MEYGEN

THE TIDE OF CHANGE IN CAITHNESS

Operation Phase Emergency Response Cooperation Plan

This ERCOP is between MeyGen and HM Coastguard for Meygen Phase 1.

Fraser Johnson

External

Author: Fraser Johnson	Document No: Meygen Phase1A ERCOP_2.Docx	Revision: 2
Document Title: **Operation Phase Emergency Response Cooperation Plan**		

MEYGEN
THE TIDE OF CHANGE IN CAITHNESS

Document History and Status

Revision	Approved by (internally)	Date approved	Date issued	Comment
A	DRAFT for comment			
1	F.Johnson	30/07/20	30/07/20	Slight revision to Section 9.4.3. The document has not been approved by MCGA.
2	F.Johnson	28/09/20	28/09/20	Document revision after comments provided by consultees

Issued to COMPANY name	Date	Format	Contact details	Rev	Reason
MCGA	23/07/20	PDF	OELO@mcga.gov.uk	A	For review
MSLOT	30/07/20	PDF	Nikoleta.Papanastasouli@gov.scot	1	For submission with VM&NSP. Issued for review by consultees.
HMCG	28/09/20	PDF	Peter Lowson, Offshore Energy Liaison Officer	2	Issued for review by OELO

4th floor,
Edinburgh Quay 2,
139 Fountain Bridge,
Edinburgh,
EH3 9QG
www.meygen.com

Contents

1 ORGANISATION INFORMATION

1.1 MeyGen

MeyGen is the owner and operator of the MeyGen tidal array located in the Inner Sound of the Pentland Firth, Figure 1. Meygen is a subsidiary of Simec Atlantis Energy.

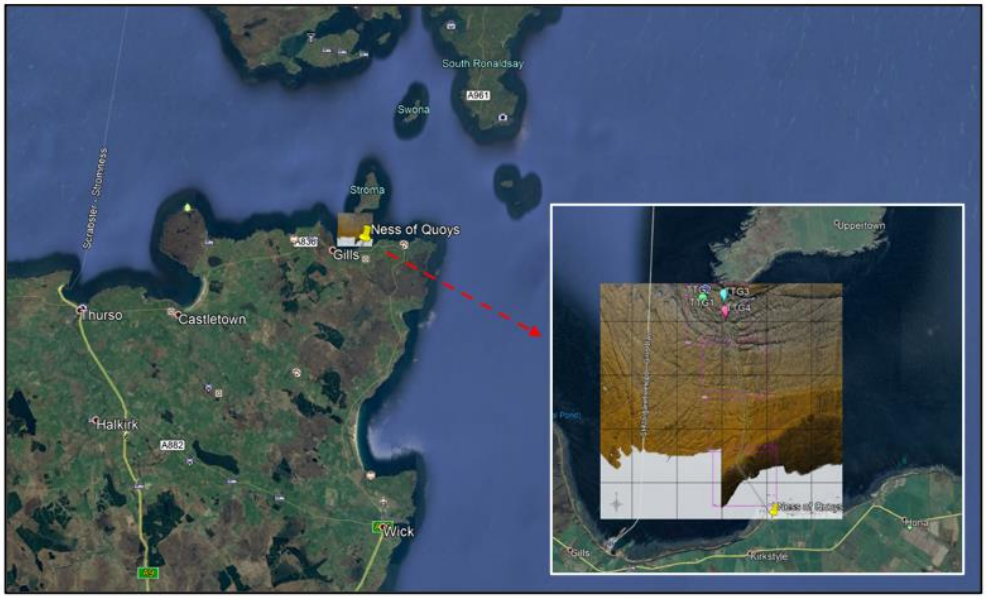


Figure 1 – MeyGen site location

The offshore site is located to the SW of the Island of Stroma, between Stroma and the Scottish mainland. The onshore substation, where the export power cables are landed via a 550m horizontally drilled duct, is located at Ness of Quoys. The onshore substation is shown in Figure 2, the substation is the green building on the shoreline to the right in the image.

Figure 2 – MeyGen onshore substation

1.1.1 Role and Responsibilities of MeyGen in an Emergency:

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

MeyGen is also obliged, under international maritime agreements and practices e.g. 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 array or area and/or when requested to assist by the relevant CGOC.

MeyGen 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 array.

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

1.1.2 MeyGen Contact information:

Primary contact: 24-hours

- Fraser Johnson
  - Meygen O&M Manager
  - [Redacted]
  - Fraser.johnson@meygen.com

Secondary Contact: 24-hours

- Bruce Mackay
  - MeyGen Site Manager – Onshore
  - [Redacted]
  - Bruce.mackay@meygen.com

Contact: office hours

- David Taaffe
  - Director of Projects
  - [Redacted]
  - David.taaffe@simecatlantis.com

1.1.3 Simec Atlantis Energy Communications

Director of External Affairs

- Sean Parsons
- [Redacted]

1.1.4 Onshore transmission grid operator contact information

Scottish and Southern Electricity Networks

- **0800 300999**

1.1.5 Police contact information

The closest Police station to the offshore site is Wick:

- Bankhead, Wick, KW1 5LB

- TBC

1.2 ERCOP Owner

The ERCOP has been written by the MeyGen O&M Manager who is responsible for the annual review and update of this document as appropriate.

2 PARTIES TO WHOM THIS DOCUMENT AS BEEN ISSUED

MeyGen has / will issued this document to the following parties to provide a document of reference:

MCGA

- Offshore Energy Liaison Officer
- oelo@mcga.gov.uk

CGOC

- Renewables@hmcg.gov.uk

Nigg Energy Park

- Marine operations base
- Alan.Carter@gegroup.com

Wick Police Station

- TITLE
- E-mail address

SAE external communications

- Sean Parsons
- sean.parsons@simecatlantis.com

Marine Contractor

- To be advised as per Section 5.1

Vessel master

- To be advised as per Section 5.1
-

3 EMERGENCY SHUTDOWN PROCEDURES AND PROCESSES

The array is controlled by a SCADA accessed via operators with suitable access rights, . To access the SCADA an operator requires:

- A computer / laptop equipped with SAE Virtual Private Network access
- TIGER VNC software
- The correct IP address
- Access to the internet
- Log in details

Of the MeyGen team two personnel have access to control the turbines:

Primary Contact: 24-hours

- Bruce Mackay
  - MeyGen Site Manager – Onshore
  - [Redacted]
  - Bruce.mackay@meygen.com

Secondary Contact: 24-hours

- Fraser Johnson
  - Meygen O&M Manager
  - [Redacted]
  - Fraser.johnson@meygen.com

Once the Array SCADA has been accessed a turbine can be shut down and the Rotor locked in under 90 seconds.

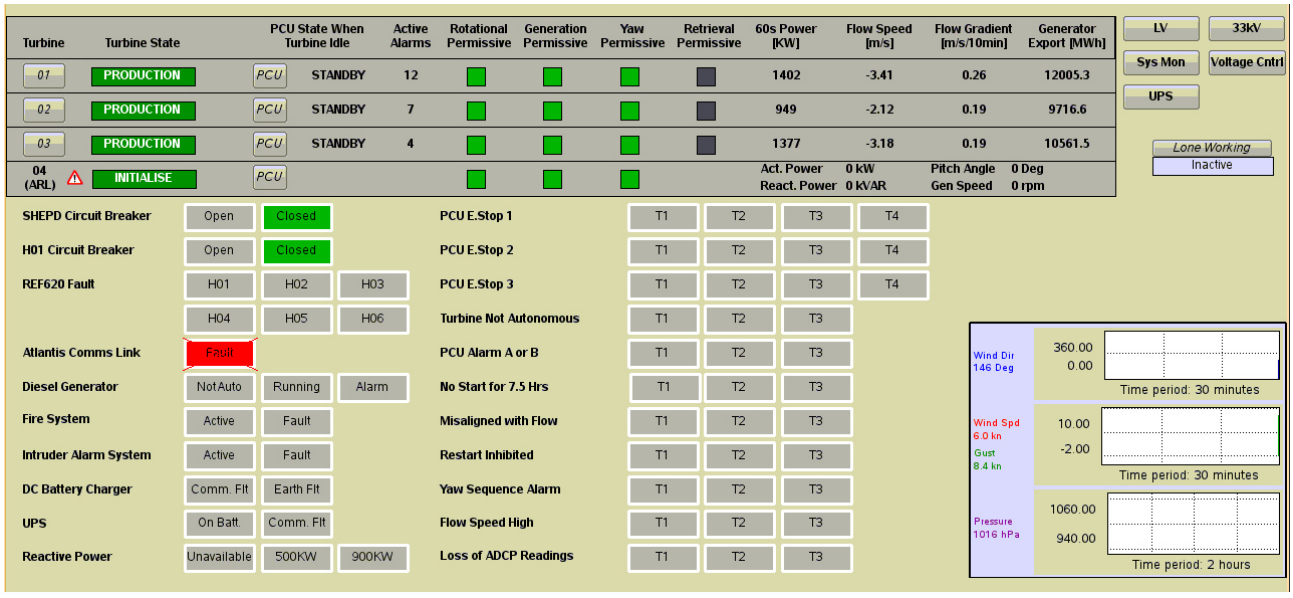


Figure 3 – Array SCADA main page

An emergence stop can also be triggered by SSE opening the SHEPD circuit breaker or an E-STOP can be depressed in the onshore substation.

4 SITE LAYOUT

The turbines and export cables are located at the positions listed in Table 1. The turbines and export cables are shown in Navigational charts as per Figure 4.

Table 1 – Turbine locations

Turbine	Longitude UTM 30 WGS84	Latitude UTM 30 WGS84	Water depth (m) LAT	TTG Height (m)	Clearance above TTG (m) LAT
TTG 1 - AHH	03° 08.46158 W	58°39.60515 N	33.1	23.5	10.9
TTG 2 - AHH	03° 08.48413 W	58°39.55663 N	34.1	23.5	11.7
TTG 3 - AHH	03° 08.24738 W	58°39.57198 N	33.1	23.5	9.9
TTG 4 - AOU	03° 08.26262 W	58°39.50192 N	34.9	23.5	13.9

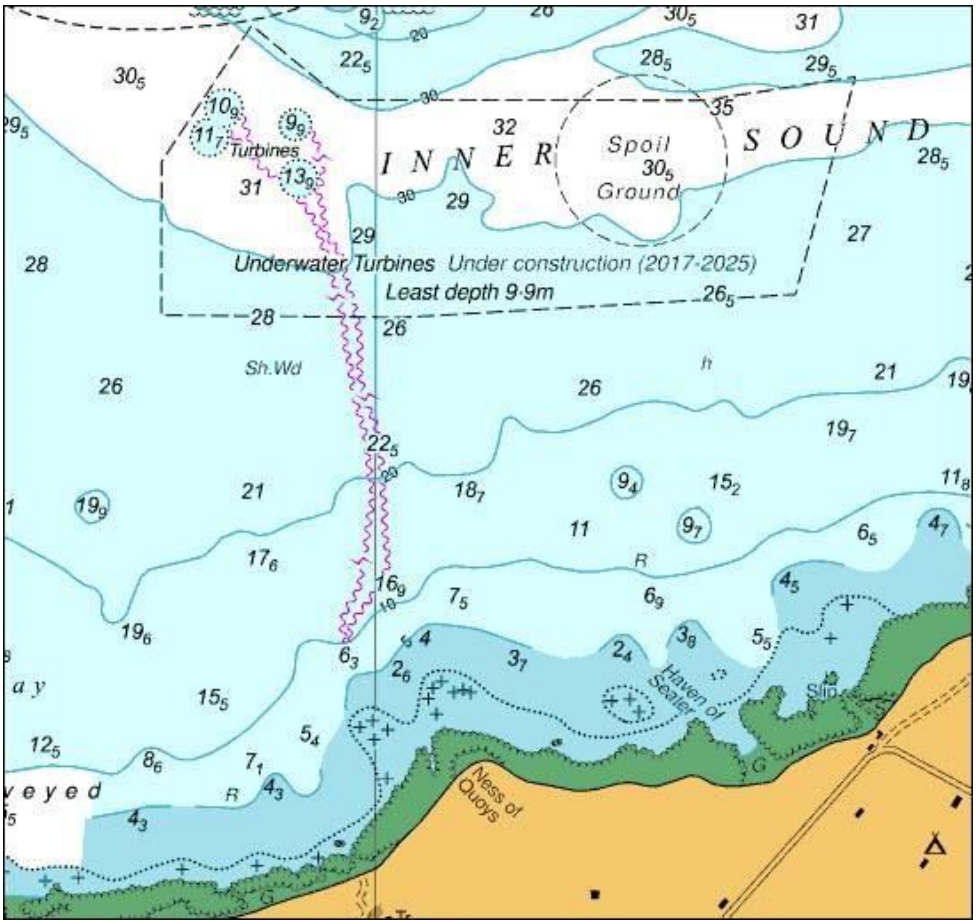


Figure 4 - Export cable and turbines shown in UKHO chart 2581

A more detailed set of site drawings is provided in Appendix B.

4.1 Maintenance and Offshore Operations

The marine works planned in the next 10 years are as follows:

- Site survey:
  - Conducted annually in Q2
- Cable stabilisation:
  - This is a preventative activity informed by the annual site survey.
  - MeyGen expect an infrequent requirement to undertake works to stabilise the cables
  - An operation is planned in 2021, no further works are currently planned after this intervention.
- Planned turbine maintenance:
  - Planned maintenance interventions for the AHH TTG is forecast for Q2 2023, future works would then occur in 2028, 2033 and 2038.
  - Planned Maintenance interventions for the AOU TTG are forecast for Q2 2024, future works would then occur in 2030, 2036.
- Unplanned turbine maintenance:
  - Unplanned maintenance events are by their nature unplanned

Notification of the above planned works, and any unplanned, works would be as per the procedure outlines in Section 5.1.

4.2 Site Access

The Inner Sound of the Pentland Firth is unrestricted to marine navigation, but at times is also a work site for the recovery and installation of tidal turbine generators, site survey or cable stability works. Vessels undertaking these works conform to the International Regulations for Preventing Collisions at Sea.

MeyGen manages site entry for vessels working at the MeyGen site in the issuance of a Site Entry Permit. The procedure for the issuance of this permit is detailed in *MEY-1A-70-PRO-001-F_OffshoreSiteEntryProcedure* and the offshore site is shown in Figure 5.

