site with turbine locations and cable routes.

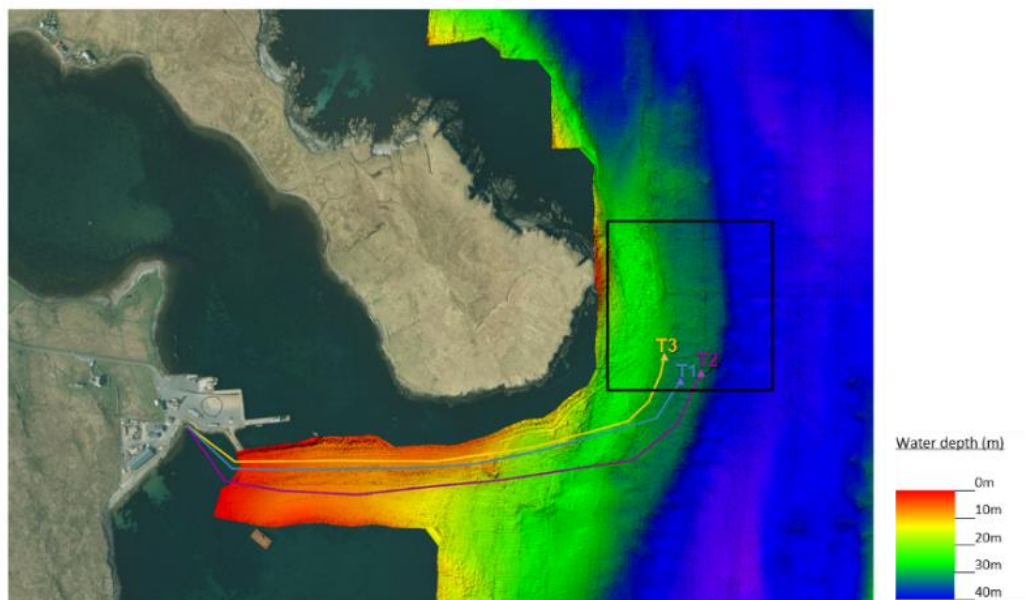


Figure 4: Shetland Tidal Array: bathymetry and key locations

Figure 5 shows the relative locations of the T1-3 turbines in more detail.

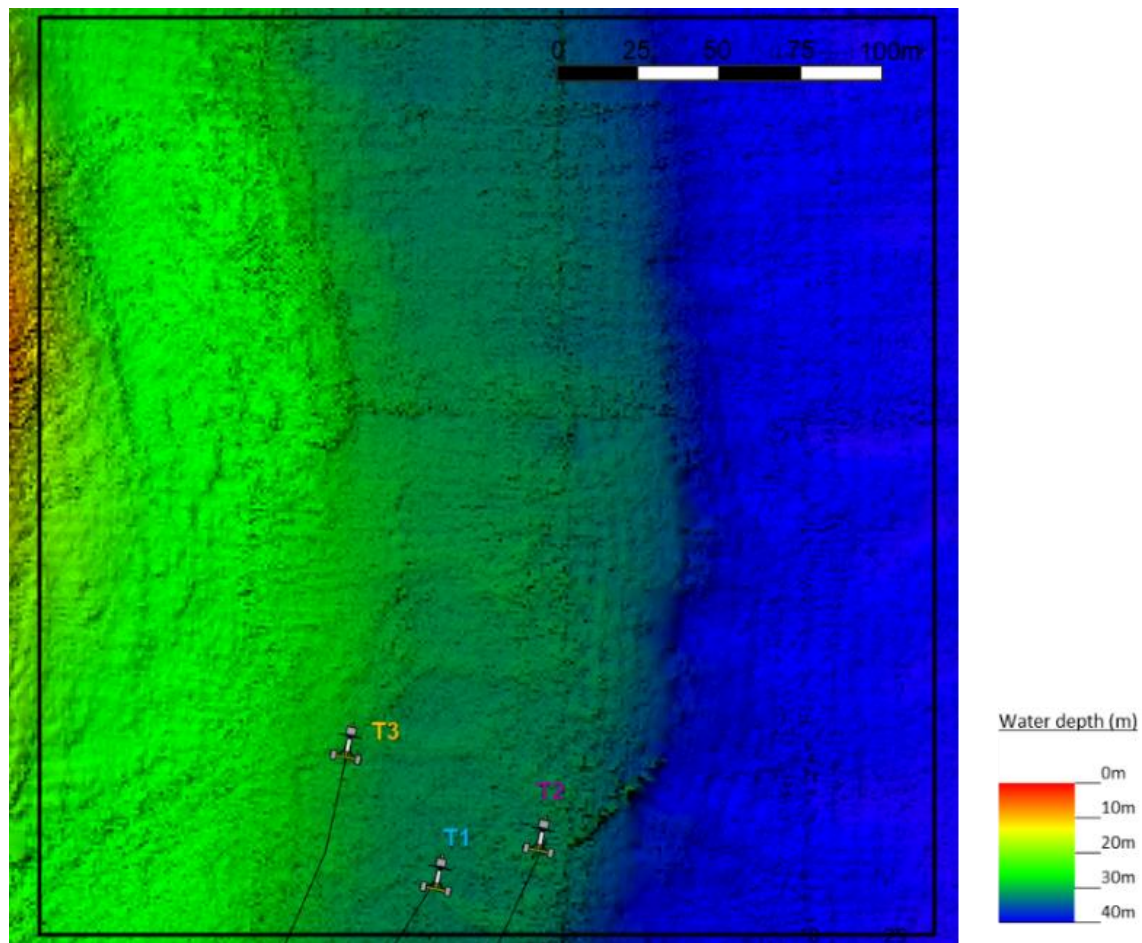


Figure 5: Turbine locations within the Nova Innovation lease area

The tables below provide coordinates of the different turbines and their cables.

