Defence Infrastructure Organisation

Ministry of Defence

Queen Elizabeth Class (QEC) Capital Dredge Project,
Her Majesty's Naval Base (HMNB) Portsmouth

Contract Document

Annex 1 – Specification

Contents

1 Introduction

1.1 Objectives

Following the 2010 Strategic Defence and Security review, the requirement was endorsed for the construction of two Queen Elizabeth Class (QEC) aircraft carriers, subsequently named HMS Queen Elizabeth and HMS Prince of Wales. To support this programme, the seaborne access into Her Majesty's Naval Base Portsmouth, the vessels' home port, must be improved in conjunction with the base's support facilities.

The QEC aircraft carriers will be significantly larger than any vessel that currently enters Portsmouth Harbour. Consequently, improvements are required to the existing approach channel and inner Harbour areas to ensure that the QEC Vessels can safely enter, berth and exit the Harbour.

These improvements will require dredging work to both modify the alignment and depth of the existing approach channel and inner harbour area and create a deeper berth pocket to the frontage of Victory, Sheer and Middle Slip Jetties to accommodate berthing of QEC.

The core geometry and depths of the areas to be dredged are indicated on the Drawings. The design of side slopes and slopes between areas of differing level shall be the responsibility of the Contractor.

The Contractor shall be responsible for disposal of all materials.

1.2 Not used

1.3 The Site

The Site shall be defined as:

- the entire area bounded by the upper limits of the Contractor-designed side slopes that originate from the dredging areas as indicated on the Drawings and including any tolerances that apply and,
- any area used by the Contractor for the purposes of his site establishment or for handling, storage, or processing of materials or for other uses

1.4 Drawings

List of Drawings		
Drawing Number		**Title**
B11200-G0-	0001	Setting Out Details (Sheet 1 of 2)
B11200-G0-	0002	Setting Out Details (Sheet 2of 2)
B11200-G0-	0003	Layout of Dredge Zones
B11200-G0-	0004	Section Locations
B11200-G0-	0005	Sections AA, BB and CC
B11200-G0-	0006	Sections DD, EE and FF
B11200-G0-	0007	Sections GG, HH and JJ
B11200-G0-	0008	Sections KK, LL and MM
B11200-G0-	0009	Sections NN, PP and QQ
B11200-G0-	0010	Site Layout

The Drawings named in the List of Drawings are intended to indicate the position and extent of the Works but neither they nor this Specification are guaranteed to show or

describe every part of the Works. The drawings do not show the extent of works for which the Contractor carries design responsibility. The Drawings are represented in Appendix J.

Should there be any discrepancy between the dimensioned figures on the Drawings and the measurement by scale, the former shall take precedence over the latter and detailed drawings shall be taken as more correct than general drawings.

Electronic versions of the drawings are issued to the Contractor in AutoCAD format. Coordinates explicitly identified on drawings shall take precedence over coordinates obtained through electronic interrogation of the drawings. The Contractor shall be responsible for verifying the accuracy of any coordinates electronically extracted that are not explicitly identified in writing on the Drawings.

1.5 Site Investigations

Recent Ground Investigation (GI) data relating to the Site are presented in Appendix B.

Historical Ground Investigation data relating to the Site is referenced in Appendix C.

The Contractor shall note that the above referenced GI information is indicative and provided for information purposes only. He must not therefore rely solely on the geological and geotechnical information presented therein. The Authority does not warrant, in any way, the accuracy or correctness of this information. The Contractor shall carry out his own interpretation and verification of the ground conditions prevalent at the Site and hence derive his own ground models, geological cross-sections, and geotechnical design parameters based on the available GI information.

Should the Contractor require any further investigation, he shall design, scope, specify and procure such works at his own expense and at a time to suit the design and his programme. Such investigation shall be undertaken in accordance with recognised Standards, Codes and Specifications. Any consent that may be required in order to undertake such additional investigation work shall be obtained by the Contractor.

1.6 Standards and Codes of Practice

Any British or European Standards or Codes of Practice referred to in the documents relating to the Contract shall be held to be the latest edition published, at the date of Tender. All relevant conditions in British or European Standards or Codes of Practice relating to standards of material, quality and workmanship shall be complied with and except as otherwise noted all tests specified shall be conformed to. In the cases where no particular specification is given for any article or material to be used under the Contract, the British or European Standard or Code of Practice, where one exists, shall apply.

