

Cowes Harbour Commission
Application for Works / Dredging License 2009

Expansion of the information requested on the application form.

Name and address of applicant

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Particulars of the nature, extent and manner of the operation to be carried out.

The components of the plan are:

- § Construction of a new rock mound breakwater and a short extension to the Shrape breakwater to create a properly protected outer harbour for the benefit of both Cowes and East Cowes;
- § A marina of 300 permanent berths with separate dedicated provision of visitor and event berths to support the waterfront regeneration of East Cowes;
- § Dredging of a new eastern channel to improve vessel safety within the harbour, especially during major yachting events such as Cowes Week and the annual Round the Island Race.

Rights held in, under or over land* (above and below the level of high water) as are necessary to enable him [the applicant] to enjoy the benefits of the license. If no rights are held, the action taken to enable him [the applicant] to obtain such rights, if the license is granted. (documentary evidence is required with this application, if applicable).

No rights are currently in place over the land. Dialogue has been ongoing with the Crown Estate with respect to arrangements to restructure the existing leases. These discussions are well advanced as evidenced by the provision of a draft lease by The Crown Estate. Furthermore dialogue has been undertaken with other key stakeholders to ensure the project can be delivered. To formalise the necessary arrangements a Collaboration Agreement has been drafted by SEEDA's solicitors which will be put in place to set out the roles and responsibilities of CHC, SEEDA, The Crown and the IOW Council.

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Information requested in letter from CHC dated 1st April 2009

Full description of the project

Eastern Channel Dredge

A Capital Dredge will be undertaken to create a channel that will be some 550m long with a width at its narrowest point of 30m. The Channel has a design and maintained dredge depth of 3.0m below Chart Datum (CD) and maximum side slopes of 1:5, giving a total excavation of around 69,000m³. The spatial extent of the dredge is 45,244 m². The depth of material to be removed to form the channel varies from up to 4.7m depth towards the inshore south east corner of the proposed marina to less than 3m depth in the channel – please see accompanying plan MP118-315.

Marina Basin Dredge

A Capital Dredge to accommodate the marina and associated vessels will be required to provide a design depth of 2.5m below CD which will be subsequently maintained at a depth of 2.0m below CD.. Accompanying plan MP118-315 shows the extent of the dredge, of which 14,208m² lies above MLW and therefore falls within the intertidal, the balance of 53,565 m² is subtidal. In total a maximum volume of 171,000m³ will be removed.

Physical Composition of the Breakwater

The preferred breakwater construction is for a rock mound breakwater and SEEDA intends to let the contract for the breakwater construction on a design and build basis. The breakwater will be some 342m long, 2m wide at the top and 21-30m wide at its base on the sea bed, see Drawing MP118-302. The top of the breakwater will be set at a level of +5.5m CD and the sea bed is typically at minus 0.9m CD but dropping to minus 1.7m CD at the western end. Thus at Mean High Water Springs the visible width of the breakwater at water level is likely to be 6m and at Mean Low Water Springs the visible width at water level will be 17-21m.

The breakwater would have an initial central core of ballast as dredged (BAD)/small rocks, topped with a stone core and finished with protective armour of large rocks, as illustrated in Drawing MP118-304. Total finished volume for the breakwater would be in the order of 30,000 - 35,000m³. The gradient of the side slopes will be between 1:1.5 and 1:2.

Extension of the Shrape Breakwater

In the interests of maintaining the character of the breakwater, the proposed extension will be of a similar design and construction as the original structure, as illustrated in Drawing MP118-304.

The extension to the Shrape breakwater will form part of the Design and Build contract for the development works. Ultimately the detailed design will therefore be the responsibility of the selected contractor/developer. However, in the interests of maintaining the character of the breakwater, in general terms the form of the breakwater extension will be similar to that of the existing Shrape breakwater construction and the overall section will not exceed the section of existing breakwater.

Detailed Design of the Marina

The marina layout is shown in Drawing MP118-303 and will provide for 300 permanent finger pontoon berths. These berths will be available for annual and seasonal berthing contracts. When vacant the berths will also be made available for visiting vessels. In addition to the permanent berths the long lengths of alongside pontoon, particularly those adjacent to the main navigation channel, will be reserved for use by visiting vessels. Some 34 berths of average vessel length can be accommodated on the visitor pontoons, and during peak periods and events rafting of vessels will enhance these numbers.