Table 2. Nova M100 T1 Substructure and Cable Locations

	UTM V30 E/N		WGS84 GPS Lat/Long	
T1 Turbine Location	610079	6730893	60° 41.909'	-0° 59.017'
T1 Cable: - waypoint 1	610079	6730895	60° 41.910'	-0° 59.016'
- waypoint 2	610041	6730829	60° 41.874'	-0° 59.059'
- waypoint 3	609929	6730793	60° 41.856'	-0° 59.185'
- waypoint 4	609830	6730764	60° 41.844'	-0° 59.294'
- waypoint 5	609732	6730742	60° 41.832'	-0° 59.402'
- waypoint 6	609630	6730733	60° 41.832'	-0° 59.515'
- waypoint 7	609517	6730728	60° 41.832'	-0° 59.639'
- waypoint 8	609413	6730724	60° 41.826'	-0° 59.753'
- waypoint 9	609335	6730723	60° 41.832'	-0° 59.839'
- waypoint 10	609258	6730792	60° 41.868'	-0° 59.921'

Table 3. Nova M100 T2 Substructure and Cable Locations

	UTM V30 E/N		WGS84 GPS Lat/Long	
T2 Turbine Location	610113	6730908	60° 41.916'	-0° 58.978'
T2 Cable: - waypoint 1	610118	6730906	60° 41.915'	-0° 58.972'
- waypoint 2	610112	6730831	60° 41.875'	-0° 58.982'
- waypoint 3	610026	6730769	60° 41.843'	-0° 59.078'
- waypoint 4	609892	6730731	60° 41.825'	-0° 59.227'
- waypoint 5	609780	6730709	60° 41.815'	-0° 59.351'
- waypoint 6	609664	6730696	60° 41.81'	-0° 59.478'
- waypoint 7	609542	6730694	60° 41.811'	-0° 59.613'
- waypoint 8	609404	6730696	60° 41.814'	-0° 59.764'
- waypoint 9	609314	6730700	60° 41.818'	-0° 59.863'
- waypoint 10	609258	6730791	60° 41.868'	-0° 59.921'

Table 4: Nova M100 T3 Substructure and Cable Locations

	UTM N30 E/N		WGS84 GPS Lat/Long	
T3 Turbine Centre	610049	6730923	60° 41.926'	-0° 59.048'
T3 Cable: - waypoint 1	610045	6730901	60° 41.914'	-0° 59.053'
- waypoint 2	610027	6730856	60° 41.89'	-0° 59.074'
- waypoint 3	609993	6730822	60° 41.872'	-0° 59.113'
- waypoint 4	609928	6730798	60° 41.86'	-0° 59.185'
- waypoint 5	609836	6730774	60° 41.849'	-0° 59.287'
- waypoint 6	609676	6730746	60° 41.836'	-0° 59.464'
- waypoint 7	609586	6730743	60° 41.836'	-0° 59.563'
- waypoint 8	609413	6730729	60° 41.832'	-0° 59.753'
- waypoint 9	610049	6730923	60° 41.926'	-0° 59.048'

- Description of the type of turbine/device/unit (manufacturers type-name and/or number and power output);

The devices are subsea Nova M100 turbines developed by Nova Innovation. The rated power output is 100 kW at 3.3 kV.

- When constructed, the depth of turbine tower/installation, including to the blade tips (when blades are in the upright position), below mean sea level.

All parts of the array are at least 15 m below LAT. Note that there are just two blades on each device, so the minimum clearance is when the rotor is in the “I” position.

- Blade diameter

The blade diameter (blade tip to blade tip) is maximum 9.0 m.

- Turbine/device/unit dimensions (length, width and height in metres) or general dimensions for other devices/units;
 - The maximum height of the device (sea floor to blade tip) is 14.0 m.
 - The width of the device is 13.5 m.
 - The length of the device is 12.2 m.

- Spacing between turbines/devices/units installed;

The East-West distance between turbines is 50 m. The North-South distance between the two rows in the array is 140 m.

- Description of how turbines/devices/units/transition pieces are to be lit and marked (buoyage) during the construction period;

The turbines will not be lit during the very short deployment period, other than with the deployment vessel lights. Temporary mooring buoys will be in place on the site during the construction period. All vessels and buoys will comply with all aspects of COLREGS where applicable.

- Power (export) Cable layouts including depth of burial, location of entry to foundation;

The planned cable layout is shown in the layout diagram above. Five cables will be laid separately within the indicated blue cable corridor. The cables will not be buried, but will be protected in some areas as required, for example by concrete mattresses. The cable enters the back of the nacelle unit (the opposite end to the turbine) as indicated in the turbine diagram above.

- How the construction site is to be guarded and monitored during the construction phase e.g. guard vessel(s) on site? AIS/radar surveillance? What periods of operation such vessels will be on site, etc.

The deployment vessel is fitted with AIS and a radar system as detailed in Section 3.8.1. The deployment vessel will be on site during deployment operations only. A watch will be maintained.

- Details of Temporary Exclusion Zones around each installation/work activity;

There will be no Temporary Exclusion Zones around the work area. Local Notices to Mariners will request passing vessels to keep their distance and to pass at minimum speed.

3.4 Construction Activities

*NOTE: the information contained in **Error! Reference source not found.** and **Error! Reference source not found.** is dynamic and should be sent in periodic (e.g. daily, weekly) emails and/or fax or verbal updates to the CGOC.*

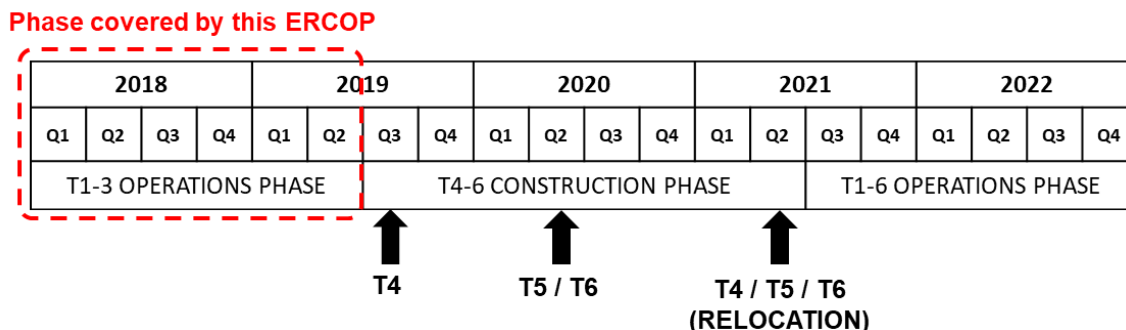


Figure 6: Phase of work covered by this ERCOP

As shown in Figure 6, this operations phase ERCOP covers ongoing operations and maintenance of the T1-3 turbines on the Shetland Tidal Array.