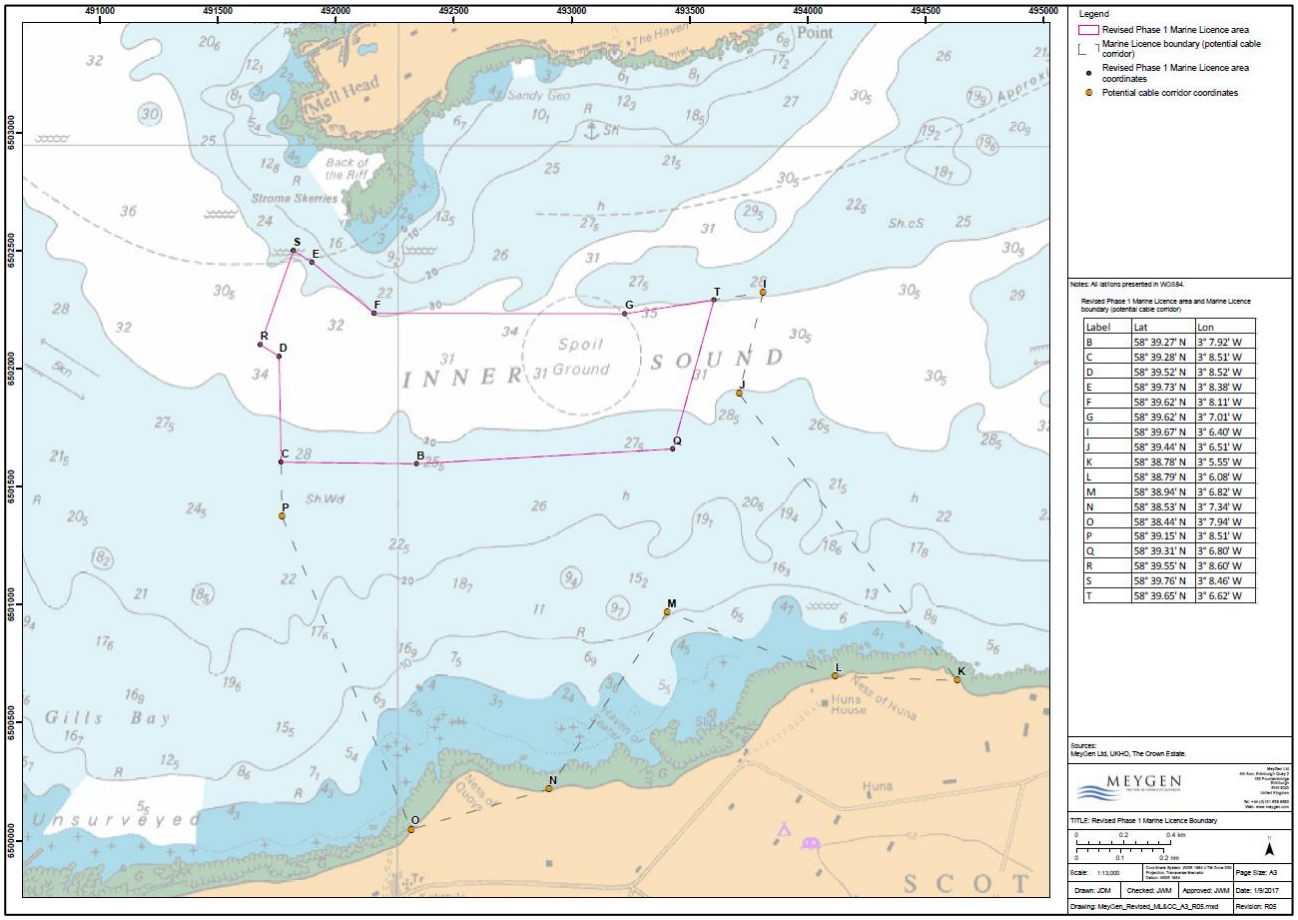


Figure 5 – MeyGen site boundary

4.3 Tidal flows and their prediction

MeyGen have a detailed 2D mathematical model that simulates tidal flows for a 10 minute average, Figure 6. A live feed can clao be obtained from the operating turbines via a open access web page. This also provides live data from a weather station located at Ness of Quoys, 50m from the shore line, Figure 7.

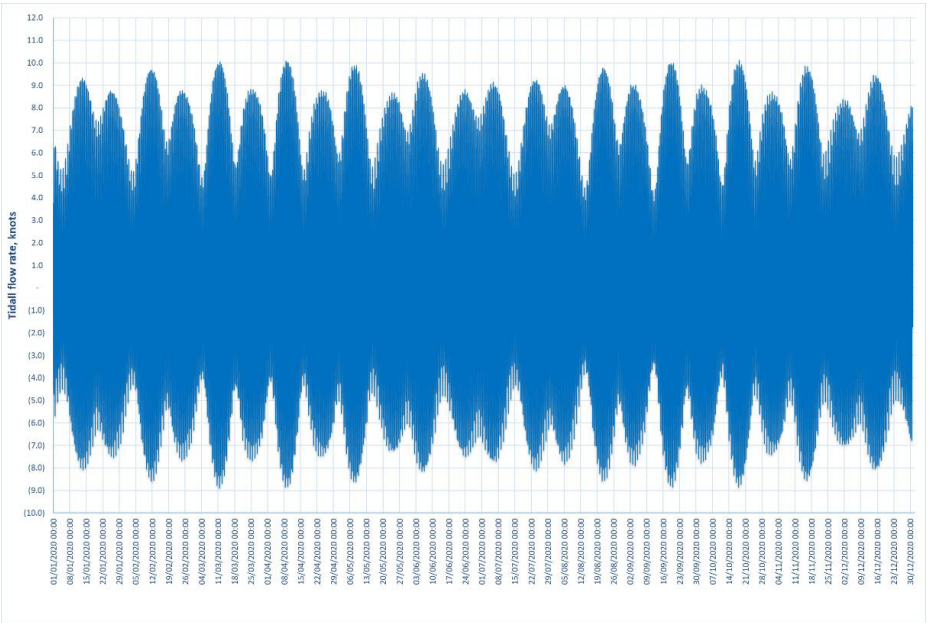


Figure 6 – Tidal prediction

Open access site data can be obtained from the following link:

- http://137.221.2.131:8888/meygen.cfm?key=ksef8lLUHF*US>LKJSsdas8&inst=0&day

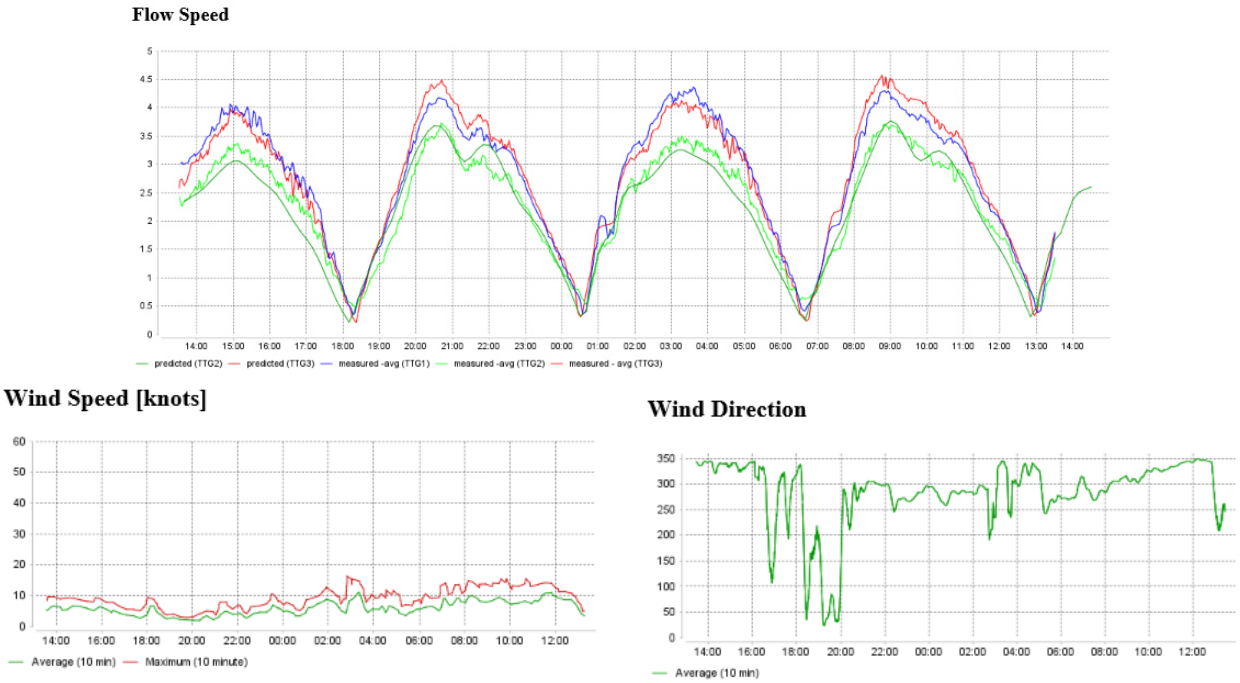


Figure 7 – Open access site data

5 LIAISON ARRANGEMENTS BETWEEN *MEYGEN* AND HM COASTGUARD

5.1 MeyGen Communications plan

The notifications to be issued pre-requisite to and upon completion of marine works are shown in Figure 8.

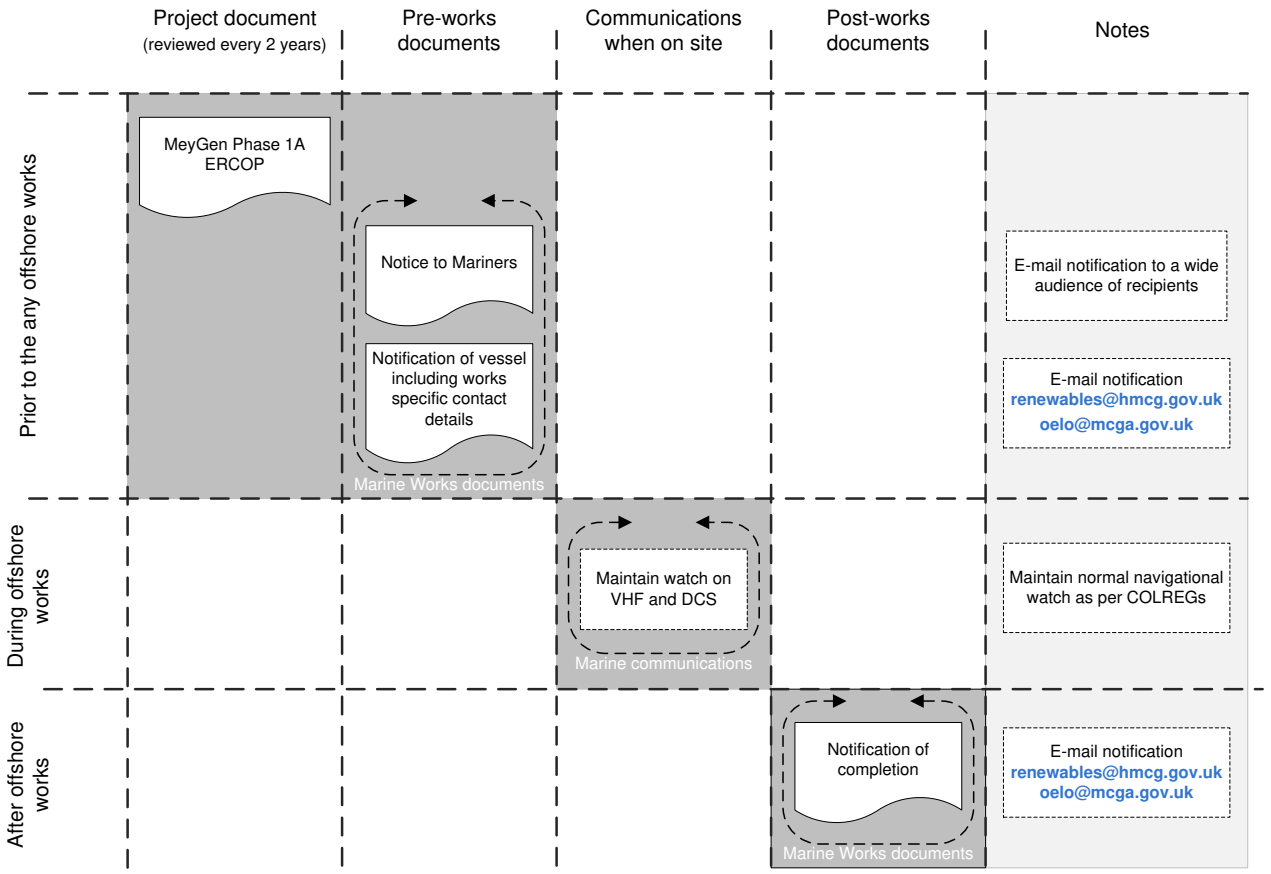


Figure 8 – MeyGen Phase 1A Communications plan

The notification provided to renewables@hmcg.gov.uk & will include the following information:

- Summary of the works to be undertaken
- Duration:
- Vessel:
    - Name
    - IMO number
    - Call sign
    - MMIS number
    - Vessel telephone number
    - Estimated persons on board
- Names of key individuals:
    - MeyGen liaison officer:
        - Name
        - 24 / 7 contact details
    - Emergency Response Centre contact details

- Marine Contractor:
    - Liaison Officer
        - Name
        - 24 / 7 contact details
    - Offshore works manager
        - Name
        - 24 / 7 contact details

See Appendix C.

The event of an emergency the MeyGen liaison officer will act as point of contact to HM Coastguard / CGOC. They will be located at the company offices in Edinburgh, where an Emergency Response Centre will be set up. Information specific to the incident will be issued via Microsoft SharePoint with HMCG being provided a log in access via e-mail.

This SharePoint site is populated for every offshore operation with:

- Site layout (PDF & DWG format)
- Project Execution Plan
- Vessel details
- Site Entry Permit listing PoB
- Personnel Next of Kin Forms

The MeyGen site Entry Permit, see Appendix A, shall be shared with HM Coastguard / CGOC via SharePoint.

As appropriate a company liaison office will attend CGOC to assist with the emergency response and with access to supporting documentation concerning Simec Atlantis Energy the MeyGen array, e.g. diagrams, pictures and resource information.

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

6 MEYGEN INCIDENT RESPONSE

The action to be taken in response to an incident on the MeyGen offshore site will vary according to the severity and nature of the incident.

Where possible MeyGen, the Marine Contractor and the Vessel Master will seek to co-ordinate the treatment or evacuation of a casualty ashore using the assets at their disposal, and would only notify the Shetland CGOC of the situation and actions being taken at the time to allow co-ordination of the incident if appropriate.

Where the nature of the indecent warranted, and if in the opinion of the Vessel Master, the Offshore Construction Manager, MeyGen Client Representative, or any other person associated with the works, urgent and immediate assistance was required. Shetland CGOC would be notified of the situation and a request for support made, See Section 7.1.2 & 7.1.4.1.

7 SEARCH AND RESCUE INFORMATION

7.1 The Coastguard Operations Centre (CGOC)

7.1.1 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.

7.1.2 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.

7.1.3 Radio Communications

All CGOCs can operate on channels 6, 10, 16, 23, 67, 70 DSC, 62, 63, 64, 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. If HMCG requires any development 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.

7.1.4 CGOC Contact Information

For HMCG purposes, the UK coastline and sea areas are divided into 36 Operational Zones, Figure 9. Every zone is connected to a CGOC or the NMOC and all radio, distress alerting systems and telephone connections e.g. 999/112 calls, in that zone, are directed to the CGOC or NMOC team responsible for it.

The Operational Zones allows HMCG to assign a zone, or group of zones, to the CGOCs around the UK, and the NMOC, according to the predicted or actual workload and to share demand equitably around the Coastguard network. It also enables the handover or takeover of more or less zones according to the operational demand, technical failures or other network-management requirements. In normal configuration,

the CGOC geographically closest to the operational zone will be responsible for that area. The concept also allows less busy CGOC to connect with and provide additional support to a CGOC that might, for example, be handling a complex incident, a major marine incident or a large number of small incidents.