1.7 Contractor's Equipment

"Contractor's Equipment" (otherwise referred to as "Equipment") means all apparatus, machinery, vehicles, vessels, facilities and other things required for the execution of the Works.

1.8 List of Abbreviations

CEMP	Construction Environmental Management Plan
COLREG	International Regulations for Preventing Collisions at Sea 1972 (COLREGs)
DGPS	Differential Global Positioning System
DIO	Defence Infrastructure Organisation
EIA	Environmental Impact Assessment
EOD	Explosive Ordnance Disposal
ES	Environmental Statement
GI	Ground Investigation
GPS	Global Positioning System
HAT	Highest Astronomical Tide
H&S	Health and Safety
HMNB	Her Majesty's Naval Base
HSE	Health Safety and Environmental
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
LAT	Lowest Astronomical Tide
MHWN	Mean High Water Neaps
MHWS	Mean High Water Springs
MLWN	Mean Low Water Neaps
MLWS	Mean Low Water Springs
MSJ	Middle Slip Jetty
MMO	Marine Management Organisation
MBES	Multi Beam Echo Sounder
ODN	Ordnance Datum Newlyn
PEC	Pilotage Exemption Certificate
QA	Quality Assurance
QEC	Queen Elizabeth Carrier
QHM	Queen's Harbour Master
RTK	Real Time Kinematic
SBES	Single Beam Echo Sounder
SOLAS	International Convention for the Safety of Life at Sea
TEZ	Temporary Exclusion Zone
TIN	Triangulated Irregular Network
UHAF	Upper Harbour Ammunitioning Facility
UTC	Coordinated Universal Time
WSI	Written Scheme of Investigation

2 General

2.1 Site Area

The Site lies within the tidal waters comprising the approach channel to Portsmouth Harbour and the harbour itself. The Site has been subject to previous dredging campaigns in places comprising both capital and maintenance dredging. The harbour is very busy with commercial, naval and leisure traffic, with traffic particularly concentrated in the narrows of the harbour entrance. The harbour is surrounded by waterside buildings, structures and infrastructure, including, quays, sea defences, slipways, retaining walls, etc. These take various forms and are in varying states of repair. The harbour encloses environmentally sensitive areas. The Contractor is referred to the EIA (which is available on Public Register at the Marine Management Organisation website) for further information.

2.2 On-shore Facilities

On Shore Facilities for the Contractor

The Contractor shall be provided with office accommodation for his Site Agent and no more than three other management staff within QHM's premises at Semaphore Tower within the Naval Base for the duration of the Contract. The office space will be furnished but without Information Technology provision, for which the Contractor shall be required to make his own arrangements. Internet and data access will not be available through the Naval Base network. The Contractor shall use this office space for the purpose of facilitating communication with the QHM and shall occupy the offices on a daily basis or as otherwise agreed with the DIO PM.

Areas may also be available within the Naval Base which could be utilised for office/sundry other accommodation that may be required for vessel crews and other dredging personnel. Such potential areas include but are not limited to:

- Royal Clarence Yard – suitable for small vessels / workboats etc. only due to shallow water (not maintained),
- Fort Blockhouse (Haslar Lake) – Poor structural condition, load restrictions,
- Oil Fuel Jetty – no vehicle access, minimum vessel length of 80m on account of dolphins,
- North Wall (Bunkering operations may be carried out while the vessel is berthed at North Wall but this will be subject to agreement at daily/weekly planning meetings with QHM as HM Naval Base must maintain access to and from No 3 Basin via the adjacent B Lock).

In the event that such area is made available by the Authority, the Contractor shall be required to make his own arrangements in respect of on-shore facilities and services that he may require for the purposes of the Contract. The Contractor shall be responsible for obtaining all Consents necessary and for complying with all conditions that may be imposed by the relevant authorities.

In the event of such area not being made available by the Authority, the Contractor shall make his own arrangements outside of the Naval Base regarding provision of on-shore facilities for general crew and other sundry personnel.

The Contractor shall be responsible for all costs associated with provision and maintenance of services required for his site establishment and will install meters as requested to record usage.