A construction phase ERCOP will be produced in advance of the T4 turbine deployment, scheduled for summer 2019.

3.5 Emergency Shutdown Procedures and Processes

The method for electrical isolation of the turbines in the Shetland is defined in the Nova Innovation document TM_NM100 RAMS_STA Electrical Isolation_0.2.

3.6 Maintenance and Work Operations

Nova Innovation has recently been awarded funding for a five year programme of research, testing and upgrades to these turbines². This will allow Nova to operate, monitor, recover, upgrade and redeploy turbines to maximise learning from their operation.

In this phase of ongoing T1-3 operations (see Figure 6), the T1-3 nacelles and ancillary equipment may be inspected, maintained, recovered and redeployed along with survey and measurement equipment as part of normal array operations. Inspection and maintenance work may also be carried on the T1-3 cables within the licensed cable corridor. The T1-3 substructures and other turbine equipment will remain in place and as previously mentioned, a construction phase ERCOP will be prepared in advance of construction work for the T4 machine commencing.

A full set of Risk Assessment and Method Statement (RAMS) documentation will be developed for all such operations and CGOC in Lerwick will be notified of any offshore site works in advance.

² See: <http://tidalenergytoday.com/2017/07/06/horizon-2020-picks-nova-innovation-to-lead-e20m-tidal-arrays-project/>

3.7 Diving operations

Some maintenance activities may involve divers. If so, a recompression chamber will be provided on the vessel. In addition, a fully operational recompression chamber dedicated to emergency response is available 24 hours a day, 7 days per week, at the following location:

Ocean Kinetics
Port Business Park
Lerwick
Shetland ZE1 0TW
Phone: 01595 696 707

Any diving activities will be fully compliant with the requirements of the Diving at Work Regulations 1997, as set out in the Health and Safety Executive Approved Code of Practice (ACOP) for inland/onshore commercial diving projects³.

3.8 Vessels on site for inspection and maintenance work

3.8.1 Working vessels

The table below lists each vessel working on the site. This will be updated and copied to the CGOC whenever vessels arrive and leave.

Deployment vessel name	MV C-Odyssey
Vessel Callsign	2ETW7
Vessel Maritime Mobile Service Identity number (MMSI)	235088132
Type of vessel	Multiworker Twenty6
Normal number of crew carried	3
Weather and/or other operational limitations	MCA Workboat Cat1: 150 miles from shore, Wind 30knts & 2m swell
Telephone contact numbers (mobile and/or satellite)	Boat no.: [Redacted] Office no.: +44 (0) 1856 874 725
Email address	c-odyssey@email.com

³ Available at <http://www.hse.gov.uk/pubns/books/l104.htm>

Communications equipment fitted e.g. VHF, MF and HF Marine band radios, satellite systems, fitted, etc.	<ul style="list-style-type: none"> - Radar system: Furuno - Compass: Magnetic Compass - Gyrocompass: No - Echosounder: Furuno Navigational Sounder - GPS: Furuno GPS Navigation Chart Plotter: Transas ECDIC system & Lorenz Cmap - Autopilot: Simrad AP50 - Navtex: Furuno NX 700 - VHF: 2no. Sailor DSC 6222 - VHF handheld: 2no. Emergency VHF's & 3 Deck VHF's - VHF GMDSS: 1no. Furuno - Inmarsat-C: Yes - AIS: Furuno FA-100
Communications channels/frequencies monitored during normal and abnormal operations e.g. when at sea proceeding to and working at the site	<p>Working Channel 10 or 14</p> <p>Listening watch on VHF16 + DSC 70</p>
Dates on site	TBC to Shetland CGOC



Source: Leask Marine

Figure 7: Example working vessel (MV C-Odyssey)

3.8.2 Guard Vessel

No dedicated Guard Vessel will be used.

3.8.3 Rescue Boat Capabilities

No dedicated Rescue Boat will be available.

3.9 Airborne Activities

There will be no aircraft operations associated with the works.

3.10 Locating Aids Used by Personnel or Vessels Working at the Site

The deployment vessel will use AIS with MMSI as detailed in 3.8.1. Nova offshore staff will wear AIS personal locator beacons (Ocean Signal MOB1, see <http://oceansignal.com/products/mob1/>) .

3.11 Electronic Surveillance and Monitoring Systems

The working vessel will be fitted with AIS (Class A).

3.12 Radio Communication Aerials

The site is not fitted with radio communications aerials. The working vessel can communicate using VHF. Vessel contact details are given above.

3.13 Emergency Response

3.13.1 Equipment on OREIs

The working vessel the Leask Marine C-Odyssey is compliant with MCA Category 1 requirements for emergency lifesaving equipment which is stored in the vessel wheelhouse. The locations of other relevant items are shown below.

C-Odyssey Emergency Response Equipment Locations

Equipment	Location
First Aid Kit	Vessel Galley / Deck Store
Eye Wash Kit	Vessel Galley / Deck Store
Emergency Lifesaving equipment	Vessel Wheel house
Life Rafts	1x8m Vessel Main Deck / 1x8mAft of Wheel House

3.13.2 Emergency Communications

The communication equipment aboard the working vessel is outlined in 3.8.1. The onshore team will also have a portable VHF, landline and mobile phones. Should the C-Odyssey deploy its small inflatable tender, the crew of this should also have a mobile VHF on board.

See also: 4.1.3 Radio Communications.

3.13.3 Integrated Emergency Response Coordination Plan (IERCP)

There are no other offshore renewables projects in the immediate vicinity so no IERCP is required.

3.13.4 Offshore Transmission Owner (OFTO)

n/a

4. GENERIC INFORMATION

4.1 The Coastguard Operations Centre (CGOC)

4.1.1 Role and Responsibility of the CGOC:

As the UK maritime emergency service, HM Coastguard's CGOCs are responsible for the coordination of all civil maritime emergency response and search and rescue operations within the UK Search and Rescue Region (UKSRR). This includes the mobilisation and tasking of adequate resources to respond to persons at risk of death or injury at sea or on the cliffs or shoreline of the UK.

The CGOC is also the first point of contact for any reports of vessels in difficulties e.g. engine failures, or pollution or maritime security incidents or concerns.

4.1.2 Communicating with HM Coastguard:

HM Coastguard uses a network of remote aerials to ensure VHF coverage from the coast to nominally up to 30 nautical miles offshore. HM Coastguard maintains a radio distress watch on VHF and MF DSC. The primary means of distress alerting on VHF is by DSC channel 70 but a listening watch is also kept on VHF channel 16.