The open water/berthing area fronting the Venture Quays apron slab provides for a dedicated events basin, making full use of the natural deep water that exists. The flexible nature of the berthing provided will allow for a range of vessel sizes to be accommodated including support craft.

The final pontoon layout, spatial position and berth allocation has been derived with reference to a number of external factors in addition to the optimum berth mix:

- § The marina has been positioned to reduce to a minimum, the area of capital dredging by making best use of self-maintaining deep water;
- § Yachts are positioned north-south to compliment tidal currents and thus aid manoeuvrability;
- § Larger berths are predominantly located towards the main channel and natural deep water;
- § Dimensions and layout design require consideration of the future maintenance dredging operations;
- § A single 'spine' or 'back' walkway of 5m width provides access to all piers without undue change in direction;
- § All main piers are of either 2.5m or 3m width;
- § Incorporation of a public landing facility available at all states of the tide.

There is a current access to the water which will be removed as part of the project. Bell's Landing which is identified on Drawing MP118-302 will be demolished and within the marina development a new all states of tide access point for public use will be provided (also identified on Drawing MP118-302)

The total area encompassed by the marina pontoons amounts to 5,904m².

A fixed suspended concrete deck, mounted on vertical piles, will provide a foundation for the marina building that will comprise a two-storey office together with toilet, shower and laundry facilities.

Indicative method statements

Eastern Channel Dredge

Dredging activity in the Eastern Channel will take place between October and March, prior to the start of the seagrass growth season, to avoid unnecessary stress and impacts upon the sensitive seagrass beds. Vessels will also avoid grounding and other activity, such as anchoring, within the sensitive seagrass beds (these elements are discussed further in the accompanying Environmental Statement).

Dredging will be conducted in concert with tides and operations will continue 7 days per week, subject to favourable weather conditions. The anticipated production is in the range 1,500-2,000m³ per day and allowing for some down-time (for weather delays, maintenance etc.) the duration of the dredge is estimated to be 5-7 weeks.

Self-propelled disposal vessels transporting the material to the FEPA licensed disposal grounds will exhibit the required marks and lights to avoid collisions at sea. Such vessels will be in regular communications with VTS (Southampton), QHM Portsmouth and the local Harbour Master. The precise and final dredging equipment to be used will be determined by the appointed dredging contractor.

Marina Basin Dredge

To limit disturbance of material, backhoe dredging will be utilised. Working from within the dredged area, a pontoon mounted backhoe dredger will load the dredged material into self-propelled hoppers for off-site disposal with a barge size in the range 300-750m³. Positioning will be by GPS and level control maintained by an electronic system. Dredging will be conducted in concert with tides and the maximum anticipated production is 1,500-2,000m³/day and allowing for some down-time (for weather delays, maintenance etc.) the duration of the dredge is estimated to be 10-12 weeks.

Self-propelled disposal vessels transporting the material to the FEPA licensed disposal grounds will exhibit the required marks and lights to avoid collisions at sea. Such vessels will be in regular communications with VTS (Southampton), QHM Portsmouth and the local Harbour Master.

Both the Eastern Channel dredge and the Marina Basin dredge are likely to be completed in sequence and a total duration of dredging activity of 15 - 19 weeks can be expected.

Construction Methodology for the Breakwater

Based upon the results of the geotechnical survey it is envisaged that the ground may not have sufficient strength to support a rock mound placed at sea bed. Therefore, it is anticipated this be overcome through the installation of perimeter steel sheet piling at the toe, between which a filled core of ballast as dredged (BAD) and stone will be placed. It is likely that construction will include provision of a geotextile layer in the form of a heavy duty large weave open plastic mesh, laid directly on the sea bed prior to placing any fill, in order to stabilise the bed and prevent localised failures. The BAD and/or stone will be placed on the geotextile in controlled layers to ensure the whole construction settles in a controlled manner, inundation by tidal waters will assist effective settlement. The construction methodology outlined assumes there will be a requirement for toe-piling and

therefore can be regarded as a worst-case in respect of the scope and complexity of works.

