

Staffin Harbour Project
BWCMS (Breakwater Construction Method Statement)
Rev:03 12.6.2025

To be read in conjunction with CEMD issue 04, Wallace Stone engineering plans ref 2297, Marine Licence ref MS00010741, and planning permission ref 24/01031/FUL.

1. Project Objectives

The development of the existing Staffin Harbour facility will include a new hard standing area, storage sheds, office & WCs and improved weather protection from a new larger breakwater, and an improved slipway and new pontoons.

The project will be carried out on a phased basis to minimise environmental impacts and be subject to securing sufficient funding to complete the objectives in each phase. See attached drawing BWCMS Construction Phases Rev01 for phases 1 to 7.

The first & second phase of the works have been completed at time of writing, and work is ongoing to develop onshore facilities & services.

During Phases 3 to 6 where construction work will be carried out above & below MLWS it is essential that the risk of wash-out of rock fill fines and resultant debris landing on the adjacent north foreshore area where the dinosaur footprints are located, is avoided due to a storm event occurring during construction.

2. Equipment & Materials Required

2 No 20t 360 Excavator with associated ground engaging bucket attachments and grab
Rigid tipper for rock fill deliveries
Artic' lorry with rock trailer
Compaction roller

2.1 Materials

Imported primary rock armour 1-8 tonne
Imported secondary 0.1-0.8 tonne
Imported rock fill, 400mm down
Class 6F5 capping materials
Legato precast concrete blocks
Precast concrete slipway sections (below +2mCD)
Poured shuttered slipway concrete (above +2mCD)

2.2 Labour resource

Contract manager – TBC
Plant supervisor - TBC
Site Plant Operations – TBC
Site contact – Lachie Gillies, SCT harbour manager
Labourer/banksmen – to assist with ground works and vehicle marshalling

3. Traffic Management

A separate traffic management document has been prepared and is attached to this method statement. Document reference TMP-STAFFIN 1363 (section 12 of attached CEMD)

Prior to works commencing & HGV vehicles using the harbour access road, a detailed video record of the full length of the single track access road will be taken and made available for the local authority roads engineer.

The traffic management document will be issued to all site personnel and material delivery drivers who will be required to sign a receipt once its content and operational requirements have been read and understood.

4. Mobilisation & signage

4.1 Prior to the placement of imported rock infill and rock armour material all plant will be delivered to site by contractors low loader and will be dropped off at the existing harbour hardstanding area. A traffic control marshal will be used when HGVs are transiting the single track harbour access road.

4.2 The construction working area at the harbour will be cordoned off and site safety warning signs used on the public approach road to provide information to the general public and visitors to the adjacent beach of HGV movements.

4.3 Vehicle parking will be restricted on the site during construction and will be limited to essential harbour user personnel only. A designated temporary parking area has been prepared for the fish farm staff.

4.4 Access will be maintained to existing storage containers and a suitable safety zone set up within the harbour area to separate harbour user personnel from construction delivery HGV vehicles.

4.5 The site welfare cabin/site office will be delivered to site and located in a suitable position at the site entrance.

5. Work Method Statement

5.1 To prepare the breakwater & infill area, all vegetation and sea borne debris will be cleared prior to the placement of rock fill & armour stone.

All work on foreshore between MLWS & MHWS will be carried out between tides.

All work below MLWS will be carried out from excavators located above MLWS carried out between tides on the newly formed breakwater as it extends out in layers to the extremity of the new breakwater footprint. Maximum water depth at the extremity of the new breakwater will be 3.5m below chart datum. To ensure excavators working from dry land can reach the seabed at the extremity of the new breakwater (to break out the toe trench, place rock armour & fill) all personnel are to be briefed each week on weather & swell forecasts, tide times & heights and a work plan agreed each week to ensure work can safely be progressed between tides and wash-out risk minimised.

5.2 The existing rock armour & fill material that is to be reused from the old breakwater will only be dismantled and re-used once enough of the new breakwater has been constructed such that the vulnerable dismantling works are protected from north & easterly storms by the new breakwater. Likewise for the poured concrete slipway construction phase. See phases 4 & 5 of attached Construction phases plan.

5.3 The extent of the working area will be set out by the survey engineer in accordance with the approved design layout and suitable guide markers used to clearly display the rock armour & infill areas. A navigational marker buoy will be placed at the seaward extent of tidal works as they progress outwards, and local mariners kept updated on progress. Setting out of underwater toe trench & rock armour placement will utilise excavator's onboard GPS system.