4.1.3 Radio Communications

All CGOCs can operate on channels 6, 10, 16, 62, 67, 70 DSC, 84, 86, and on two private SAR coordination channels, 0 and 99. Channels 62, 63 and 64 are duplex and are mainly used for medical link calls and Maritime Safety Information (MSI) broadcasts, but can also be used for SAR. HM Coastguard is not formally licensed to use other VHF Marine Band channels, but may use them in extremis.

Medium Frequency (MF) frequencies used by HM Coastguard include 2187.5kHz (DSC), 2182kHz (MF distress, urgency and safety working frequency) and 2596kHz (HM Coastguard's primary MF working frequency although a range of other frequencies are used by individual CGOCs for SAR and general communications. In the event that HMCG requires any windfarm work or service craft to use MF radio (where that is required or fitted), the relevant frequency will be informed to the craft at the time.

VHF

RT coverage is provided by a network of remote aerial sites in Orkney, Shetland and mainland Scotland to ensure VHF RT coverage from the coast to 30 miles offshore.

VHF DSC is available at all remote VHF sites.

MF

RT coverage is provided by a network of remote aerial sites in Orkney, Shetland and mainland Scotland to ensure a MF RT coverage of 150 miles offshore.

MF DSC is available from selected site.

Channels & Frequency

Shetland CGOC is capable of working all standard maritime VHF channels. However, only channels 6, 10, 16, 23, 67, 73, 84 and 86 are used routinely.

Similarly Shetland CGOC is capable of working all standard maritime MF frequencies. However, only 1770, 2182, 2226 and 2596kHz are used routinely.

A 24hour watch is maintained on VHF channel 16, VHF DSC and MF DSC.

Procedures to be followed by duty personnel to report accidents or incidents and/or to communicate with the CGOC - routinely and in emergencies.

4.1.4 CGOC Contact Information

The following contact information is for the most appropriate CGOC for routine purposes. In an emergency, the CGOC responsible for the area containing the development will respond and this may not be the nearest CGOC or the one detailed below.

Shetland CGOC

Knab Road

LERWICK

Shetland

ZE1 0AX

Primary emergency and routine telephone: 01595 692976

Secondary emergency tel. contact: dial 999/112 and ask for Coastguard

Email: zone1@hmcg.gov.uk

Fax: 01595 694810 (24hrs)

Watch kept: 24 hours

VHF/MF DSC routine contact MMSI: 002320001

VHF DSC Distress/Urgency alerting: DSC sets will make an "all stations" call in this mode of operation and this will be received by the relevant CGOC

Radio call sign: 'Shetland Coastguard'

In an emergency, VHF communication with the CGOC on Channel 16 will be the preferred method. For routine purposes the office telephone and/or email may be used.

4.1.5 Reporting Incident Position/Location

It should be noted that the position of any incident (the OREI or other location) is a vital part of the incident response process and should be reported as part of initial incident details. If the incident is on a WTG, the precise coordinates (in latitude and Longitude) should be passed to HM Coastguard so that any responding rescue unit may use the position for precision navigation purposes.

4.2 SAR (Search and Rescue) Facilities and their Response Capability

4.2.1 Availability of National SAR Resources

National Search and Rescue resources (lifeboats and rescue helicopters) are available if:

- the incident exceeds the capability of the operator resources or,
- if in the opinion of the work/safety boat skipper or work supervisor or other person, urgent and immediate assistance is required or,
- it is an event which has occurred to persons or vessels not connected with the OREI or its operations. In this event, and where safe and feasible to do so, wind farm work and safety craft should respond and provide assistance in accordance with IMO SOLAS regulations, Chapter V.

4.2.2 Surface Craft Rescue Resources Available



Figure 8: Lerwick Lifeboat RNLB 17-10 Michael & Jane Vernon⁴

Royal National Lifeboat Institution (RNLI) All-weather lifeboats (ALB) are able to reach virtually any point 50 miles from the coast of the British Isles within 2½ hours. RNLI ALBs are stationed at:

Shetland Islands	Aith and Lerwick (Figure 8)
Orkney Islands	Kirkwall, Stromness and Longhope
Mainland Scotland	Thurso, Wick, Invergordon, Buckie and Fraserburgh

The two lifeboats stationed at Aith and Lerwick are Severn Class lifeboats as shown in Figure 8. The following information generalises the capabilities of this lifeboat type:

- Inherently self-righting, inflatable daughter boat and comprehensive medical equipment
- Portable salvage pump
- Crew of 7
- Maximum speed of 25 knots
- Range of 250 nautical miles
- Length 17.3m, Beam 5.9m, Draught 1.78m
- Displacement of 42 tonnes
- Fuel capacity of 5,600 litres

Note: Royal National Lifeboat Institution and other volunteer lifeboat and rescue boat services provide craft to rescue persons in danger at sea. Their personnel are not trained to climb Wind Turbine Generators or enter an OREI and should not be requested to do so. Their role in the OREI context is limited to rescuing or assisting persons from the landing stages or decks of such installations.

⁴ Source: <http://www.lerwicklifeboat.shetland.co.uk/rnlb-17-10-michael-jane-vernon/>

4.2.3 Airborne Rescue Resources

There are ten UK SAR helicopter bases, the following two are the most relevant to the Shetland Tidal Array, with Sumburgh the closest at ~70 miles from the OREI:

- Coastguard S-92 helicopter based at Sumburgh, Shetland.
- Coastguard S-92 helicopter based at Inverness.

These aircraft must not be factored in to the operator's own provisions for Emergency Response and are to be looked at as a resource of last resort.

The following information generalises the capabilities of this aircraft type:

Sikorsky S-92

Air Speed: 145 knots

Operational range: in excess of 250 nautical miles radius of action

Normal flight crew: 4

Capacity: 21 persons as required – 3 stretchers, 10 seated persons, additional standing persons

Endurance: over 4 hours

De-icing equipment

Twin hoist

Comprehensive medical suite



All SAR aeronautical resources are tasked by the Aeronautical Rescue Coordination Centre (ARCC) based on a number of factors including greatest need, weather, availability, etc. Therefore, the nearest aircraft base as detailed above, may not be the one mobilised during an emergency.