7.1.4.1 CGOC Shetland

Point of contact	CGOC Shetland
Address	HM Coastguard The Knab Knab Road Lerwick Shetland ZE1 0AX
Direct Phone number	+44 (0) 344 382 0722 Secondary emergency contact: 999/112 Secondary routine contact: 01595 694810
E-mail communication	zone2@hmcg.gov.uk
MMSI information	002320001

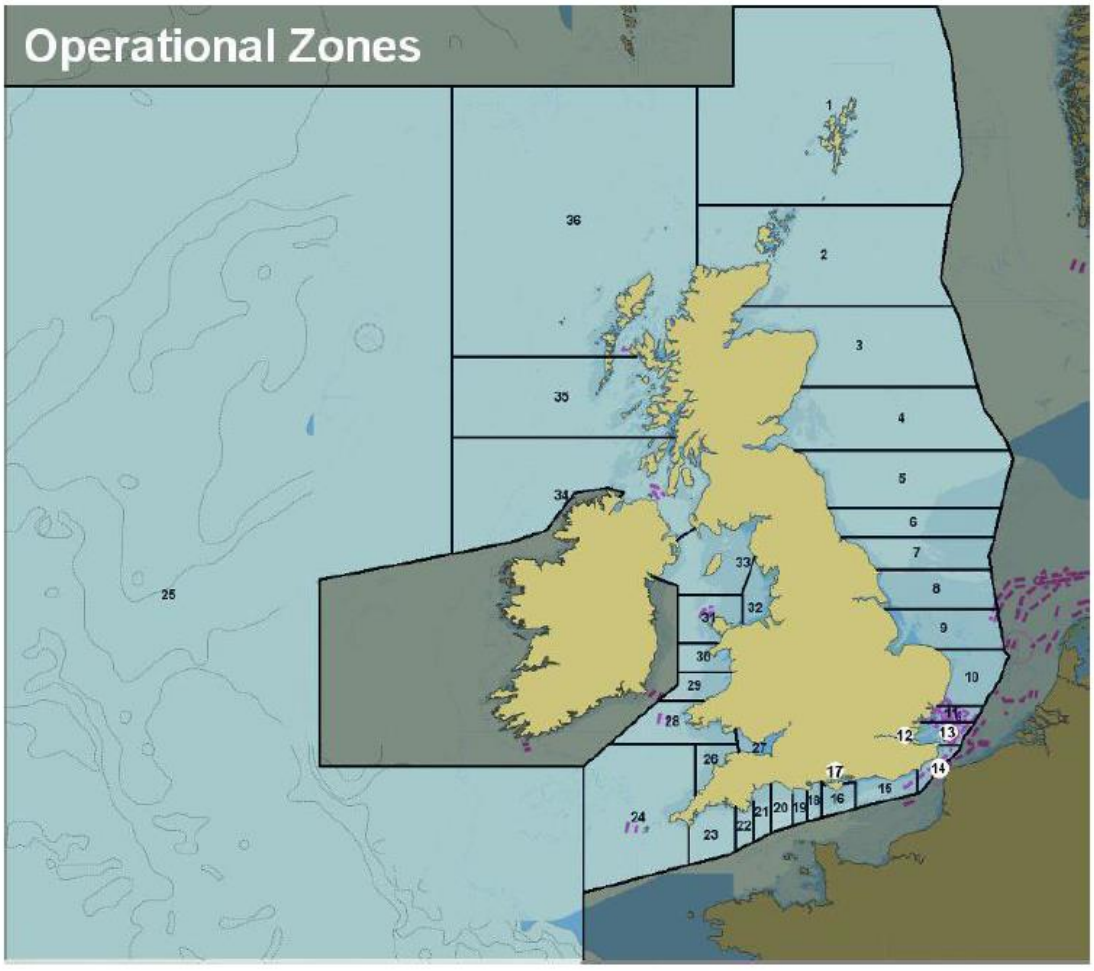


Figure 9 – CGOC Operational Zones

7.2 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. The location of the TTG is listed in Table 1. The typical vessel route between Nigg Energy Park and the MeyGen OREI is listed in Table 2.

Due to the regulation of the transits between site and Nigg Energy Park a series of waypoints have been provided which the vessels typically use in the generation of their passage plan, these are as follows Table 2 and Figure 10.

Table 2 – Passage waypoints

Waypoint #	Location	Lat / Long
1	Cromarty Firth	57^0 49'N 003^0 26'
2	Helmsdale	58^0 00'N 003^0 15'W
3	Beatrice WF	58^0 18'N 002^0 56'W
4	Wick North	58^0 27'N 002^0 56'W
5	MeyGen offshore site	58^0 39.85 N 003^0 8.5 W

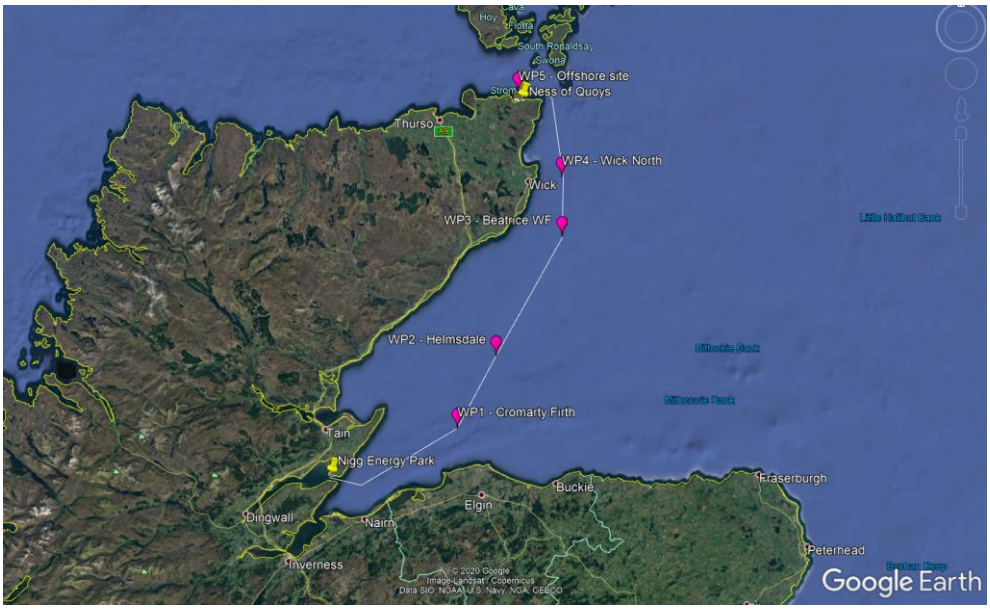


Figure 10 – MeyGen passage waypoints

7.3 SAR Facilities and their Response Capability

7.3.1 Note on 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 vessel master, the Offshore Construction Manager or Meygen Client or any 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, development work and safety craft should respond and provide assistance in accordance with IMO SOLAS regulations, Chapter V.

Royal National Lifeboat Institution and other volunteer lifeboat and rescue boat services provide craft to rescue persons in danger at sea. Their role in the OREI context is limited to rescuing or assisting persons from the water or accessible areas of an OREI or providing support to vessels in the area.

All national SAR resources are tasked and coordinated by HM Coastguard and therefore any request for assistance should be made via HM Coastguard and not directly to the resource.

7.3.2 Surface Craft Rescue Resources Available

MeyGen do not operate any surface rescue craft.

The nearest RNLI all weather lifeboat is located at Thurso, 14.5 nm, and Longhope, 11.7 nm, Figure 11

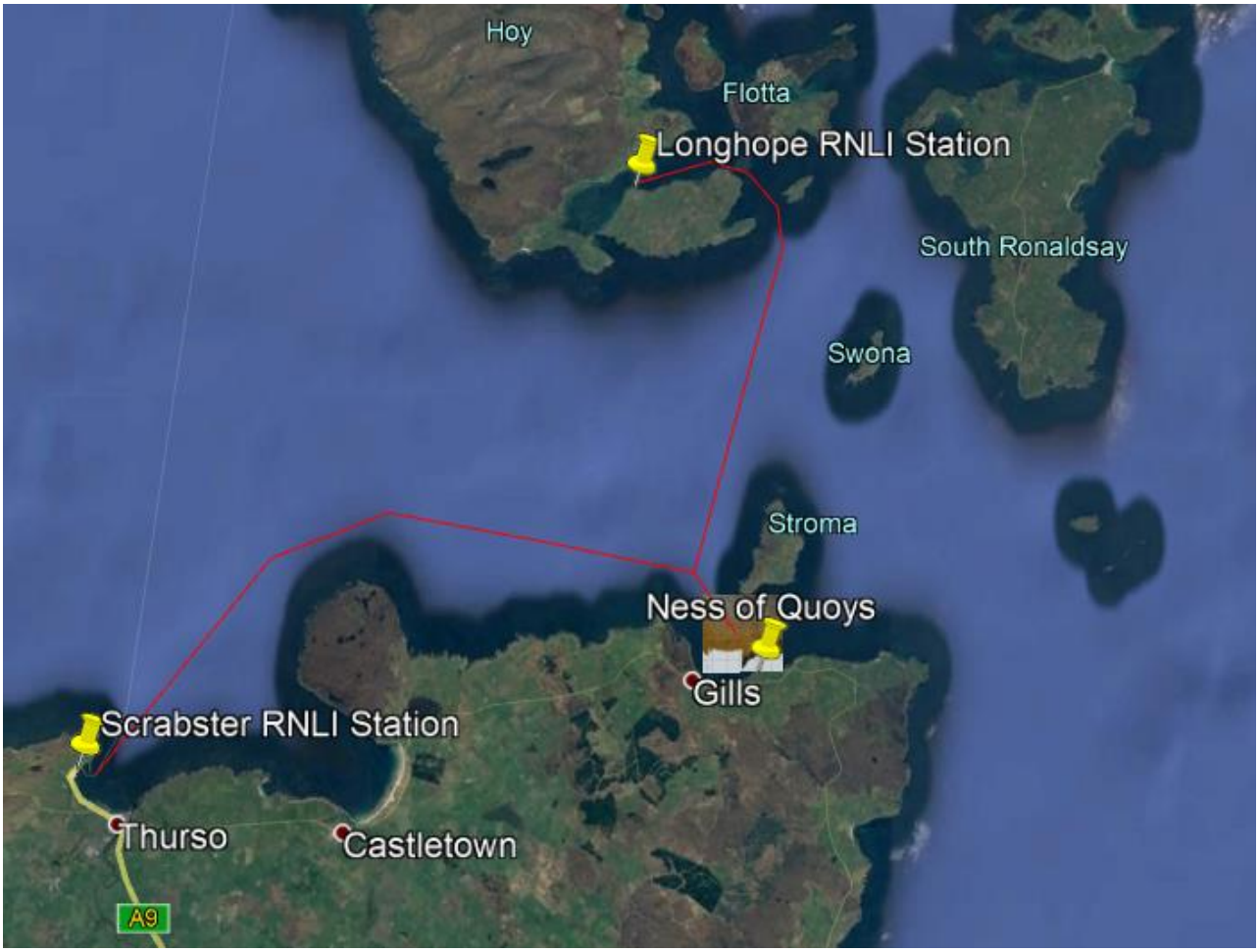


Figure 11 – Local all weather RNLI support

7.3.3 SAR helicopters

The nearest SAR helicopters are the AW189 from Inverness and the S92 from Sumburgh though these may not be the ones used depending on availability.

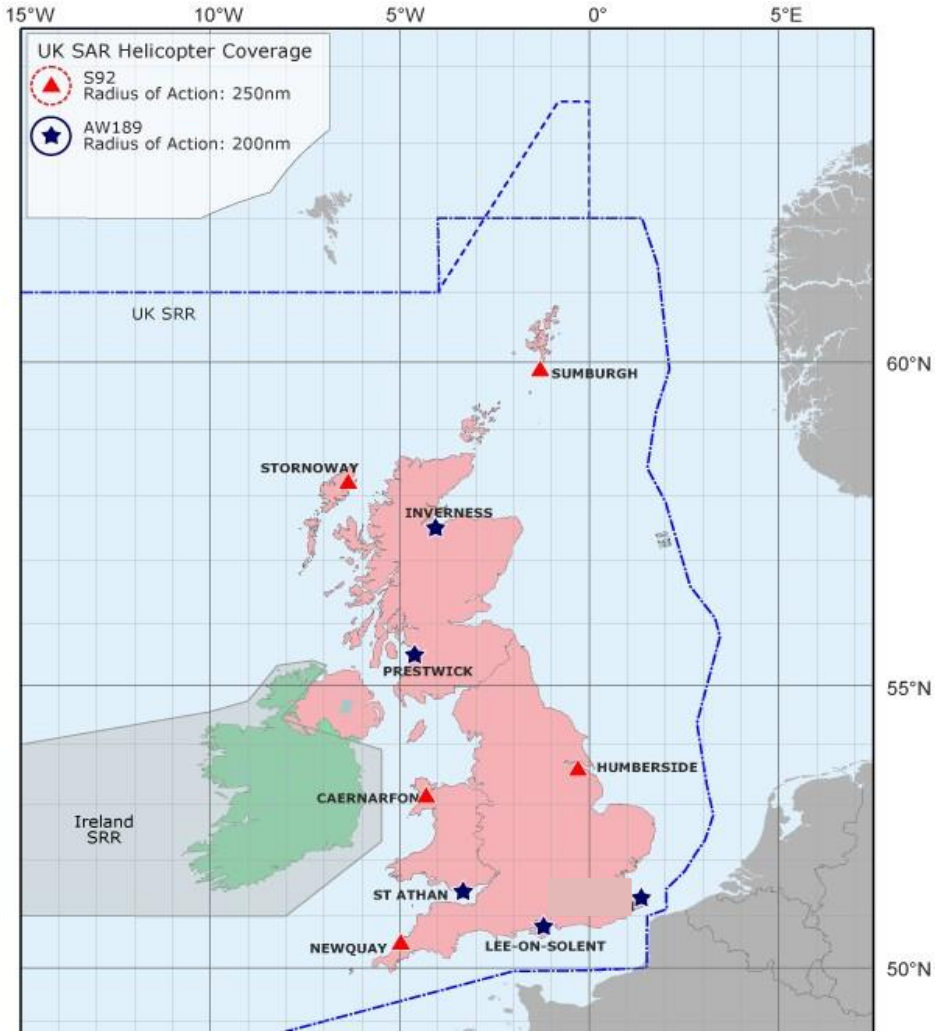


Figure 12 – UK SAR Helicopter Coverage

7.3.4 Airborne Rescue Resources

Provision of SAR helicopters is undertaken by Bristow Helicopters which has been awarded the contract to operate civilian SAR helicopter service for the UK on behalf of HM Coastguard.

These aircraft must not be factored into 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 each 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

AgustaWestland AW189

- Air Speed: 145 knots
- Operational range: in excess of 200 nautical miles radius of action
- Normal flight crew: 4
- Capacity: 16 persons or as required – 2 stretchers, 6 seated persons, additional standing persons
- Endurance: over 4 hours
- De-icing equipment
- Twin hoist
- Medical suite

These aircraft operate out of ten UK SAR helicopter bases. Please see section 7.3.3 for details of the relevant developments nearest aircraft.

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.