5.4 The imported rock fill & armour stones from the Lealt quarry will be tipped off the delivery trucks on a stable and level area of the existing hardstanding to allow the excavator to marshal and then place material into the construction area by the most efficient method of working.

5.5 The excavator will initially form a bund using clean rock armour around the perimeter of the breakwater or hardstanding area to be constructed in that phase. Once the bund is constructed to a predetermined level, the rock fill will be placed inside the bund during hours of low tide and in compacted layers until the height of the bund is achieved and not exceeded. Thereafter the rock armour bund will be increased in height prior to any further infill material being placed inside the bund. A roller is to be used to ensure adequate compaction is achieved. The engineer has stated that compaction should be done in accordance to SHW series 600, clause 612, table 6/4 with a Class 6N material.

5.6 A key requirement of the infilling operation is to ensure the risk of fines wash-out resulting from a north or easterly storm event is minimised. Mitigation measures will be implemented to control storm wash-out risk as follows; weather, swell & tide forecast monitoring to be carried out twice weekly and ideally three times weekly using multiple sources such as www.windy.com, www.xcweather.co.uk, www.willyweather.co.uk, amongst other sources and reported to main contractor & site manager weekly. Any north or east swell forecast with period > 10 seconds to be highlighted and measures listed below taken to minimise risk of washout of fine materials in & above the tidal zone. The swell period limit of 10 seconds is determined from experience during phase 1 construction to be the limit at which fill material becomes mobile.

- There must always be sufficient rock armour in suitable sizes available on site to enable the excavator operator to “close up” the open face of the rock fill in the event of a northerly swell forecast.
- The extent of the exposed open face at any one time will be dependent on the time of year the infilling operation is being carried out. During winter months the extent of open face will be limited to no more than 2 days (when storms are most likely), in spring/autumn 3 days, and during the summer months the working time can be extended to 4 to 5 days (when storms are less likely)
- Once the storm event has passed & swell subsided, the protective temporary rock armour layers will be removed, stock piled and the rock infilling operation progressed.

5.7 For rock infill to be placed below water level i.e. below MLWS a low fines graded rock infill material will be used as described within the engineer’s design specification document ref 2297- sheets 301 to 304 inclusive.

On the basis that the budgetary constraints may not allow the full extent of a particular phase to be completed, an agreed method of temporarily protecting the open faces using rock armour will be agreed with the engineer. This work will be carried out and signed off by the engineer. Where sections of the outer face of the new hard standing area & breakwater can be completed; the rock armour protected slope will be constructed in accordance with the engineer’s design specification. This will require the rock toe and outer primary rock layer to be built up from a 500mm deep foundation toe trench having been excavated into the rock seabed/foreshore.

5.8 Any remaining processed rock armour for the future phases of the project will be stock-piled at the Lealt Borrow pit if space is available, and/or on the hard standing area using a safe and stable method and above MHWS.

5.9 On completion of each phase of the works, if subsequent phases are not yet funded, the work site will be cleared of plant, equipment, fencing, welfare cabins and any other items associated with the works.

6. Other Environmental Considerations

6.1 All works to be monitored by ECOW as per CEMD

6.2 Work area is tidal. A tide time chart will be presented to each operator daily, with times to vacate tidal zone area.

6.3 All plant working on site will have spill kit provided.

6.4 Re-fueling by remote, double skinned fuel bowser with pump incorporated. Re-fueling to be carried out a minimum of 10 meters from any water course, surface drains, ponds etc. Plant nappies to be used when re-fueling to capture any potential drips. Spill kit and powder fire extinguisher stationed with the bowser.

6.5 In the event that any siltation within the water is caused by the works, this must be dealt with and mitigated to prevent pollution problems into the wider sea area. Where possible infilling at the lower levels will be carried out at tide times of low water.

6.6 All personnel to stay outwith the excavator working zone. If excavator is to be approached, eye contact must be made with the operator and acknowledged by a thumbs up and the bucket placed on the ground.

7. Underwater noise & marine mammal impact mitigation

7.1 Two months prior to commencement of all construction activities, inclusion of details of the on-site location and experience levels of the marine mammal observers (MMOs) employed, with details of their location, when they are to be deployed and the experience of the observers, will be required. These details will be provided by the principal contractor upon appointment of MMOs This section of the BWCMS will be updated with these details.

All MMOs will be trained to Joint Nature Conservation Committee (JNCC) standards. MMOs shall have the power to delay rock breaking operations should marine mammals be present in the mitigation zone.