4.3 Medical advice / assistance

4.3.1 Information specific to the Shetland Tidal Array

The nearest medical facilities to the site are shown below:

MEDICAL FACILITIES

Type	Address	Telephone	Distance
Accident and Emergency	Gilbert Bain Hospital South Rd, Shetland ZE1 0TB	01595 743 000	82 km including one Ferry crossing from Cullivoe; two ferry crossings from Belmont.
Minor injury	Yell Health Centre Reafirth, Shetland ZE2 9BX	01957 702 127	18 km by road from Cullivoe; including one ferry crossing from Belmont.

Requests from a ship at sea in the UK SAR Region for medical advice and/or assistance should be made to the nearest Coastguard CGOC. The proword MEDICO should be used, giving priority over routine calls, and the Urgency signal PAN PAN can be used if required. The Coastguard will link the vessel to a hospital doctor.

Information required may include:

name & type of vessel	
vessel's present position, course, speed and intentions	
vessel's last port and next port	
name, gender & age of patient	
patient's symptoms, condition & medical history	
treatment already taken	
medication available on board	

However, notification should not be delayed if all the information is not immediately available.

Assistance provided will depend on the circumstances, but may include the transport to the vessel of a medical or paramedic personnel and/or the evacuation of the patient(s) by helicopter or surface craft.

NOTE: Medical advice by radio to telephone link call is available via HM Coastguard. If the OREI operator has its own medical advice capability, they should use this in the first instance unless the situation is considered urgent. Evacuation of injured or ill persons can be arranged with HM Coastguard if the operators own resources (work and/or safety boat) are considered inappropriate or speed is of the essence. If in doubt, HM Coastguard should be contacted.

4.4 Firefighting, Chemical hazards, Trapped Persons, etc

There are no specific procedures to be followed beyond those defined in the onshore health and safety documentation and in the construction vessel's procedures.

NOTE: It is understood that general instructions to OREI personnel are that should a fire break out, the OREI is to be evacuated and no direct firefighting response is to be attempted. This will be the normal response to such situations.

4.5 Survivors Shore Reception Arrangements

4.5.1 Procedures

As agreed between the local Police Service, the CGOC, local council and the operators) to be followed for the reception of persons to shore who may require post incident processing or medical or social support following an incident within or on the OREI - whether or not the persons involved are personnel working for the operator or third parties involved in an external incident.

Overall co-operation of emergencies ashore in the UK is the responsibility of the Police.

The Police therefore co-ordinate other local responders managing shore reception resources such as temporary accommodation, emergency feeding and rest centres, transport, equipment, etc. Landing sites are designated in port and local authority plans.

The Police are also responsible for security and preservation of the incident scene (so far as possible); news media control; visits by VIPs; and subsequent investigation in parallel with agencies such as the Marine Accident Investigation Branch and the MCA Enforcement Branch.

4.5.2 Embarkation/disembarkation point

Survivors may need to be delivered to a location other than the normal embarkation/disembarkation point depending on:

- the location of the OREI
- the origin point of the rescue units
- the weather and/or incident conditions and situation
- the scale of the incident and its consequences.

It is however envisaged that the Cullivoe Pier (see EMERGENCY CONTACT AND QUICK REFERENCE INFORMATION) would be appropriate in most foreseeable circumstances, given its proximity (~1km) to the turbines and the good shelter this harbour provides for vessels coming alongside.

4.6 Informing Next-of-Kin

The appropriate authorities will be involved in the event of any incidents.

The Police are responsible for informing next-of-kin in the UK. In major incidents a Police Casualty Bureau will be established as a central contact point for those seeking or providing information about persons who might have been involved, to collect data, and collate records. Contact telephone numbers will be disseminated via the news media. Documentation teams staff each landing site and each hospital, mortuary and survivor reception centre.

In all these matters the Police will liaise closely with other authorities involved, including the Coastguard and the Company.

See local police station address in 4.8.

4.7 Suspension / Termination of SAR action

The SMC is responsible for deciding when to terminate attempts to rescue and/or search operations for incidents but will do so in conjunction with:

- SAR resources
- On-scene Coordinator
- OREI Operators, personnel or contractors
- Third parties
- Other emergency services
- Any other relevant party engaged in the incident.

4.8 Criminal Actions and Accidents to Persons

The CGOC and the local police force will be informed of any suspected criminal activity.

The nearest police station is the Mid Yell Police Station at Mid Yell, Shetland, ZE2 9BT.

The address of the main Shetland Police Station is at Market Street, Lerwick, Shetland, ZE1 0JN.

The Police must always be informed of any deaths on OREIs .

4.9 Media relations

In order to prevent the dissemination of misleading, incomplete, or incorrect information, and to reduce the danger of the news media impeding SAR operations, it is important that media liaison arrangements be established between the SAR service and the company.

The Marine and Coastguard Agency (MCA)'s Press Officer will be alerted by the CGOC in the event of an incident. It is the MCA Press Officer's responsibility to contact their opposite numbers in the company, any harbour authority involved, and the Police. If necessary, a media liaison team will be set up. Statements released to the media will be agreed beforehand, and each member of the team will avoid comment on other members' areas of responsibility. In general terms, these areas of responsibility are:

- MCA: providing information on the role of the Coastguard and the co-ordination of maritime emergency response resources during the incident;
- Nova Innovation: providing information on the ship, company policy, etc.
- Harbour operator (Shetlands Islands Council): if involved, providing information on activity in the port area, etc.
- Police: providing information on activities ashore, including survivor and casualty information, and the role and responsibilities of the Police. (Management of the media liaison team will pass from the MCA to the Police when activities at sea are concluded.) In general, MCA spokespeople will provide factual SAR information only - avoiding personal judgements and opinions or speculation as to causes or results. The MCA will not release the names of individuals involved or - before the company has been informed - the name of the ship or company. It is usual practice for the Police to release information about civilians involved in the incident and for the company to release crew details. Names are only released after positive identification has been achieved and every effort has been made to contact relatives. Information on military personnel involved should be released only by the service to which they belong.

Any statements to the media (in the event of an incident or otherwise) must be authorised by one of the Nova Innovation Company Directors.