7.4 Medical advice / assistance

All project personnel must hold a valid medical certificate for working offshore. The Marine Contractor shall hold a register of all personnel, including guests etc working offshore.

This Register will include health information i.e. special illness, allergies use of prescription medication etc for Contractor staff and visitors accessing the Contractor managed crew vessels only. In case of an emergency this information will be volunteered to the emergency services. Of note personal health information is given to the Contractor on a voluntarily basis and the sole purpose is to allow for correct emergency medical intervention.

All vessels engaged on the project will be provided with a first aid trained personnel in accordance with STCW-95.

Note that medical advice by radio to telephone link call is available via HM Coastguard. 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.

7.5 Exercises

Exercises should be held at suitable intervals to test and practice the procedures listed within this document. Table-top exercises between the involved parties can also be conducted.

It is the responsibility of the MeyGen O&M Manager in cooperation with the Offshore Energy Liaison Officer (OELO) to plan and carry out any planned exercises.

7.6 Unexploded Ordnance

Prior to 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.

Suitable and sufficient surveys carried out during construction did not identify any UXO however should this occur the contingency procedures in the Emergency Response Plan must be followed, all actions are to be liaised with CGOC.

7.7 Wreck or Wreck Materials

The MeyGen site is devoid of sediment, a detailed bathymetry survey was conducted prior to construction and no wrecks were identified.

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 72575**
- Or email row@mcga.gov.uk, or contact 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

7.8 Counter Pollution

MeyGen's pollution management is intended to supplement the vessel's SOPEP procedures, as detailed in the Vessel Management Plan, the local Marine Pollution Emergency Response Plans and the National Marine Pollution Emergency Response Plan.

In case of an environmental incident or accident all relevant authorities shall be informed; the MCA, the port authorities, Marine Scotland, and Scottish Natural Heritage shall be informed.

Vessels operating at site shall carry oil spill kits placed in suitable locations. Any additional equipment provided by a Marine Contractor for the purpose of undertaking works on the marine site shall provide additional oil spill kits positioned everywhere an oil spill might occur.

The Marine Contractor undertaking the works shall

- hold a register of all vessels involved in the offshore operations this register contains general information of types and quantities of major marine pollutants carried on board (i.e. bunkers, lubrication oils and hydraulic oils)
- undertake a marine pollution risk assessment and implement the mitigating actions identified.

7.8.1 Fuel /Oil Spill

In the event of a spillage following actions **MUST** be taken:

- All spillage sightings reported to the Vessel Master immediately
- Vessel Master must notify the Coastguard Operations Centre (CGOC) identifying location and initial indication of the size of the spill (based on the 3 Tier system) source of the spillage if identifiable, and other information as applicable to complete a Pollution Incident Report Form

CGOC will direct onsite support vessel to the location.

Onsite support vessel will confirm spillage assessment based on 3 Tier system and notify CGOC.

Onsite support vessel will commence clean up/containment operations as applicable.

CGOC responsible for completing the initial Pollution Incident Report Form which will be used to notify MCA, UKHO and other relevant authorities. Subsequent reports will be submitted on a daily basis until the spillage incident is cleared.

The responsibility for elevating and incident classification from Tier 1 to Tier 2 lies with the CGOC.

7.8.2 Three tier system:

- Small scale spill (<1,000 litres) local, in house resources deployed in the clean-up

- Medium sized spill (1,000-150,000 litres) external assistance and resources may be utilised
- Major spills (>150,000 litres) national level assistance and resources required in line with the National Contingency Plan

7.8.3 Chemical spill

While MeyGen does not include the use of chemicals for normal operations, this section is included for completeness. The following actions shall be taken upon a chemical spill:

- Work must be stopped immediately
- Chemical identified and COSHH sheet and inventory referred to for potential impacts
- Flow of chemical(s) will be stemmed
- Spill contained, where possible, and depending on the level of release the appropriate organisations will be called immediately
- All contaminated material removed off site as soon as possible and disposed of to licensed waste management facility

Report will be sent to MCA and Marine Scotland in all instances

8 SUPPORT ARRANGEMENTS

8.1 Shore reception arrangements

If a casualty must be evacuated to the shore via a rescue craft, the following berthing and reception facilities maybe used to land casualties, Figure 13:

- Gills Bay accessed via the inner 'basin'.
- John O'Groats may in some cases be reached in the shortest time.

The Coastguard will decide the best landing stage. (It should be noted that a new section of quay is available at Gills Bay and can be utilised if the inner basin is not available).

In some events, a rescue may be carried out by an in-shore lifeboat. In this case landing the casualty directly on the beach may be the fastest way. The landing place will be decided by the coastguard, who will direct the ambulance to the spot.

Figure 13 – Shore landing locations

8.2 Informing Next-of-Kin

Next of Kin information of the relevant Contractor personnel is held at the relevant office. All contractors' personnel's' information is only to be held by the employer. In the event of an emergency, the contractors are responsible for informing the Next of Kin of their respective personnel.

8.3 Criminal Actions and Accidents to Persons

Any party which receives reports or information that criminal action is taking place on or within the project area, should inform the Coastguard and/or Police and then other parties as required as soon as possible.

8.4 Media relations

Except for the relevant Marine Contractor and the designated SAE Director of External Affairs, nobody is to comment or enter into discussions with the media.

Do the following if you are contacted by a journalist, inform them that they are to contact the SAE Director of External Affairs for a comment, See Section 1.1.3.

Reference should also be drawn to the Atlantis Emergency Response Plan, Section 4:

"Should any member of staff receive an emergency call relating to an emergency at a worksite, the call must be immediately transferred to the Site or Operations Manager of that site, or if unavailable, the most senior member of the Simec Atlantis Energy Emergency Management Team (SAE-EMT)".

8.5 Survivors Shore Reception Arrangements

Personnel evacuated due to a medical emergency are likely to be landed at Gills Bay or John O'Groats before being transferred to hospital by ambulance or helicopter.

Personnel landed ashore after an incident at the MeyGen Offshore site are likely to be landed at Nigg Energy Park, or Scrabster.

Once disembarked the care and custody of these personnel will be managed as per SAE H&S procedures for emergency incident management which is managed by the SAE HR Department who contact details are:

- Head of HR
- Ewa.Cywinska@simecatlantis.com
- [Redacted]

9 ADDITIONAL INFORMATION

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.

9.1 The SAR Mission Co-ordinator (SMC)

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.

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.

9.2 The On-Scene Coordinator - (OSC)

The SMC 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 IAMSAR1, 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.

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.

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
- 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)

[1] 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.

- 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.

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.

9.3 Search planning

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.

9.4 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
- Onscene Coordinator
- OREI Operators, personnel or contractors
- Third parties
- Other emergency services
- Any other relevant party engaged in the incident.

9.5 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.

10 DEVELOPMENT SPECIFIC INFORMATION

Having completed the construction and installation of Phase 1A of the MeyGen tidal array the project moved out of the construction and into the Operating phase on the 1st April 2018. The nature of the works conducted during operations has then moved away from the installation of new assets to the preventative and reactive maintenance of existing assets.

10.1 Recovery and installation of tidal turbines

Tidal Turbine Generator (TTG) are recovery from and installed onto the Turbine Support Structures (TSS) by means of an Offshore Construction vessel. Typical vessels used for these works are listed in Table 3.

All vessels will be equipped with VHF. MF and HF Marine Band Radios as well as satellite communications. Medical facilities will be available onboard. Normal marine channels of communication are monitored at all times.

MeyGen do not require that dedicated medical personnel are provided.

Table 3 – Offshore construction vessels employed at the MeyGen site

Vessel name	Details	Image
Viking Neptune	– Length: 145.6m – Breadth: 31m – Maximum draught: 13m – Crane capacity 400Te – Typical PoB: 30 to 45	
Seabed Stingray	– Length: 120.9m – Breadth: 23m – Maximum draught: 6.6m – Crane capacity 250Te – Typical PoB: 30 to 45	
North Sea Giant	– Length: 153.6m – Breadth: 30m – Maximum draught: 7.5m – Crane capacity 400Te – Typical PoB: 30 to 45	
Normand Jarstien	– Length: 117.35m – Breadth: 22m – Max draught: 7.1m – Crane capacity 250Te – Typical PoB: 30 to 45	
Olympic Ares	– Length: 115.4m – Breadth: 22m – Maximum draught: 7.3m – Crane capacity 250Te – Typical PoB: 30 to 45	
Olympic Challenger	– Length: 105.9m – Breadth: 21m – Maximum draught: 6.6m – Crane capacity 250Te – Typical PoB: 30 to 45	

Siam Daya	– Length: 120.8m – Breadth: 22m – Maximum draught: 6.6m – Crane capacity 250Te – Typical PoB: 30 to 45		

The operations undertaken to recover or install a TTG fall into one of two categories:

1. those which require cable handling to detach or connect the TTG from the Export cable by way of a dry mate, or;
2. those which do not require cable handling to detach or connect the TTG from wet mates.

All works are conducted during slack tide and are limited by the capability of the Work Class ROV aboard the vessel, typically 1.6 knots. The turbines are held onto the turbine foundation under their own weight.

Figure 14 – AHH TTG sat atop a TSS onshore, note that no ballast is on the TSS

10.1.1 Turbines with a dry mate

The three turbines provided by Andritz Hydro Hammerfest are equipped with a dry-mate connector and therefore require cable handling to be conducted during installation or recovery. The typical sequence of

works is listed in Table 4 and a sequence of photos are provided in Figure 15 to Figure 20. The sequence assumes a turbine installation.

Table 4 – AHH turbine installation and recovery sequence

Slack tide	Recovery	Installation
1	Remove rock bags from the export cables.	Install a turning rock bag and inspect the turbine stab on the Turbine Support Structure
2	Recover the dry-mate connector to the deck of the vessel and between slack 2 and 3 break the connector and seal the export cable with a top hat.	Land the turbine onto the Turbine Support Structure and lay the cable tail around the turning bollard and out towards the north where the dry mate is laid to the seabed.
3	Deploy the export cable top hat back on to the seabed and reel in the cable tail towards the turbine.	Recover the export cable top hat from the seabed and between slack 3 and 4 make up the dry-mate connector.
4	Land the lift frame onto the turbine and recover the turbine to deck	Lay the dry-mate to the seabed. Land rock bags onto the dry-mate and export cable as required to ensure the cable is stable on the seabed.

Due to the capabilities of the vessels operating on Differential Position, operations to recover or install an AHH TTG are only conducted in neap tides where the peak flows do not exceed 6 knots. This limits the works to about 7 days every month.

Figure 15 – Export cable recovery

Figure 16 – Landing the export cable on deck

Figure 17 – Dry-mate connected on deck

Figure 18 – Dry-mate being handled for deployment

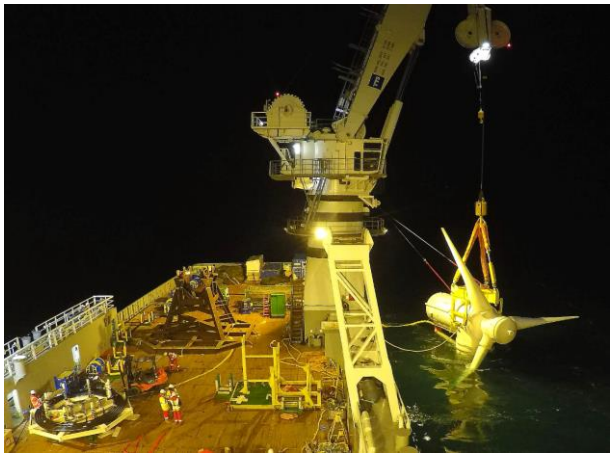


Figure 19 – AHH TTG ready for installation

Figure 20 – Turbine stab being landed onto the TSS

10.1.2 Turbines with wet mates

The single turbine provided by Atlantis Operations UK (AOU) is equipped with wet mate connectors that are passively disconnected or connected as the turbine is recovered or installed. Where the AHH TTG require several slack tides to complete the recovery or installation process, the AOU TTG required just 30 minutes where the flow speed is less than 1.6 knots. Figure 21 shows the AOU TTTG the AR1500 being readied for installation.

Figure 21 – AOU TTG the AR1500

10.2 Operations base

MeyGen utilise Nigg Energy Park as a logistics base from which vessels will mobilise and return and where the TTG are returned for maintenance. The turbines are maintained in Shop1,

Figure 22 – Nigg Energy Park, Shop1 is highlighted in the red box

10.3 Other works

Other planned works include:

- Annual site visual survey
- Cable stabilisation activities

10.3.1 Annual site survey

The annual site survey is conducted over 2 to 5 days depending on the scope of work. The activity uses a small survey vessel, Table 5 and an observation ROV equipped with an HD video camera and survey package.

Table 5 – Survey vessels employed at the MeyGen site

Vessel name	Details	Image
MV Advance	– Length: 15m – Breadth: 5.8m – Maximum draught:0.75m – Typical PoB: 4 to 6	

MV Athenia	– Length: 18.5m – Breadth: 6.1m – Maximum draught: 1.25m – Typical PoB: 4 to 6	

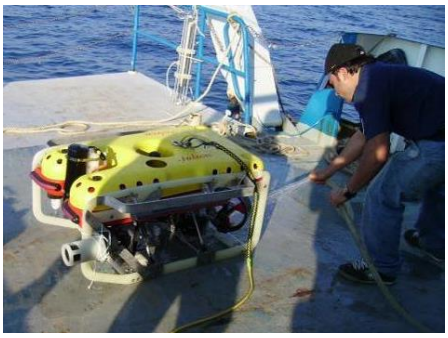


Figure 23 – Falcon ROV being prepared for deployment

All vessels will be equipped with VHF. MF and HF Marine Band Radios as well as satellite communications. Statutory medical equipment will be available onboard. Normal marine channels of communication are monitored at all times.

10.3.2 Infrequent cable stabilisation

The export cables are laid onto the exposed bedrock. Works associated with cable stabilisation are typically focused upon the relocation and installation of 4Te rocks bags onto and up to the cables. The need for these localised stability measures are identified through the annual site inspections.

Visual assessment of the export cables incremental identifies locations where cable stability is recommended. Once a sufficient number of locations have been identified for an offshore operation to the warranted, MeyGen will issue a contract to undertake the prescribed scope. The works will be conducted in a neap tide, but the precise neap tide may be chosen by the marine contractor within an agreed window that could be 4 to 6 months in duration.

The works would be conducted from a multi-cat type vessel being supported by an observation ROV equipped with an HD video camera and survey package. Typical vessels employed in these works are listed in Table 6.

Table 6 – Works vessels employed at the MeyGen site

Vessel name	Details	Image
Isle of Jura	– Length: 33.2m – Breadth: 14.5m – Maximum draught: 4.9m – Speed: – – Typical PoB: 8 to 12	

Green Isle	– Length: 27.7m – Breadth: 12.45m – Maximum draught: 2.85 – Typical PoB: 8 to 12	
C-Odyssey	– Length: 26m – Breadth: 10.5m – Maximum draught: 2.5m – Typical PoB: 8 to 12	

All vessels will be equipped with VHF. MF and HF Marine Band Radios as well as satellite communications. Statutory medical equipment will be available onboard. Normal marine channels of communication are monitored at all times.