The overall construction period for the breakwater is estimated to be 10 – 15 months.

It is envisaged that there would be in the region of 500mm settlement during construction with further settlement after work is complete. As is the case with such structures, there may be a requirement for limited periodical topping up and/or reshaping of the breakwater throughout its serviceable life. Although after an initial 12 years such requirement will significantly reduce. All works will be completed from the water using floating equipment such as work boats, barges and barge mounted cranes.

Breakwater Construction Project Phases

The breakwater construction involves several key phases that together will determine the overall timeline for the project.

Steel piles

If steel piles are used these will most likely be sourced in the UK, Europe or the Far East and shipped from the mainland (e.g. Southampton) for onward delivery to site by barge.

Piles will be driven by non-percussive methods from either a floating or 'jack-up' barge to maximise production and minimise the effect of tides. Non-percussive piling techniques will be employed to minimise noise/disturbance to the surrounding environment. Should insufficient penetration be achieved using non-percussive piling techniques then allowance will need to be made for limited percussion piling as an alternative means of achieving the required penetration. It is anticipated that the piling would take in the order of 3 – 5 months in total. After an initial lead-in period of piling only (about six weeks) piling would continue in parallel with BAD fill and rock fill/armouring.

Laying of geotextile

The geotextile would be sourced from Europe and be shipped to Southampton in large rolls for onward delivery to site by barge. The laying of geotextile would commence after piling starts and the works will be intermittent with timing dictated by piling progress. The geotextile will be accurately placed by sliding off the side of a barge in pre-weighted sheets or unrolled from the back of the barge to be immediately covered by a layer of BAD/stone to anchor it to the sea bed. The employment of commercial divers to assist in this process is likely. The estimated period over which the laying of geotextile will occur is approximately 7-8 months. Any excess geotextile would be removed once the works have been progressed to a sufficiently advanced stage.

Ballast As Dredged (BAD)

BAD would be dredged from one of the approved local licensed dredging areas using a large suction dredger, brought direct to site and placed by means of pumping or conveyor belt. Typically each shipload would be in the order of 2,300 tonnes (1300m³) so allowing for half of the fill in BAD this would represent around 14 shiploads. A typical cycle time to dredge, deliver and offload would be 12 hours. The frequency of ships would be determined by the speed of construction of other aspects of the design, but could be in the order of 1 ship per fortnight.

Rock

The balance of the rock fill will most likely be sourced in UK or northern France and typically delivered by a mother ship to a local commercial wharf. There it will be offloaded into a holding area for subsequent loading/transit in a small barge of around 500 tonnes capacity (~250m³) to the breakwater site. Rock will be side tipped from the barge and final placement would be achieved by grapple for large rocks and large excavator for smaller rocks. A combination of excavators will be used to shape the rock mound breakwater to ensure structural integrity with some equipment working from the partially constructed breakwater. The placement of rock is anticipated to have a duration of 8 – 12 months.

Extension to the Shrape Breakwater

Whether sheet piling or tubular steel piles the piles will most likely be sourced in the UK, Europe or the Far East and shipped to the mainland (e.g. Southampton) for onward delivery to site by barge.

The general form can be described as steel sheet piles supported by king piles (tubular or structural section) and raker piles at regular centres. Continuity and enhanced strength will be provided through the installation of a steel waling and reinforced concrete capping; similar to existing. The concrete capping beam will be cast in situ with concrete supplied from locally based suppliers.

All piles will be driven from floating equipment employing non percussive piling techniques. Should insufficient penetration be achieved using non-percussive piling techniques then allowance will need to be made for limited percussion piling as an alternative means of achieving the required penetration. Due to different designs, ground conditions, water depths, materials and age of the structures the extension and existing breakwater will not be tied together and a gap (of less than 150mm) will separate the two structures.

Piling for the Marina

Piling work will be necessary to drive both an estimated 26 load bearing piles for the facilities deck and 118 pontoon mooring piles of average diameter 508mm.