The MCA Press Office can be contacted on:

Tel: +44 (0) 23 8032 9401

Fax: +44 (0) 23 8032 9404

4.10 Exercises

4.10.1 Procedures and periodicity

Periodic exercises will be held to test and practice procedures, processes and arrangements for responding to emergencies on or around the OREI, in conjunction with the SAR services

Full advice on exercises can be found in the Integrated Offshore Emergency Response Document – Renewables (IOER-R). All exercises should be planned in consultation with the MCA Offshore Energy Liaison Officer.

4.10.2 Planned exercises on the Shetland Tidal Array

Specific exercises are to be coordinated when the members of the Nova team are on site.

4.10.3 Note

It is recognised as good practice for an initial table-top exercise to be held shortly after commencement of operations. This serves as a 'get to know you' and educational process for all the operators staff and the emergency services who might be expected to respond to any emergency in or around the installation.

4.11 Unexploded Ordnance and Wreck Materials Located on or Near to OREIs

During construction or other seabed operations it is possible that unexploded ordnance or materials from uncharted wrecks could be located, exposed, disturbed or inadvertently lifted from the seabed. If this occurs the following procedures should be followed:

Unexploded Ordnance (UXO)

4.11.1 The object should not be moved (or removed if it is lodged in dredging buckets, pipes or conveyor systems, etc). The situation should be immediately reported to HM Coastguard who will alert the relevant military ordnance disposal organisation. All personnel should be evacuated as far as practicable away from the UXO.

4.11.2 Further information and advice to mariners on the handling of UXO can be found in UK MGN 323 (M+F)

4.11.3 A military Explosive Ordnance Disposal (EOD) team may be sent and they will take the lead in advising the contractors on response to the UXO. If necessary, telephone advice can be given directly from the EOD team either via mobile phone or by radio to telephone link-call via the Coastguard CGOC.

Wreck or Wreck Materials

4.11.4 Disturbance

Uncharted wrecks, (aircraft or vessels) or materials from wrecks may be located, disturbed or inadvertently lifted from the seabed during subsea operations. All such finds MUST be reported by law to the UK Receiver of Wreck. This should be done by telephoning the receiver of Wreck on:

020 381 72420 or 020 381 72421

Or contact the HM Coastguard who will then inform the Receiver of Wreck Officers.

Information on reporting wreck or wreck materials can be found at:

<https://www.gov.uk/government/groups/receiver-of-wreck>

4.13 Counter Pollution

Any pollution incident resulting from the Shetland Tidal Array, or associated activities will be dealt with in accordance with the Shetland Islands Council Marine Pollution Contingency Plan⁵. This plan was prepared in accordance with the MCA guidelines provided in the National Contingency Plan for Marine Pollution from Shipping and Offshore Installations and covers the organisation and procedures for containment and clearance of marine pollution within the Shetland area. The plan is based upon the need to minimise the impact of marine pollution on the environment, property and amenities.

The Bonn Agreement also contains useful information on responding to pollution events in and around offshore renewable energy installations. Information on this can be found in the following Bonn Agreement web page:

http://www.bonnagreement.org/eng/html/counter-pollution_manual/Chapter08_offshore%20windfarms.htm

5

<https://www.shetland.gov.uk/ports/contingencyplans/documents/SIC%20MPCContingency%20Plan/Marine%20Pollution%20Contingency%20Plan%202015%20Iss4%20No%20Personal%20WRCC%20Phone%20Numbers.pdf>

5. ADDITIONAL INFORMATION

5.1.1 The information contained in this section describes the duties and functions of various participants in SAR and explains any areas or information requirements of particular importance to SAR and other emergency response within OREIs.

5.2 The SAR mission co-ordination (SMC)

5.2.1 Each SAR operation is carried out under the direction of a SAR Mission Co-ordinator (SMC) at the CGOC. This function exists only for the duration of a specific SAR incident.

5.2.2 The responsibility of the SMC will vary depending on the nature and severity of the incident. The SMC is essentially in overall charge of coordinating and directing the response to an incident until it is successfully concluded or a decision has been agreed to terminate operations.

5.3 The On-Scene Coordinator - (OSC)

5.3.1 The CGOC may, according to the severity of an incident, wish to appoint a wind farm work/safety boat as OSC. The information below is for the guidance of the persons in charge of such boats:

- According to IAMSAR⁶, when two or more SAR facilities are working together on the same mission, it is sometimes advantageous if one person or vessel is assigned to co-ordinate the activities of all the participating units.
- The SMC (at the CGOC) designates the OSC, who may be in charge of a Search and Rescue Unit (SRU), ship or aircraft participating in a search, or someone at another nearby facility able to handle OSC duties.

5.3.2 The OSC should be the most capable person or vessel available, and the following considerations should be taken into account when selecting:

- the amount of SAR training and experience the person may have had
- communications capabilities
- the length of time that the facility on which the OSC is aboard can stay in the search area.

5.3.3 Duties which the SMC may assign to the OSC, depending on needs and qualification include any of the following:

- assume operational co-ordination of all SAR facilities on scene
- receive and implement the search action plan from the SMC
- modify the search action plan based on prevailing environmental conditions, SRUs / SAR Facilities availability and capability, new target information and new developments on scene, keeping the SMC advised of any changes to the plan

⁶ IAMSAR – International Aeronautical and Maritime Search and Rescue. The acronym given to the manual jointly produced by the International Maritime Organisation (IMO) and International Civil Aviation Organisation (ICAO). IMO and ICAO are specialised agencies of the United Nations.

- establish and maintain communications with all SRUs using the designated on scene channels
- provide relevant information to the other SAR facilities
- monitor the performance of other units participating in the search. Co-ordinate and divert surface units or helicopters to evaluate sightings
- develop and implement the rescue plan (when needed)
- co-ordinate safety of flight issues for SAR a/c (where no Aircraft Co-ordinator is appointed)
- make consolidated situation reports (SITREPS) back to the SMC.

5.3.4 Information that the SMC needs from the OSC includes:

- On-scene weather, wind, and sea conditions when significant changes occur, and at least every four hours if the SMC has not stipulated a shorter time interval
- SRU on scene arrival and departure information, including actual and estimated time
- Pertinent new developments or sightings
- Major modifications made to the SMC's SAR action plans, either already taken or recommended
- Requests for additional assistance
- Summary of search areas, completed with an assessment of the search effectiveness
- Obtain results of search as each facility departs the scene.