10.4 Operating limits

10.4.1 Turbine operations

The following generic operating limits are applied to operations to recover or install a TTG:

- Operations supported by a work class ROV:

  The ROV will typically depart the Tether Management System at =<2 knots and depart the works site to return to the Tether Management System as the flow >1.6 knots

- Transit limits

  These are vessel dependent but are in general >2.5m Hmax

- Wind speed

  No limit is applied

- Underwater works:
  - Installation / recovery of rock bags:
    - <40 knots & <2.5m Hs
  - Recovery or installation of dry-mate
    - <40 knots & <2.5m Hs
  - Cable works between slack tides
    - <40 knots & <2.5m Hs
    - MIKE21 10-minute average predicted flow speed <6.5knots
  - Recovery or installation of an AHH tidal turbine
    - <30 knots and <1.5m Hmax
    - In the case where cable works are required to recover or install a TTG, MIKE21 10-minute average predicted flow speed <6.5knots

10.4.2 Site Surveys

Survey works are limited by the deployment and recover of the ROV with regards to wind speed, <20 knots and wave height, <1m Hs.

In addition, daylight hours are required for deployment and recovery. The ROV is limited to operation in flow speeds of <1.5 knots.

10.4.3 Cable stabilisation works

The works to install cable stability measures in the form of rock bags using a Multi-cat work boat are expected to have the following operating limits:

- Wind speed:
    - <25 knots
- Wave heights:
    - <1.5m Hmax

10.5 OREI Information

Due to the OREI being underwater it is unlikely that an emergency would require a third party have any interaction with the subsea assets. The offshore works relating to operations are limited to:

- Heavy lifts, 150 to 200Te
- Subsea cable works
- The installation of cable stability measures in the form of 4Te rock bags
- ROV observation surveys

The array has two turbine types, both having an installed capacity of 1.5MW. The handling of the TTG require bespoke lifting frames with hydraulic controls and transportation frames.

10.5.1 Atlantis Operations UK

The AR1500 was supplied by Atlantis Operations UK.

- Installed capacity: 1500kW
- Dry-weight: 156Te
- Wet-weight 91Te
- Rotor diameter: 18m

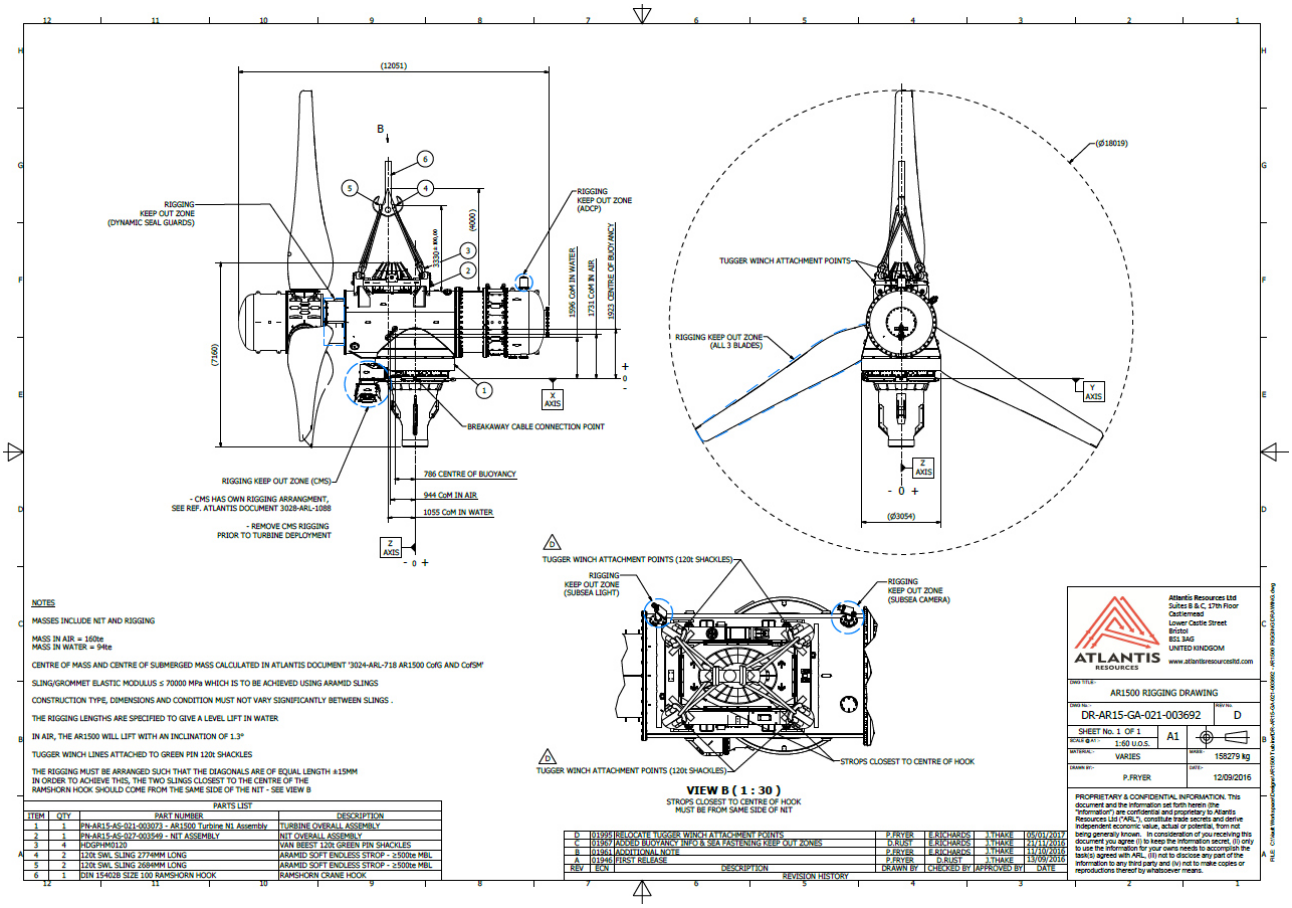


Figure 24 – AR1500 rigging drawing

10.5.2 Andritz Hydro Hammerfest

The H1000Mk2 was supplied by Andritz Hydro Hammerfest.

- Installed capacity: 1500kW
- Dry-weight: 207Te
- Wet-weight 89Te
- Rotor diameter: 18m

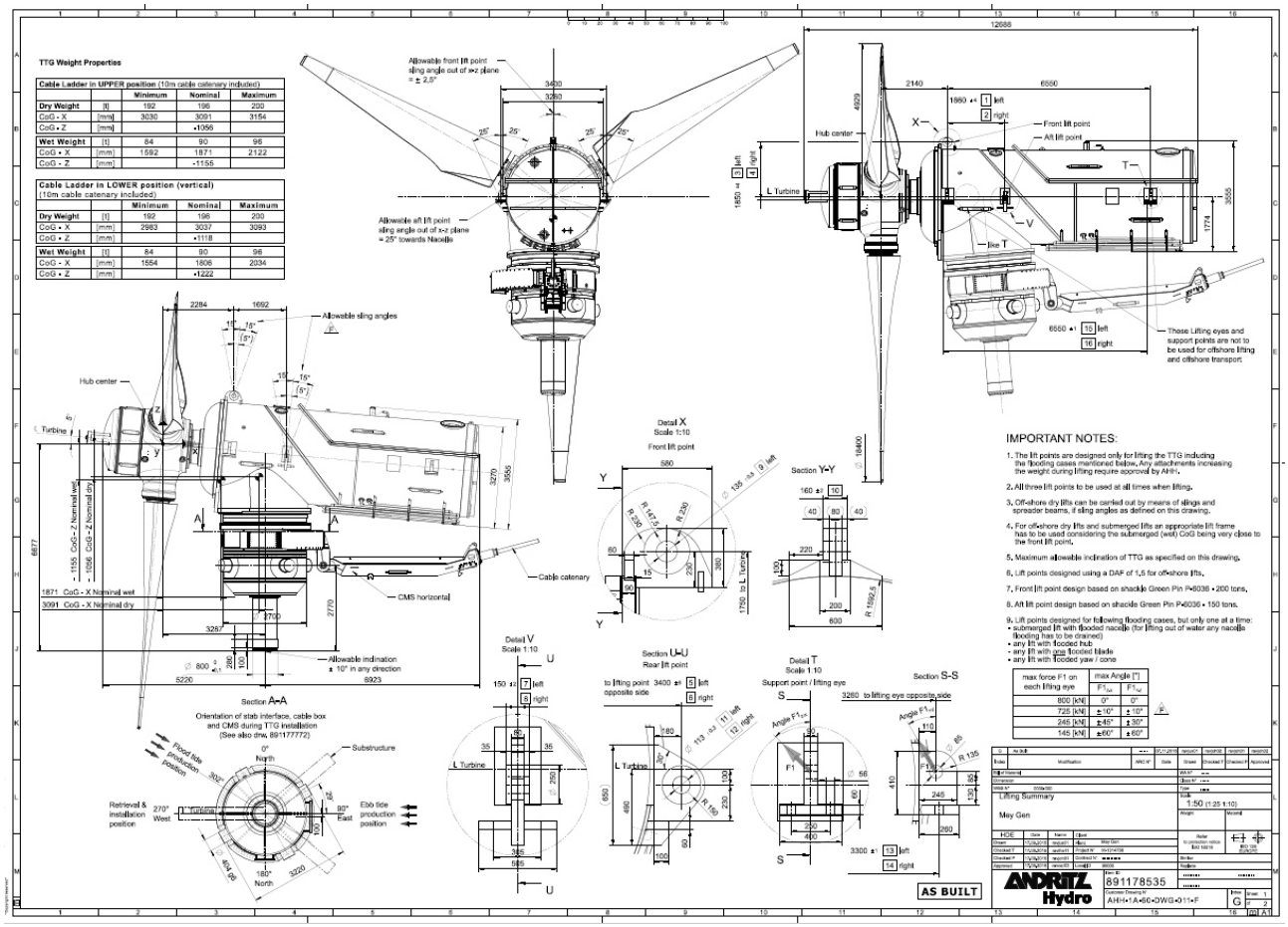


Figure 25 – AHH TTG rigging drawing

10.5.3 Export cables

Individual export cables are laid DIRECTLY ONTO THE EXPOSED BEDROCK from the TTG to the onshore sub substation, Figure 26. The final 550m is fed through a horizontally drilled duct which runs from the onshore site to ~13m LAT.

The cables carry 3 phase export power from the turbine to the shore, 3 phase auxiliary power from the shore to the turbine and 12 fibre optic cores for communications.

- Export power: 4.1Kv
- Auxiliary power: 1Kv

The cable properties are included in Figure 27, note that the Quadcore cable runs from ~50m within the horizontally drilled duct to the TTG.

Figure 26 – MeyGen export cable laid on exposed bedrock

Approved By JDR Engineering
Uncontrolled When Printed

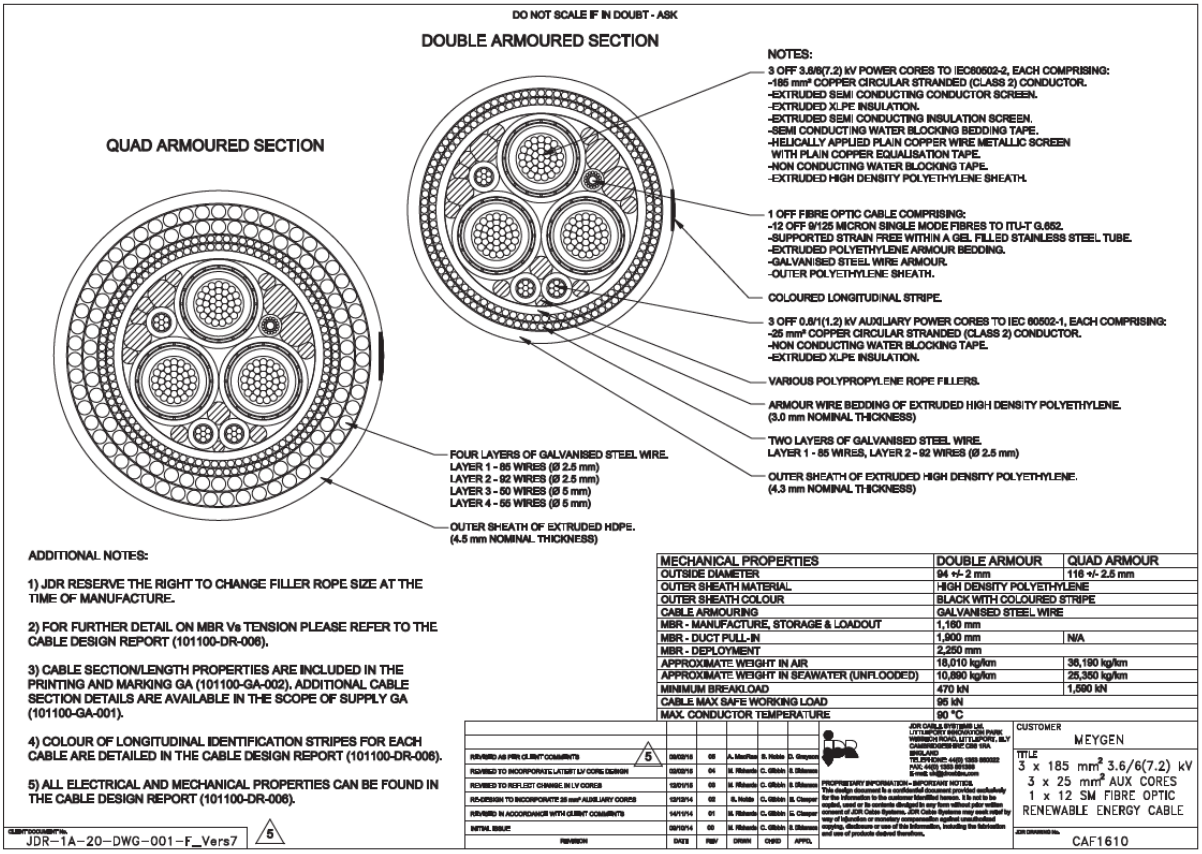


Figure 27 – Export cable

10.5.4 Turbine Support Structure

The support structures are similar in design but due to the different weights there are some differences in the fabrication of the TSS supporting the AHH TTG and the AOU TTG.

The TSS were fabricated at Nigg Energy Park. The TSS ballast blocks were fabricated at JGC.

Both were installed using the Jack up vessel Neptune, Figure 28to Figure 30. The ballast blocks were installed using a bespoke lifting tool which is stored at Nigg Energy Park,

Figure 28 – TSS being installed in slack tide

Figure 29 – 205Te ballast block

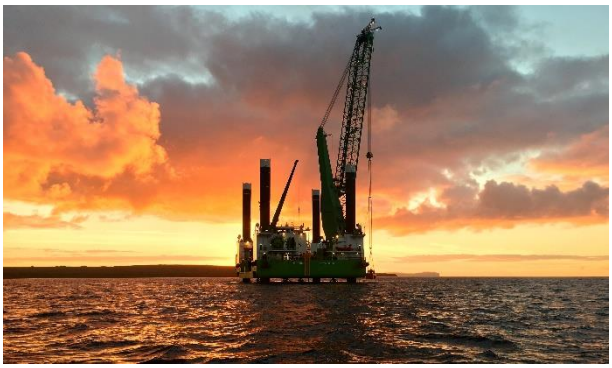


Figure 30 – Ballast block awaiting installation

10.5.4.1 AOU

The TSS (Turbine Support Structure) for the AR1500 TTG is shown in Figure 31 and Figure 32.