Piling will be conducted from a pontoon-mounted crane or jack-up rig with positioning by GPS. The piles will be sourced in the UK, Europe or the Far East and shipped to the mainland (e.g. Southampton) for onward delivery to site by barge. Non-percussive piling techniques will be employed to minimise noise/disturbance to the surrounding environment. Should insufficient penetration be achieved using non-percussive piling techniques then allowance will need to be made for limited percussion piling as an alternative means of achieving the required penetration. Should any percussive piling be required this can be limited e.g. to periods of high tide, to minimise potential disturbance to fish and birds. The duration of piling works is estimated to be 6-8 weeks but with appropriate planning, environmental and site control, noise/disturbance to the area will be kept to a minimum.

Pontoon equipment will be sourced from the UK and/or Europe and is likely to be delivered to Southampton, assembled and brought to site on barges. The pontoon walkways and finger pontoons will be launched from the barge, towed into position by small workboat and installed on a phased basis and connected by means of a pile guide.

Following installation of the pontoons the access bridge, pontoon equipment and all services will be installed. The anticipated duration for the construction of the pontoon system is 10 – 12 weeks and 20 – 24 weeks for the deck and marina facilities building the structure for which will be constructed in modular form.

Bell's Landing will be demolished from the sea by floating plant and appropriate measures will be in place to ensure all debris is captured and not released into the marine environment. The current deck structure will be removed, the piles extracted and all will be disposed of off site. The connection to the sea wall will be made good. The scheme provides for a new all state of tide water access point for public use within the marina design as shown on Drawing MP118-303.

General considerations

To enable the construction of the breakwater all existing swinging moorings will be lifted, the tackle stored, and then once construction is complete the swinging moorings will be reconfigured and re-laid in the lee of the breakwater as illustrated on Drawings MP118-302 and MP118-305.

Each element of the construction will be undertaken in concert with the tides and all timeframes stated make allowances for weather conditions impacting upon construction activities.

All vessels utilised in construction activities will abide by navigational requirements and display the appropriate lights and signals. Vessels will also avoid grounding and other activity, such as anchoring, within the sensitive seagrass beds (this element is discussed further in the accompanying Environmental Statement).

Timeline for Construction

The construction of the breakwater, eastern channel and marina will have the potential for some temporary impacts on the local environment. Potential impacts that have been considered within the ES, supplied in support of this application, in relation to environmental sensitivities are listed below together with the appropriate section that assesses those impacts.

- § Suspended sediment plumes from dredging that could potentially affect seagrass habitat - Section 10.5.6; Suspended sediment plumes from dredging could potentially impact oyster stocks - Section 11.2.3;
- § Noise from piling, particularly percussion piling could potentially impede movement of adult trout population - Section 10.5.7;
- § Noise from piling could potentially disturb over-wintering birds on the Shrape mudflat - Section 10.5.9;
- § Construction plant activity could interfere with commercial fishing activity - particularly oyster fishing in the vicinity of the works - Section 11.2.4; and
- § Construction plant movement may need to be restricted during Cowes week in view of the potential navigation issues and the importance of the event to the local economy - Section 15.5.

The range of potential timing implications could be significant and there is the potential for overlapping restrictions. Accordingly consideration has been given to the avoidance of potential difficulties. It is apparent that a number of the potential impacts can be

mitigated, at least in part, through the use of particular techniques, or conditions, for example the use of vibro-piling techniques and backhoe dredging will greatly reduce the potential for associated impacts. The introduction of appropriate mitigation through specification of a particular method will serve to avoid or minimise timing constraints or overlapping restrictions.

Scheme drawings

The following drawings are all submitted in hard and electronic copy in support of the application:-

MP118-301	Existing Harbour Layout
MP118-302	General Arrangement (Scheme 6)
MP118-303	Marina Layout
MP118-304	Typical Sections
MP118-305	Mooring Details
MP118-310	Navigation Details
MP118-315	Marina Parameters

Environmental Statement

To be attached once finalised

The full Environmental Statement and associated documents and appendices will be submitted in full in electronic format (on CD). Due to the number and physical volume of the documents only the following are to be supplied in hard copy format.

Supporting appendices

The following drawings are all submitted in hard copy in support of the application:-

- § Non Technical Summary
- § Appendix A – Scoping Report
- § Appendix B – Scoping Opinion
- § Appendix C – Appropriate Assessment
- § Appendix J – Breakwater modelling report
- § The options 6 modelling report
- § Visual Impact Assessment