5.4 Search planning

5.4.1 In the event that persons or craft are in danger and drifting on or in sea, and they are unable to provide locating signals or a precise position, search and rescue units will have to be deployed to physically look for them. This requires that search area calculations are made based on the movements of the tide, local currents and wind (leeway) as they might act on the object drifting e.g. life raft, life boat, drifting vessel, person in the water, etc. Any information that the OREI has or records on tide and wind speed and direction could be helpful in the accurate calculation of search areas. Such useful information could be:

- information about tides and water currents,
- availability of any wind data from OREI resources e.g. anemometer information and how the CGOC can obtain this.
- Explanation of the procedures to be carried out by the CGOC, and any information or actions required from the operator, in the event of search planning action being required.

5.5 Liaison

It is recognised as good practice that OREI operators and the emergency services should conduct periodic visits to each other's operations rooms, control centres, etc. to maintain close liaison and understanding between all parties.

6. CONTINGENCY PLAN FOR COMPLIANCE WITH LICENCE CONDITIONS

This section outlines the steps that must be taken to ensure compliance with key licence conditions.

6.1 Licence conditions

Attention is drawn to the following conditions from Nova Innovation's register of conditions compiled from Marine Scotland Licence 06642/18/0 and SIC Works License No. 2018/002/WL.

Table 5: Selected Conditions from Marine Scotland Licence 06642/18/0

Ref.	Description	Action
PART 3.1	GENERAL CONDITIONS	
3.1.4	<i>Force Majeure: Deemed to apply when due to stress of weather or any other cause, the master of a vessel or vehicle operator determines that it is necessary to deposit the substance or object other than at the Site</i>	Notify MS-LOT within 48 hrs
PART 3.2	CONDITIONS APPLICABLE TO ALL PHASES OF THE WORKS	
3.2.1.2	<i>Incident reports: breaches of health, safety or environmental obligations must be reported within 24 hours</i>	Notify MS-LOT within 24 hrs
3.2.3	CONDITIONS APPLICABLE DURING CONSTRUCTION OF THE WORKS	
3.2.3.3	<i>Navigational safety: The Licensee must, in case of damage to, destruction or decay of, the Works notify the Licensing Authority in writing as soon as reasonably practicable. The Licensee must carry out any remedial action required by the Licensing Authority, following consultation with MCA, NLB & any other such advisers.</i>	Carry out remedial works as necessary
3.2.4	CONDITIONS APPLICABLE ON COMPLETION OF THE WORKS	
	<i>Navigational safety: The Licensee must ensure that a contingency plan is in place to respond to catastrophic failures - this plan should include the transmission of local Radio Navigation Warnings.</i>	See flow chart below

Table 6: Selected Conditions from SIC Works License No. 2018/002/WL

Ref.	Description	Action
SITE / PROJECT SPECIFIC CONDITIONS		
10	<i>In event of works falling into disrepair or becoming damaged, adrift, stranded, abandoned or sunk in manner to cause obstruction or danger to navigation, the developer shall carry out or make suitable arrangements for the carrying out of all measures necessary for lighting, buoying, raising, repairing, moving or destroying, as appropriate, the whole or any part of the equipment to remove obstruction or danger to navigation.</i>	Carry out remedial works as necessary
STANDARD TERMS AND CONDITIONS		
4	<i>In the event of environmental pollution causing a nuisance, either on land or ashore or in the sea, in connection with the operations on, in about or in connection with the Works, the Licensee shall carry out or make arrangements for the carrying out of all measures considered reasonably necessary for the clearance and removal of any such pollution. The Licensee shall ensure that any damage caused as a result is made good. [redacted]</i>	Carry out remedial works as necessary

6.2 Responsibilities

The Nova Innovation Offshore Manager (or their appointed duty replacement) will have operational responsibility for ensuring compliance with the conditions outlined in Section 6.1.

6.3 Contingency plan actions

The flow chart below outlines the actions to be taken in the event of an incident and the external communications that should be made to ensure compliance with the project's license conditions.