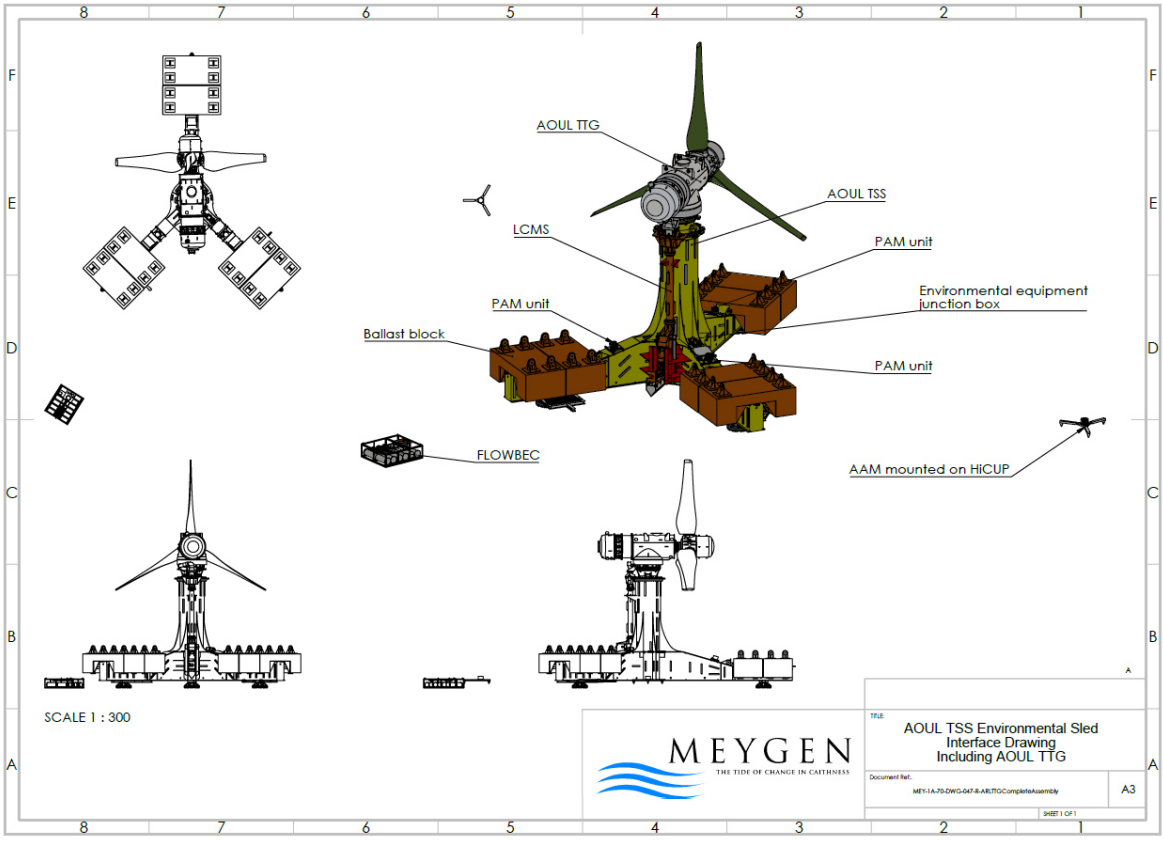


Figure 31 – AR1500 atop TSS

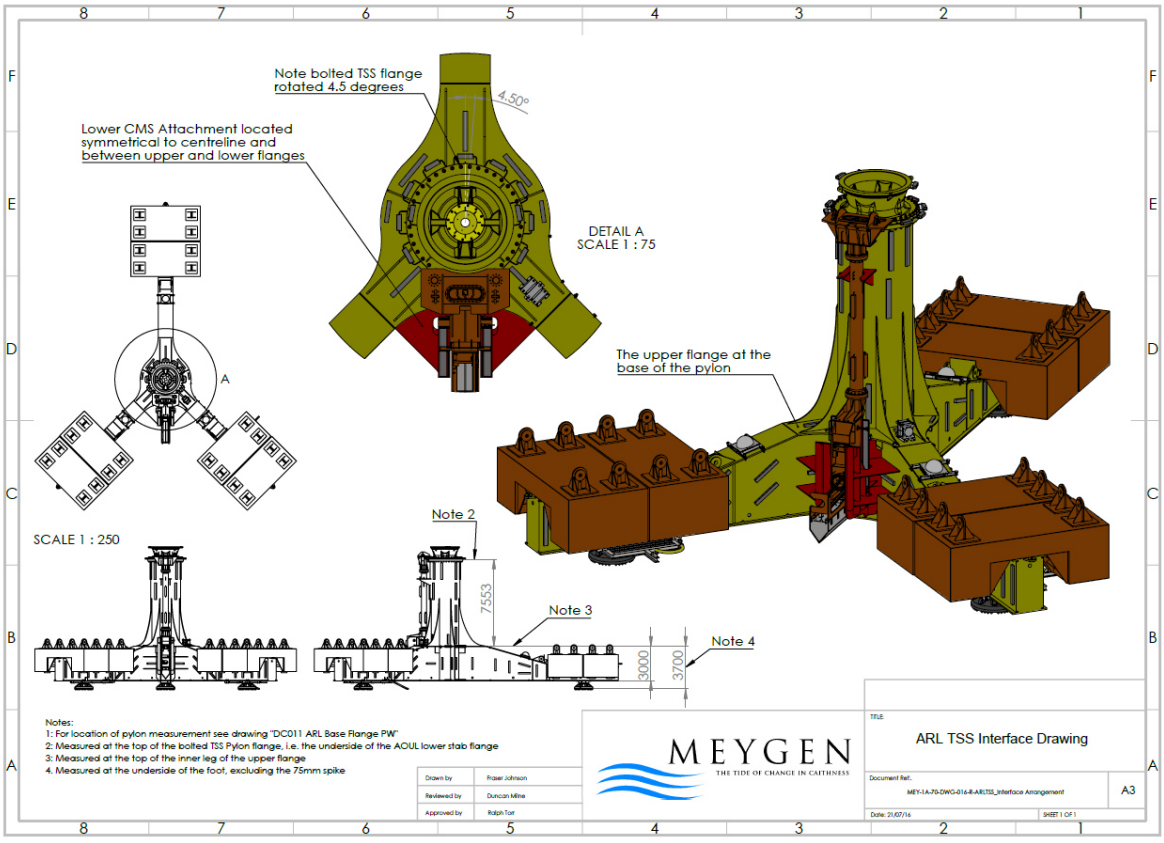


Figure 32 – AR1500 TSS general dimensions

10.5.4.2 AHH

The TSS (Turbine Support Structure) for the AR1500 TTG is shown in Figure 31 and Figure 32.

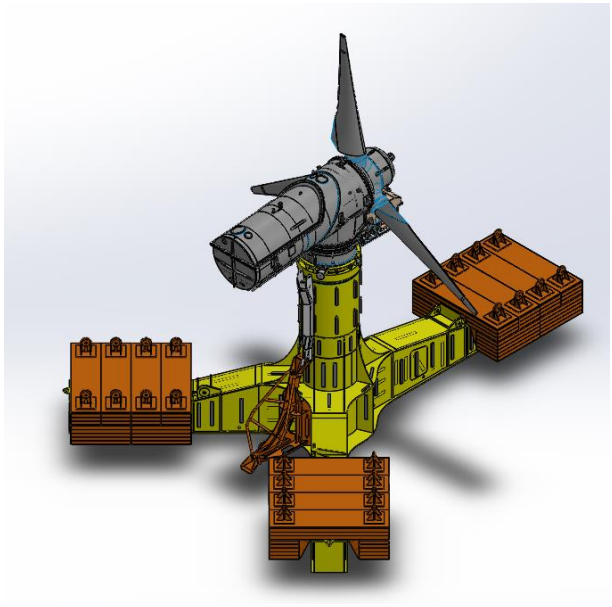


Figure 33 – AHH TSS

Figure 34 – AHH TSS

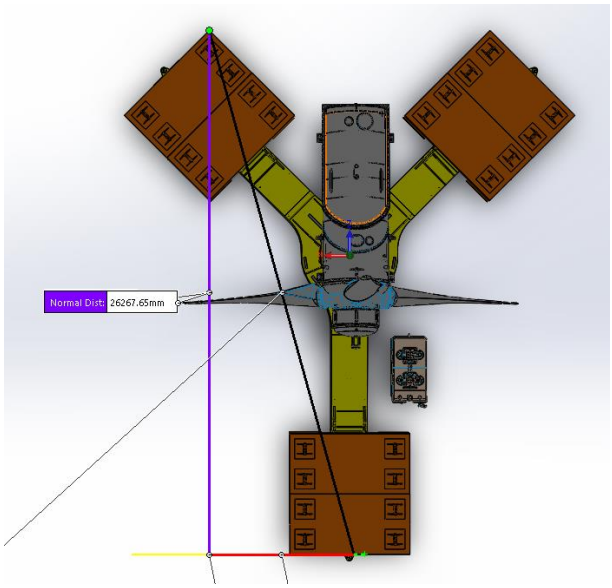


Figure 35 AHH TSS top view

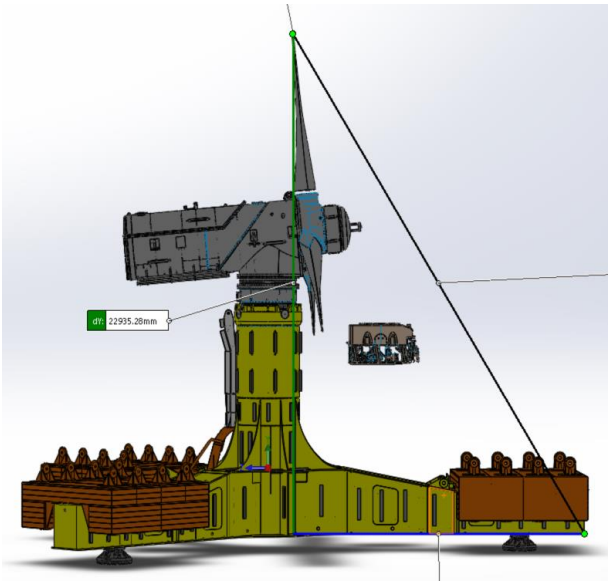


Figure 36 – AHH TSS side view

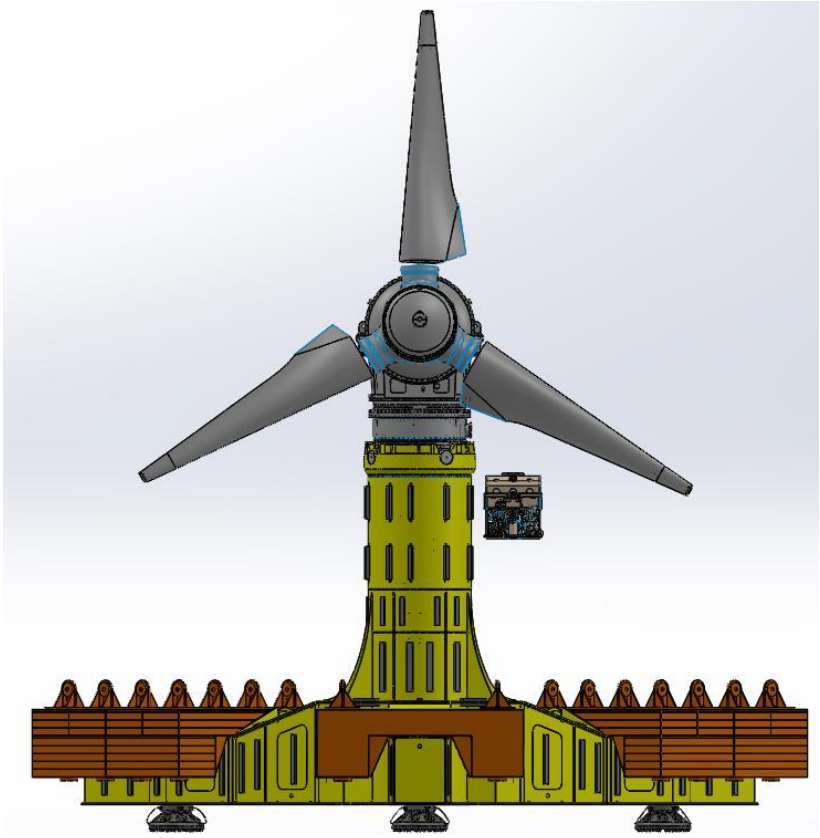


Figure 37 – AHH TSS front view with a Millennium WCROV for scale

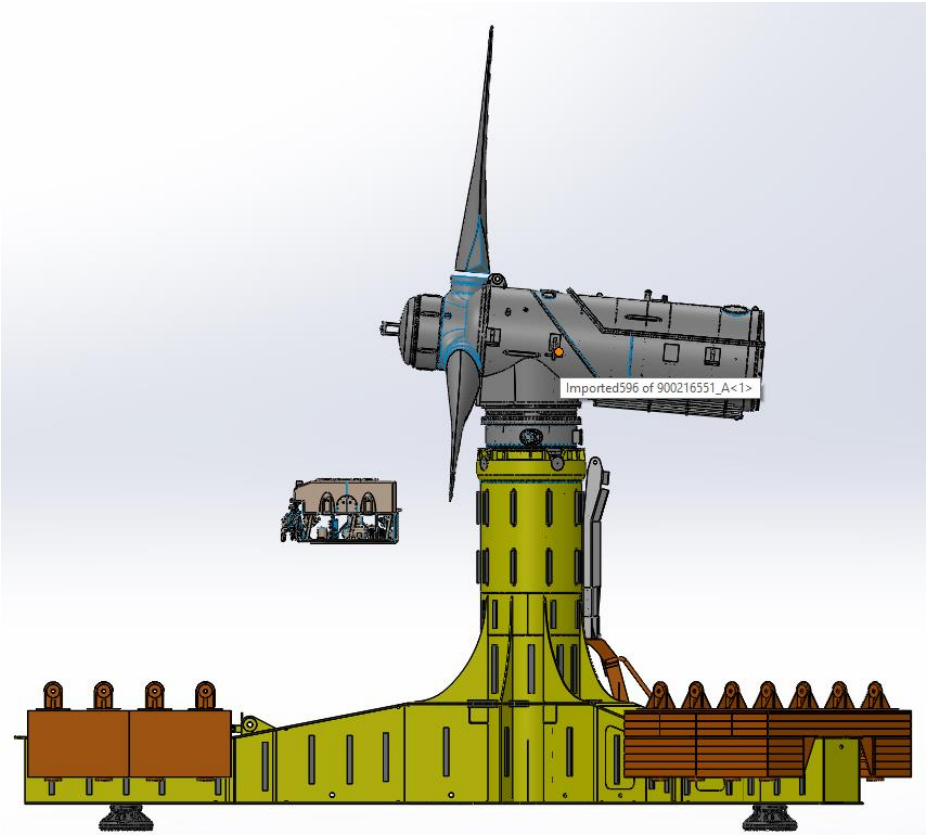


Figure 38 - AHH TSS side view with a Millennium WCROV for scale

10.5.5 Site layout

Site layouts are managed internally using AutoCAD in a DWG format. There are included in Appendix B in PDF.