7.2 The mitigation zone for rock breaking operations shall extend 500m from the proposed breakwater for cetaceans, basking shark, and seals and 100m for otters.

A formal log shall be maintained by the MMOs whether marine mammals basking sharks or otter are present or not. The forms used will be the standard JNCC MMO forms, modified to suit rock breaking operations. Paper forms should be collated on a regular basis and transferred to an electronic format. All data will be stored electronically and provided to Marine Scotland at the end of the piling campaign. The details recorded will include but are not limited to:

- Time and location of the operations;
- Mobilisation and demobilisation times of MMO
- Start time of rock breaking
- Duration of rock breaking
- Breaks in operations, or times spent at reduced breaker energy
- Conditions affecting observations including sea state and visibility, throughout surveillance;
- Records of any sightings/acoustic detections and actions taken
- Records will also be kept of sightings of other marine species including otters.

7.3 Visual observations are preferred over acoustic. As such no rock breaking to be carried out during hours of darkness, reduced visibility (fog with visibility < 500m) and when the sea state is ≥ 4 from a north or east direction. Beaufort Scale is often used as an indicator of sea state hence, visual observation when Beaufort is ≥ 4 from north or east direction may not be possible. However, it should also be noted that due to wash out risk of finer core material it is unlikely that any rock breaking would be undertaken when sea conditions are such that visual observations cannot be undertaken (see section 5.6 of BWCMS). As such, in this instance when a Beaufort level of ≥ 4 is recorded the MMO will consider sea state & wind/swell direction and actual visibility to decide whether rock breaking operations can commence.

7.4 Marine Mammal Mitigation rock breaking Protocol

The rock breaking marine mammal mitigation will provide the following measures:

7.4.1 A 500m mitigation zone will be established around the breakwater construction area, i.e. to An Corran Beach to the north west, to Staffin Island MHWS to north, whole of the shallow bay to south of the harbour sheds, and out beyond the reef to east.

7.4.2 During periods where the visibility conditions and sea state are not conducive for visual mitigation practices no rock breaking operations will take place.

7.4.3 The MMO should be informed by the site manager or foreman of proposed rock breaking start times as soon as possible (at least 90 minutes notice, or the night before for a morning start).

7.4.4 When visual observations are being undertaken, an MMO will commence the watch using binoculars (minimum characteristics of 8x42). At least a 30 minute watch is required to be conducted prior to the anticipated start time. The MMO should focus their effort on the mitigation zone and advise the site foreman if marine mammals, otter or basking sharks are present.

7.4.5 Prior to rock breaking, if the 500m mitigation zone remains clear of cetaceans, basking shark and seals during the 30 minute watch, and the 100m mitigation zone remains clear of all otter, the MMO will give permission to commence the rock breaking but:

- If a mammal/shark is sighted in the zone, the MMO will track the animals visually, and the rock breaking will be delayed until the mitigation zone has been clear for 20min. The MMO will keep the site team up to date with progress.

7.4.6 Once rock breaking has commenced at full-power, the MMO should be notified. The MMO does not need to continue watching during rock breaking at full power. If marine mammals, otters, or basking sharks are observed during rock breaking operations within their designated mitigation zones, details should be noted on a recording form.

- There is no requirement to stop works for mammals or basking sharks entering the mitigation zone once rock breaking has commenced, provided rock breaking is continuous.
- Continuous is defined as without a break in operations exceeding 10min in duration.

7.4.7 If a break in rock breaking operations exceeds 10min then a normal 30min MMO watch shall be deployed. MMO should remain on watch during breaks in operations to ensure no marine mammals have entered the mitigation zone.

7.4.8 All MMO operations will be recorded using the JNCC marine mammal reporting forms template and submitted to Marine Scotland once the works are complete.

7.4.9 As the mitigation measures are unlikely to prevent disturbance an EPS (European protected species) licence to cover disturbance to harbour porpoise, bottlenose dolphin

and common dolphin. The EPS must be sought at least 2 months prior to rock breaking commencing and should be for an at sea impact radius of 1.5km² to 1.6km² from the source. See <https://www.gov.scot/collections/marine-licensing-and-consent/> for application form and further information.

8. Risk Assessments

Risk assessments to be carried out by main contractor and appended to this method statement. Prior to works, all associated staff will be briefed on the scope of works and associated hazards and risks and adequately trained to competently & safely operate the required machinery.