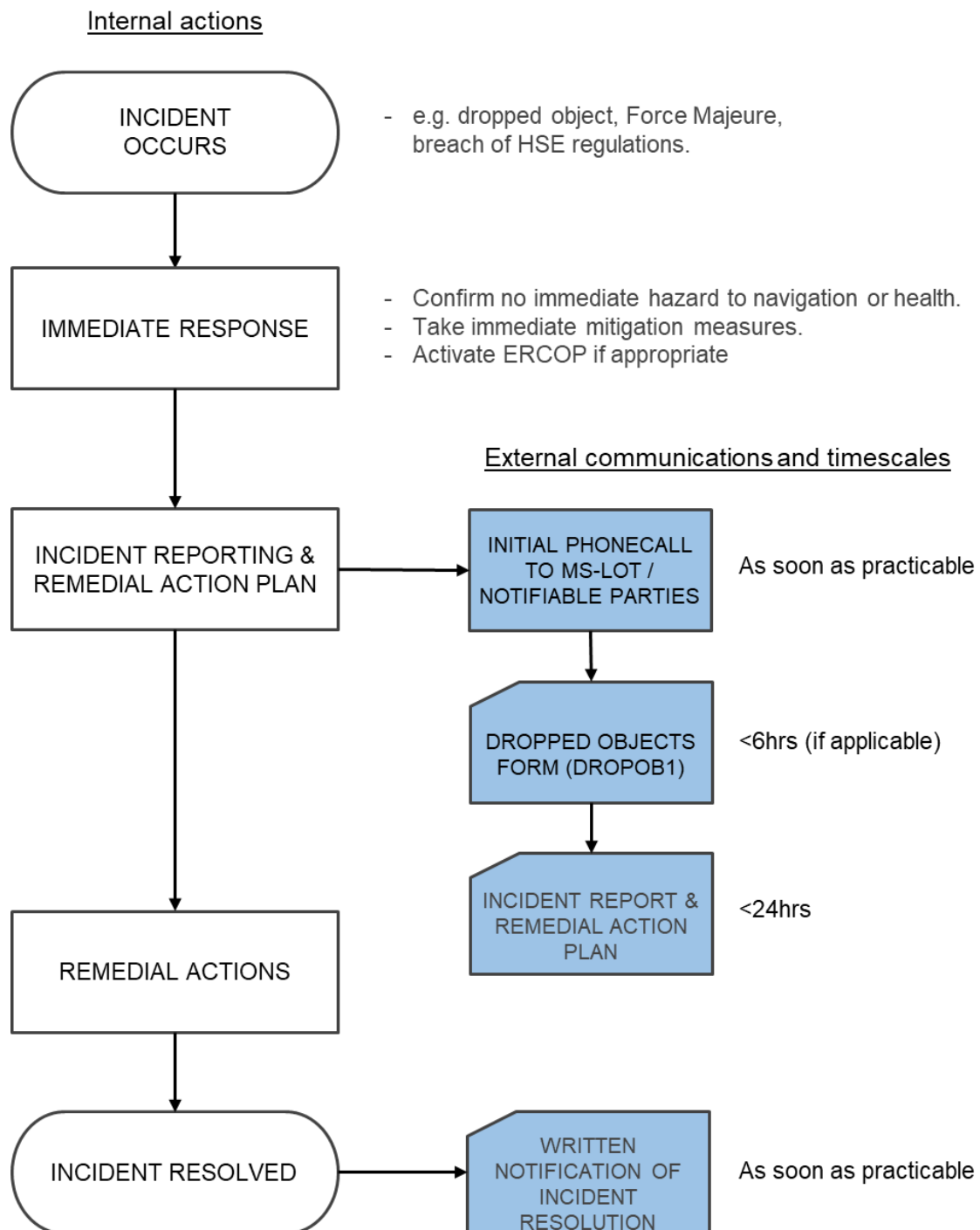


Figure 9: Contingency plan for compliance with license conditions

6.4 Key notifiable parties

The key parties that may need to be notified of an incident are listed below.

<p>Marine Scotland (MS-LOT)</p> <p>Case Officer: Rhys Potter</p> <p>Tel: +44 (0) 300 244 7947</p> <p>Email: Rhysdavid.Potter@gov.scot CC: MS.MarineRenewables@gov.scot ; Jessica.Drew@gov.scot</p>
<p>Crown Estate Scotland</p> <p>Development Manager: Mark McKean</p> <p>Tel: 0131 260 6114 / Mob: [Redacted] Email: mark.mckean@crownestatescotland.com</p>
<p>Maritime and Coastguard Agency (MCA)</p> <p>Helen Croxson: Offshore Renewables Advisor</p> <p>Email: navigationsafety@mcga.gov.uk CC: peter.Lowson@mcga.gov.uk Tel: 02038 172 426 / Mob: [Redacted]</p>
<p>Shetland Islands Council (SIC)</p> <p>Ryan Leask: Marine Planning Officer</p> <p>Email: ryan.leask@shetland.gov.uk</p> <p>Tel: 01595 745 682</p>

Other parties may also need to be notified as appropriate: see licence documentation here: <https://www2.gov.scot/Topics/marine/Licensing/marine/scoping/nova>

6.5 Reporting templates

The following reporting templates are provided below:

- Generic Incident Report and Remedial Action Plan
- Dropped Object Notification form

Generic Incident Report and Remedial Action Plan (Nova Innovation Shetland Tidal Array)

Reporter details

Full Name:	Position/Title:
Contact Telephone No:	Contact E-Mail:

Incident details

Date of incident:	Time of incident:
Description of incident:	
Remedial action taken or planned:	
Parties requiring notification:	
Any additional information that may be useful*	
Date of incident report:	Date incident resolved:

* Attach details (images/diagrams) or continue on separate sheets if required

DROPOB1 - OFFSHORE WIND & MARINE RENEWABLES DROPPED OBJECTS FORM

Marine Scotland notification pro-forma for reporting the dropped materials from the offshore wind/marine renewables industry at sea

[The local Coastguard must be contacted by telephone ASAP. This form should also be completed and submitted to the following contacts within 6 hours of dropping an object, where possible, and in any event within 5 days of becoming aware of loss /dumping incident.

Marine Scotland

Scottish Fisherman's Federation

Regional Inshore Fisheries Groups (RIFGs):

West Coast RIFG

Outer Hebrides RIFG

Orkney Management Group

Shetland Shellfish Management Organisation

Maritime & Coastguard Agency

Appropriate local HM Coastguard Station

Kingfisher at Seafish

Northern Lighthouse Board

UK Hydrographic Office (UKHO)

Navigational Warnings at UKHO

MS.MarineRenewables@gov.scot & Case Officer

PON2@sff.co.uk or fax – 01224 647078

Alastair.mcruaraidh.mcneill@gmail.com

duncan@craigard.co.uk

orkneyfisheries@btconnect.com

carole@ssmo.shetland.co.uk

navigationsafety@mcga.gov.uk

kingfisher@seafish.co.uk or fax 01472 268792

Navigation@nlb.org.uk

sdr@ukho.gov.uk

navwarnings@btconnect.com

Reporter Details		Date of Report:	
Full Name:		Position/Title:	
Contact Telephone No:		Contact E-Mail:	
Operator/Organisation/Company responsible for dropped object:			
Name offshore Wind/Marine Renewable development or ship responsible for dropped object			
Location/position at the time of dropping object:			
Latitude:		Longitude:	
Date dropped:		Time (24hours):	
Weather conditions at time:		Depth of Sea (metres):	
Wind Direction (0-360 degree):		Wind Speed (knots):	
Beaufort Scale: Tide Rate/Direction		Wave Height (metres):	

Dropped Object(s) – provide full description. Materials involved, function of object, dimensions etc. Provide Photos if available.	
If the materials are resting on the seabed are they near wind turbines / renewable devices? Yes or No:	
Are the materials likely to float on sea surface or in water column? Yes or No: If no, estimated clearance over object:	
If the answer to question above is YES - are materials likely to reach shore or cross an international border? - please specify	
Reasons for dropping object(s)	
What are the plans to recover the materials? <i>Please specify details, including anticipated timescales for the recovery operation. If there are no plans to recover the materials the reason for this must be clearly specified.</i>	
What are considered to be the risks and dangers to other users of the sea as a result of the lost or dumped materials not being recovered?	
Any further information that may be useful:	
Please list the organisations that you have / will copy this form to:	

For internal use only:
Incident history:
Date of circulation to consultees by developer:
Actions taken:
Final Action:
Confirmation that case is closed : <input type="checkbox"/>
Name of person closing the dropped objects case:
Date closed:
Reason for closing case:

For Internal Marine Scotland use only

Close off's received from:

MS – Compliance/Fisheries/Renewables	
SFF	
NFFO	
IFGs	
MCA	
Kingfisher	
NLB	
UKHO	