10.5.6 Guard Vessel

The MeyGen OREI does not employ guard vessels.

10.5.7 Rescue Boat Capabilities

Rescue capabilities would be limited to fast rescue craft present aboard the offshore construction vessels employed for the recovery or installation of the TTG.

10.6 Airborne Activities

No airborne activities are planned.

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

All vessels working on site shall have AIS.

All personnel undertaking vessel transfers on or in close proximity to the OREI shall be equipped with a 275kN life jacket and a signal beacon with an integrated DCS transmitter, specifically an Ocean Signal Rescue ME MOB1 – EPI3100 unit.

10.8 Electronic Surveillance and Monitoring Systems

No AIS or CCTV is monitored by MeyGen.

10.9 Radio Communication Aerials

Emergency radio communication would be via the vessel undertaking works at the time. This may then be transferred to mobile phones or other suitable means after initial contact has been made.

10.10 Diving Operations.

No diving activities are planned during Operations

10.11 Offshore Transmission Owner (OFTO)

No specific procedures exist between MeyGen and the OFTO. The emergency contact details are included in Section 1.1.3.

10.12 Firefighting, Chemical hazards, Trapped Persons, etc

There are no specific procedures for fire fighting, chemical hazard or trapped persons.

The TTG are normally recovered directly to the onshore maintenance facility, but if there is an instance where technicians are to enter into the turbine nacelle to affect repair while the vessel remains at site. Specific risk assessment and method statements will be written and suitable safety precautions taken.

11 EMERGENCY ACTION CARD

EMERGENCY ACTION CARD

For *MeyGen Tidal Array*

Communications with the marine coordinator should be via HM Coastguard whenever possible.

Emergency Contact One of the following or a combination of both, must be 24/7	
Duty Holder name 24/7/365	**Fraser Johnson** Meygen O&M Manager [Redacted] Fraser.johnson@meygen.com
Marine Coordinator (primary number)	**N/A**
Secondary PoC 24/7/365	**Bruce Mackay** MeyGen Site Manager – Onshore [Redacted] Bruce.mackay@meygen.com
Media relations	**Sean Parsons** Director of External Affairs [Redacted]
Coastguard	**CGOC Shetland** **+44 (0) 344 382 0722** **Secondary emergency contact: 999/112**
Police	**Wick Police Station** **TBC**

Tidal Array Summary	
Phase	Operation
Range & Bearing from land	030 degrees FROM Gills Bay Harbour 1.64nM
Number of TTG	4
No. of substations	1 (onshore at Ness of Quoys, Canisbay)

Shutdown procedure

The turbines are controlled by an Array HMI accessed via the internet. Normal shut down would be performed by the **Duty Holder** or **Secondary PoC** in approximately 2 minutes.

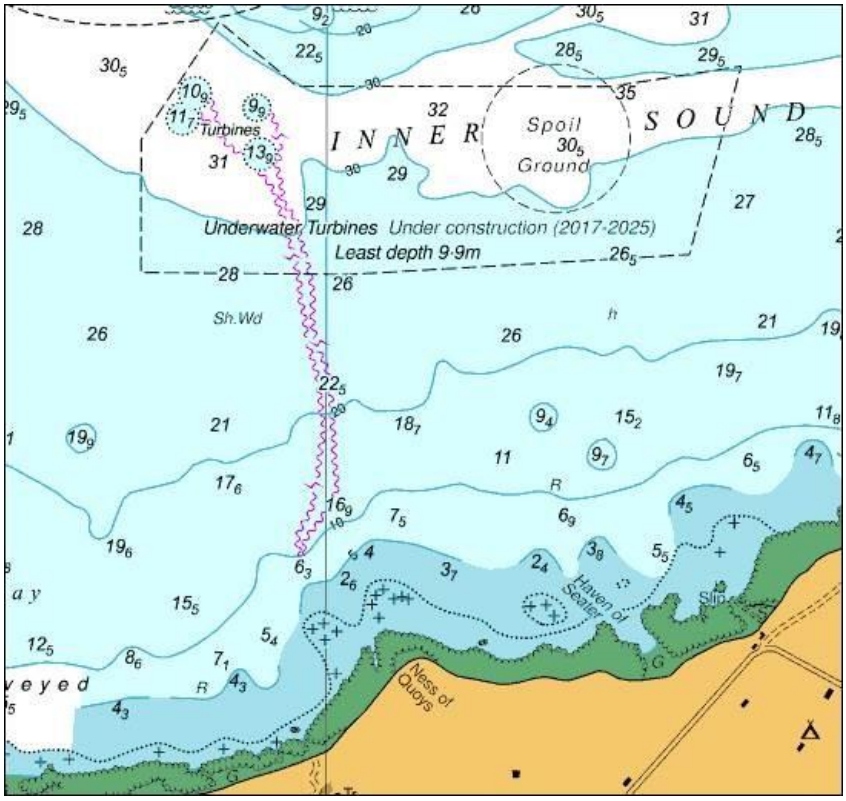
Emergency shutdown can be implemented via SSE Networks control centre. Phone this number and request that the main circuit breaker be opened. **0800 300999**

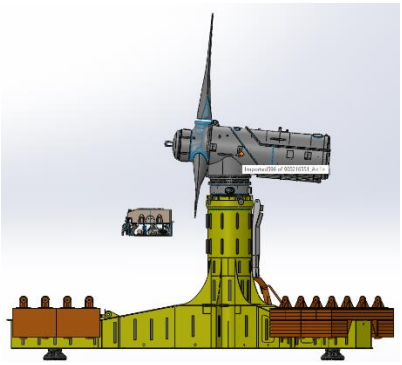
Estop buttons are also located within the onshore substation, for each turbine and the array.

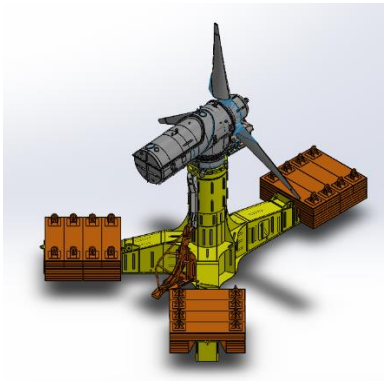
Site Rescue Teams

MeyGen do not have dedicated or part time rescue teams for the MeyGen offshore Site

TTG Specific information *(include an additional table if more than 1 WTG type)*					
Turbine	**Longitude UTM 30 WGS84**	**Latitude UTM 30 WGS84**	**Water depth (m) LAT**	**TTG Height (m)**	**Clearance BELOW LAT**
TTG 1 - AHH	03° 08.46158 W	58°39.60515 N	33.1	23.5	10.9
TTG 2 - AHH	03° 08.48413 W	58°39.55663 N	34.1	23.5	11.7
TTG 3 - AHH	03° 08.24738 W	58°39.57198 N	33.1	23.5	9.9
TTG 4 - AOU	03° 08.26262 W	58°39.50192 N	34.9	23.5	13.9







Communications	
VHF & Aviation	**Additional comms**
Activities onsite would be conducted by a vessel chartered for the purpose. Communication would be via **VHF Ch16**	Vessel specific contact details will have been e-mailed to renewables@hmcg.gov.uk and oelo@mcga.gov.uk prior to the commencement of the works.

Mass Evacuation Places of Safety *To indicate if mass evacuation is required where persons could be taken to, whether it be accommodation vessel, landfall or near Offshore Installation for temporary relief.*		
Place Name	**Range and bearing from centre of the Tidal Array**	**Latitude and longitude (WGS84, DM)**
– **Evacuation from the Offshore site by small vessel would be to Gills Bay or Scrabster Harbor.**	– **210^0 1.64nM**	**58^0 38.37633N / 003^0 9.67783W**
– **Evacuation from an Offshore Construction Vessel to a shore location would be via Scrabster or Nigg Energy Park.**	– **Scrabster harbor, 15nM west of site** – **Nigg Energy Park, 80nM South East**	**58^0 36.00783N / 003^0 33.62017W** **57^0 41.7275N / 004^0 1.89767W**

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.

Personal SAR Locating Device Make & Model
All personnel undertaking vessel transfers on the MeyGen site shall be equipped with a 275kN life jacket and a signal beacon with an integrated DCS transmitter, such as Ocean Signal Rescue ME MOB1 – EPI3100 unit.

Electronic Monitoring *(include details if feeds are provided to HM Coastguard)*		
AIS	**Radar**	**CCTV**
Location of receiver (indicated by OREI ID) and range of reception	Location (indicated by OREI ID) and range of scanners	Location (indicated by OREI ID) of cameras and range of coverage

Not relevant to the MeyGen tidal site

==========

END

==========

12 APPENDIX A – MEYGEN SITE ENTRY PERMIT

MEY-1A-80-TEM-005-F-SITEENTRYPERMIT.DOCX			MEYGEN
1. Project Number:	2. Areas of Access:	3. Date of issue:	
4. Description of work:		5. Valid From:	6. Valid to:
		7. Contractor undertaking the works:	
8. Contractor Person in Charge:		9. Contractor Number & E-mail address:	
10. Vessel Name and Call sign:		11. Number of persons on board:	
12. MeyGen Point of Contact:		13. MeyGen Point of Contact Number:	

14. TTG Status (tick applicable)

TTG#1	TTG#2	TTG#3	TTG#4
Generating ☐	Generating ☐	Generating ☐	Generating ☐
Removed for maintenance ☐	Removed for maintenance ☐	Removed for maintenance ☐	Removed for maintenance ☐
Configured for:	Configured for:	Configured for:	Configured for:
Installation ☐	Installation ☐	Installation ☐	Installation ☐
Recovery ☐	Recovery ☐	Recovery ☐	Recovery ☐
Other:	Other:	Other:	Other:

For installation and Recovery activities the turbine/s shall be / have been configured as per supplier procedures and relevant documentation has been / will be issued.

Signed on behalf of MeyGen:_____(Issuing Authority)

15.TTG isolations (tick applicable)

TTG#1	TTG#2	TTG#3	TTG#4
4.1 kV isolation ☐	4.1 kV isolation ☐	4.1 kV isolation ☐	4.1 kV isolation ☐
1kV isolation ☐	1kV isolation ☐	1kV isolation ☐	1kV isolation ☐
Generation Inhibit[1] ☐	Generation Inhibit[1] ☐	Generation Inhibit[1] ☐	Generation Inhibit[1] ☐
Generation Inhibit – Rotor Locked[2] ☐	Generation Inhibit – Rotor Locked[2] ☐	Generation Inhibit – Rotor Locked[2] ☐	Generation Inhibit – Rotor Locked[2] ☐
Generation Inhibit – Yaw Locked[3] ☐	Generation Inhibit – Yaw Locked[3] ☐	Generation Inhibit – Yaw Locked[3] ☐	Generation Inhibit – Yaw Locked[3] ☐
None ☐	None ☐	None ☐	None ☐

All relevant isolations are / will be in place and where appropriate Permits to Work have been / will be issued under Sgurrenergy Safety Rules.

Signed on behalf of MeyGen:_____(Issuing Authority)

16. Approval of Site Entry Permit

This permit is authorised to requirements of the MeyGen Health and Safety Plan. I the undersigned confirm that safe access to the site exists, and that all persons affected by this task have been informed.

Signed on behalf of MeyGen:_____(Issuing Authority) (E-mail PtW to address in Section 9)

17. Acceptance of Permit to Work

I have read and understand the procedure outlined in MEY-1A-70-PRO-001-F_OffshoreSiteEntryProcedure and have / will provide notification as required to the MeyGen Point of Contact.

Signed:_____(Performing Authority) (*Return scan of the signed PtW to MeyGen PoC*)

18. Project Documents

I have received the MeyGen Phase 1A Emergency and Coordination plan and the MeyGen Phase 1A Vessel Management Plan and shall adhere to any relevant requirements contained within.

Signed:_____(Performing Authority)

19. Completion and closure of Permit to Work

I certify that the works are complete, and all equipment and personnel have departed the site. The works undertaken are reported in _____(Doc Ref)

Signed:_____(Performing Authority) (*Return scan of the signed PtW to to MeyGen PoC*)

[1] Note: TTG rotor may still rotate and TTG may Yaw
[2] Note: TTG rotor shall NOT rotate, but TTG may Yaw
[3] Note: TTG rotor shall NOT rotate AND TTG Shall NOT Yaw

Source document: MEY-1A-70-TEM-016-F-SiteEntryPermit.docx 1 *Confidential Approved for external circulation*

Where unplanned changes to the works being undertaken occur, works must cease until the permit issuer has been informed and a revised permit to work issued.

DO NOT SEND THIS PAGE TO MEYGEN – FOR INFORMATION ONLY

VESSEL REPORTING

The Contractors Person in Charge shall provide the following notification to MeyGen Point of Contact via the operatios1@meygen.com e-mail address:

1. Vessel has commenced passage from port to the site;
2. Vessel about to enter the offshore site, (see below);
3. Vessel about to exit the offshore site, (see below);
4. Vessel has complete return passage from site to port;

The message sent shall have the following format:

Message Title:

[Project number][4] MEY-1A-70-PTW-[###]-Permittowork–Offshore Site.Docx[5]

Message format:

[Vessel name] [1 / 2N,E,W / 3N,E,W / 4][6] [Port name / -] [Time] [# of POB]

As an example:

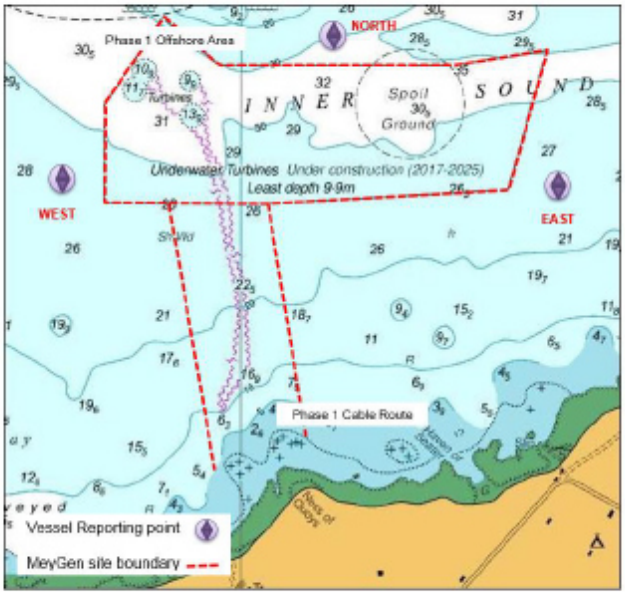
- The Olympic Ares departing Nigg at 06:30 with 27 persons aboard

Olympic Ares 1 Nigg 06:30 27

- the Olympic Ares entering the site from the north with 23 persons aboard at 15:30 would send the following:

Olympic Ares 2N - 15:30 23

Where the works shall be undertaken over several days, the Contractor shall provide MeyGen a passage plan for the duration of the works and update such via e-mail should the program of works change.



Typically, a vessel will enter or leave the site to the East or West, in some cases the vessel will depart to the North to move into the lee of Stroma Island to the North.

If a vessel departs site on passage to Gills Bay to await the subsequent tide, it shall be considered that this vessel departed site to the west.

[4] Item 1 in the previous page
[5] Note, this is the title of the Site Entry Permit on the front page.
[6] This format is taken from the list above e.g. 1 = passage to site, 2 = entering site, 3 = exiting site, 4 = return passage completes

13 APPENDIX B – SITE DRAWINGS

Note that the location of the main structures will be accurate to +/-1m and the export cables will be +/-5m.

REV.	DESCRIPTION	APPROVED	DATE
A00	Draft issued for internal review	AH	13/07/17
A01	Final issue	AH	13/07/17
A02	Revised layout based on site inspection	FJ	19/07/19
A03	Project Stroma Assets	FJ	26/07/19

491700.00mE
491800.00mE
491900.00mE
492000.00mE
492100.00mE
492200.00mE
6502300.00mN
6502200.00mN
6502100.00mN
6502000.00mN

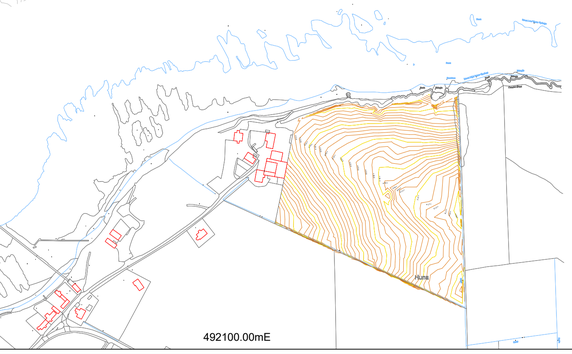
Crown estate Lease (14)
Inner Sound

Section 36 Phase 1 (18)
Marine Licence (17)

NERC
PLATFORM
AREA

Crown estate Lease (14)
Inner Sound

Crown estate Lease
Designated Area (14)



TEL: +44 131 659 9690 - Email: Info@meygen.com

DRAWN BY/DATE	FJ 19/07/19
CHECK BY/DATE	RLH 19/07/19
APPROVED BY/DATE	FJ 25/07/19
DRAWING STATUS	FINAL
DESCRIPTION	MEYGEN_INNER_SOUND
DRAWING/PART NO.	SITE_LAYOUT_25/07/19
REVISION	A03
DO NOT SCALE	REF SCALE 1:750 ON A1
SHEET	7 OF 7

REV.	DESCRIPTION	APPROVED	DATE
A00	Draft issued for internal review	AH	13/07/17
A01	Final issue	AH	13/07/17
A02	Revised layout based on site inspection	FJ	19/07/19
A03	Project Stroma Assets	FJ	26/07/19

491700.00mE
491800.00mE
491900.00mE
492000.00mE
492100.00mE
492200.00mE
6502300.00mN
6502200.00mN
6502100.00mN
6502000.00mN

SEABED DROP-OFF AREA

SEABED DROP-OFF AREA

34.0m

36.0m

36.0m

36.0m

36.0m

TSS 1 Turbine Base
491818.59mE
6502208.52mN
Heading: 272.0°T
Verticality: 1.01°

TSS 2 Turbine Base
491776.28mE
6502123.85mN
Heading: 272.3°T
Verticality: 3.19°

TSS 3 Turbine Base
492027.64mE
6502159.18mN
Heading: 272.0°T
Verticality: 0.56°

TSS 4 Turbine Base
492037.85mE
6502002.53mN
Heading: 269.6°T
Verticality: 1.25°

TTG 2 Export Cable
TTG 1 Export Cable
TTG 3 Export Cable
TTG 4 Export Cable

TEL: +44 131 659 9690 - Email: Info@meygen.com

DRAWN BY/DATE	FJ 19/07/19
CHECK BY/DATE	RLH 19/07/19
APPROVED BY/DATE	FJ 25/07/19
DRAWING STATUS	FINAL
DESCRIPTION	MEYGEN_OFFSHORE
DRAWING/PART NO.	SITE_LAYOUT_25/07/19
REVISION	A03
DO NOT SCALE	
REF SCALE	1:750 ON A1
SHEET	6 OF 7

REV.	DESCRIPTION	APPROVED	DATE
A00	Draft issued for internal review	AH	13/07/17
A01	Final issue	AH	13/07/17
A02	Revised layout based on site inspection	FJ	19/07/19
A03	Project Stroma Assets	FJ	26/07/19

491750.00mE
491800.00mE
491850.00mE
491900.00mE
6502300.00mN
6502250.00mN
6502200.00mN

Rockbags (2x4Te)
RB143 & RB144
491824.32mE
6502301.31mN

TSC1 Export DMC
491810.02mE
6502285.74mN

Rockbag (1x4Te)
RB142
491816.55mE
6502290.89mN

DMC Stabilisation (1 x 4Te RB)
RB141
491810.02mE
6502285.74mN

SEABED DROP-OFF AREA

Rockbag (1 x 4Te)
RB147
491848.20mE
6502295.80mN

Rockbags (2x4Te)
RB145 7 RB146
491826.17mE
6502281.93mN

Turning Bollard (3x4Te)
RB138 & RB139 & RB140
491836.80mE
6502210.50mN

Turning Bollard (1x4Te RB)
RB148
491844.18mE
6502205.69mN

Rockbag (1x4Te)
RB152
491768.25mE
6502193.97mN

Rockbag (1x4Te)
RB153
491773.90mE
6502196.83mN

TSC2 Export Cable DMC
491769.35mE
6502190.90mN

Rockbag (1x4Te)
RB151
491768.43mE
6502191.00mN

TSS 1 Turbine Base
491818.59mE
6502208.52mN
Heading: 272.0°T
Verticality: 1.01°

34.0m

TSC 1 Export Cable
TSC 2 Export Cable

TEL: +44 131 659 9690 - Email: Info@meygen.com

DRAWN BY/DATE	FJ 19/07/19
CHECK BY/DATE	RLH 19/07/19
APPROVED BY/DATE	FJ 25/07/19
DESCRIPTION	MEYGEN_TTG1
DRAWING/PART NO.	SITE_LAYOUT_25/07/19
PROJECT NO.	PHASE1A
CLIENT REF	
REVISION	A03
CERTS/INSPECTION	
MASS - KG	
TOLERANCES UNLESS OTHERWISE STATED: ISO 2768 - mK ALL DIMENSIONS IN mm	
DRAWING STATUS	FINAL
DO NOT SCALE REF SCALE 1:250 ON	A1
SHEET	1
OF	5
3rd ANGLE PROJECTION	

REV.	DESCRIPTION	APPROVED	DATE
A00	Draft issued for internal review	AH	13/07/17
A01	Final issue	AH	13/07/17
A02	Revised layout based on site inspection	FJ	19/07/19
A03	Project Stroma Assets	FJ	26/07/19

491700.00mE | 491750.00mE | 491800.00mE | 491850.00mE

6502200.00mN | 6502150.00mN | 6502100.00mN

TSC 1 Export Cable
TSC 2 Export Cable
TSCT Jumper Cable

Turning Bollard (3x4Te)
RB138 & RB139 & RB140
491836.80mE
6502210.50mN

Turning Bollard (1x4Te RB)
RB148
491844.18mE
6502205.69mN

Rockbag (1x4Te)
RB152
491768.25mE
6502193.97mN

Rockbag (1x4Te)
RB153
491773.90mE
6502196.83mN

TSC2 Export Cable DMC
491769.35mE
6502190.90mN

Rockbag (1x4Te)
RB151
491768.43mE
6502191.00mN

Rockbag (1x4Te)
RB154
491790.14mE
6502163.43mN

TSS 1 Turbine Base
491818.59mE
6502208.52mN
Heading: 272.0°T
Verticality: 1.01°

34.0m

TSS 2 Turbine Base
491776.28mE
6502123.85mN
Heading: 272.3°T
Verticality: 3.19°

Rockbag (1x4Te)
RB149
491801.97mE
6502119.02mN

Turning Bollard (1x4Te RB)
RB150
491810.51mE
6502121.89mN

TEL: +44 131 659 9690 - Email: Info@meygen.com

DRAWN BY/DATE	FJ 19/07/19
CHECK BY/DATE	RLH 19/07/19
APPROVED BY/DATE	FJ 25/07/19
DESCRIPTION	MEYGEN_TTG2
DRAWING/PART NO.	SITE_LAYOUT_25/07/19
PROJECT NO.	PHASE1A
CLIENT REF	
REVISION	A03
CERTS/INSPECTION	
MASS - KG	
TOLERANCES UNLESS OTHERWISE STATED: ISO 2768 - mK ALL DIMENSIONS IN mm	
DRAWING STATUS	FINAL
DO NOT SCALE	REF SCALE 1:250 ON A1
SHEET	2 OF 5
3rd ANGLE PROJECTION	

REV.	DESCRIPTION	APPROVED	DATE
A00	Draft issued for internal review	AH	13/07/17
A01	Final issue	AH	13/07/17
A02	Revised layout based on site inspection	FJ	19/07/19
A03	Project Stroma Assets	FJ	26/07/19

491950.00mE
492000.00mE
492050.00mE
492100.00mE
6502250.00mN
6502200.00mN
6502150.00mN

Rockbag (1x4Te)
RB161
492023.51mE
6502247.86mN

Rockbag (1x4Te)
RB160
492022.49mE
6502246.98mN

34.0m

TSC3 Export Cable DMC
492046.53mE
6502250.82mN

SEABED DROP-OFF AREA

36.0m

Rockbag (1x4Te)
RB159
492021.09mE
6502245.81mN

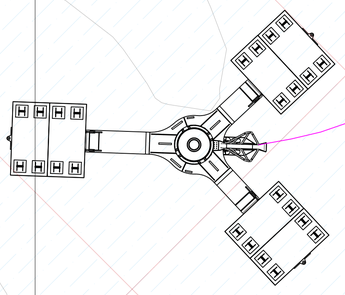
Rockbag (1x2Te)
RB158
492036.64mE
6502242.03mN

Note: Indicative Export Cable Positions. No As-Left Survey Conducted

Note: Indicative Umbilical Cable Positions. No As-Left Survey Conducted

Rockbags (2x4Te) Over Cable Crossing
RB156 & RB157
492065.92mE
6502171.32mN

TSS 3 Turbine Base
492027.64mE
6502159.18mN
Heading: 272.0°T
Verticality: 0.56°



Rockbag (1x4Te) Over Cable Crossing
RB155
492065.92mE
6502171.32mN

Rockbag (1x4Te)
RB162
492062.48mE
6502162.59mN

TSC 3 Export Cable
TSCT 3 Jumper Cable

TEL: +44 131 659 9690 - Email: Info@meygen.com

DRAWN BY/DATE	FJ 19/07/19
CHECK BY/DATE	RLH 19/07/19
APPROVED BY/DATE	FJ 25/07/19
DESCRIPTION	MEYGEN_TTG3
DRAWING/PART NO.	SITE_LAYOUT_25/07/19
PROJECT NO.	PHASE1A
CLIENT REF	
REVISION	A03
CERTS/INSPECTION	
MASS - KG	
TOLERANCES UNLESS OTHERWISE STATED: ISO 2768 - mK ALL DIMENSIONS IN mm	
DRAWING STATUS	FINAL
DO NOT SCALE	
REF SCALE 1:250 ON	A1
SHEET	3
OF	6
3rd ANGLE PROJECTION	

REV.	DESCRIPTION	APPROVED	DATE
A00	Draft issued for internal review	AH	13/07/17
A01	Final issue	AH	13/07/17
A02	Revised layout based on site inspection	FJ	19/07/19
A03	Project Stroma Assets	FJ	26/07/19

492000.00mE 492050.00mE 492100.00mE 492150.00mE

6502050.00mN 6502000.00mN 6501950.00mN

Bend Restrictor Apex
492071.94mE
6502029.60mN

TSS4 SITE PREPARATIONS (2Te)
RB169
492020.00mE
6502002.00mN

TSS4 SITE PREPARATIONS (2TE)
RB170
492026.00mE
6501999.00mN

TSS 4 Turbine Base
492037.85mE
6502002.53mN
Heading: 269.6°T
Verticality: 1.25°

Freespan Rectification (4x4Te RB)
RB163, RB164, RB165, & RB166
492091.10mE
6502002.09mN

Flowbec Stabilisation (2x2Te RB)
RB167 & RB168
492058.50mE
6501984.80mN

Note: Indicative Cable Positions

- TSC 2 Export Cable
- TSC 1 Export Cable
- TSC 3 Export Cable
- TSC 4 Export Cable

TEL: +44 131 659 9690 - Email: Info@meygen.com

DRAWN BY/DATE	FJ 19/07/19	DESCRIPTION: MEYGEN_TTG4
CHECK BY/DATE	RLH 19/07/19	DRAWING/PART NO.: SITE_LAYOUT_25/07/19
CERTS/INSPECTION / MASS - KG	APPROVED BY/DATE: FJ 25/07/19	PROJECT NO.: PHASE1A; CLIENT REF:
TOLERANCES UNLESS OTHERWISE STATED: ISO 2768 - mK, ALL DIMENSIONS IN mm	DRAWING STATUS: FINAL	DO NOT SCALE; REF SCALE 1:250 ON A1; SHEET 4 OF 6; REVISION A03; 3rd ANGLE PROJECTION

REV.	DESCRIPTION	APPROVED	DATE
A00	Draft issued for internal review	AH	13/07/17
A01	Final issue	AH	13/07/17
A02	Revised layout based on site inspection	FJ	19/07/19
A03	Project Stroma Assets	FJ	26/07/19

491750.00mE
491800.00mE
491850.00mE
491900.00mE

6502300.00mN
6502250.00mN
6502200.00mN

6.7m
8.7m
8.1m

HDD#1 (2Te)
RB171
492177.4mE
6500638.2mN

HDD#2 (2Te)
RB172
492183.1mE
6500641.9mN

HDD#3 (2Te)
RB173
492190.4mE
6500646.6mN

HDD#4 (2Te)
RB174
492198.5mE
6500646.0mN

TSC 2 Export Cable
TSC 1 Export Cable
TSC 3 Export Cable
TSC 4 Export Cable

	DRAWN BY/DATE: FJ 19/07/19	DESCRIPTION: MEYGEN_HDD_EXIT	
	CHECK BY/DATE: RLH 19/07/19	DRAWING/PART NO.: SITE_LAYOUT_25/07/19	
CERTS/INSPECTION / MASS - KG	APPROVED BY/DATE: FJ 25/07/19	PROJECT NO.: PHASE1A	CLIENT REF / REVISION: A03
TEL: +44 131 659 9690 - Email: Info@meygen.com			
TOLERANCES UNLESS OTHERWISE STATED: ISO 2768 - mK. ALL DIMENSIONS IN mm	DRAWING STATUS: FINAL	DO NOT SCALE REF SCALE 1:250 ON A1	SHEET 5 OF 6 / 3rd ANGLE PROJECTION

14 APPENDIX C – MEYGEN VESSEL NOTIFICATION

MeyGen Ref	
Notice to Mariners Ref	
MeyGen Client Rep	
Emergency contact details	
Marine Contractor Rep	
Emergency contact details	

Summary of the works			
Start date		Estimated completion date	
Vessel photo			

– Name	
– IMO number	
– Call sign	
– MMIS number	
– Vessel telephone number	
– Estimated persons on board	