On Shore Facilities for DIO PM

The Contractor shall provide, maintain and remove office accommodation, contents and equipment with shared welfare facilities for the DIO PM within his compound

The Contractor shall make available throughout the contract the following facilities for the use of the DIO PM or other Authority representatives delegated by him:

- A serviced and securable office approximately 10 sq.m within the Contractor's office establishment on the Contractor's Site Compound, complete with desk, 3 chairs and filing cabinet

- Provision of sea transport between the site compound and the Contractor's equipment as and when required for inspection on reasonable notice.

- Provision of weatherproof clothing and all PPE necessary for performance of the DIO PM's role or that of his representatives

The accommodation shall be of good quality, well lit, heated, secure, wind and water tight and lined and painted internally. From the commencement of the Works until the agreed removal date, the Contractor shall maintain the fittings and contents, replace defective fittings and equipment and keep the facilities clean and tidy. The Contractor shall also pay all utilities charges associated with the use of the facilities.

Shared access shall be provided to the Contractor's welfare facilities including WC and hand washing facilities and drying facilities. Such facilities shall be supplied with all consumables and shall be maintained in a clean condition at all times.

The Contractor shall insure the office and its contents until the agreed removal date,

2.3 Site Access

Personnel requiring access to Semaphore Tower or other locations within the Naval Base shall comply with base security requirements (Appendix M). The Contractor shall apply for and obtain unescorted security passes for a limited number of personnel requiring regular access to the Naval Base and shall undertake all escorting duties for contractor's personnel as necessary. Personnel applying for security passes shall undergo a security check to establish both their identity and integrity. Higher levels of clearance may be required where personnel have access to classified material, or require unescorted access to certain Establishments. A sample Baseline Personnel Security Standard is provided in Appendix G. The Contractor's attention is drawn to the requirement for a sponsor to support each application, and that there is no set time frame for consideration of applications or guarantee of passes being granted.

Vehicle access into the Naval Base requires appropriate security clearance and passes.

Access to any other areas outside the confines of the Naval Base e.g. commercial Harbour shall be the Contractor's responsibility to agree with the appropriate authority.

Due to Security Restrictions, Crew Changes may not be carried out from within the Naval Base and crew will not be permitted to alight at North Wall.

2.4 Working Hours

The Contractor shall comply with all restrictions on working hours that may be imposed under the terms of the Marine Licence and any other relevant consents. In the absence of restrictions, twenty four hour a day working will be permitted subject, at all times, to compliance with the noise limits identified in the relevant consents.

2.5 Contractor's Compound

The Contractor will be responsible for setting up and maintaining his compound. The location, constitution and arrangement of the compound are to be agreed with the Authority.

All the necessary Consents are to be agreed and finalised by the Contractor prior to the compound being established. When these consents and permissions are finalised, full details including, but not limited to, drawings, provision of utilities, make up of site cabins, etc. shall be forwarded to the DIO PM.

Any additional area required by the Contractor for the erection of Site Offices, laboratories, stockpiles, etc., for the storage of materials, and for the provision of accommodation for the use of the DIO PM shall be provided by the Contractor at his own expense, but only after obtaining the approval of the relevant authorities.

The Contractor's use of the compound(s) shall be subject to the following:

(i) The compound(s) shall not inconvenience nor impede the Authority's operations and facilities,
(ii) The compound(s) shall be fenced off and properly drained,
(iii) The compound(s) shall be of a standard approved by the Authority,
(iv) The compound(s) shall be kept secure, clean and tidy at all times,
(v) The compound shall be provided with all necessary utilities by the Contractor,
(vi) Activities in the compound shall not create excessive noise, dust, water pollution, etc., that would compromise the requirements of this Specification.

On completion of the Works, the Contractor shall clear the compound(s) to the satisfaction of the DIO PM. Such clearance shall include but not be limited to:

(i) Removal of all Contractor's buildings and installations,
(ii) Removal of all services, drainage, etc. associated with the Contractor's buildings and installations,
(iii) Removal of all foundations, concrete slabs, etc., remaining after removal of the Contractor's installations,
(iv) Site clearance and removal of all debris,
(v) Removal of all temporary fencing,
(vi) Removal of all materials not required for the Works, surplus to requirements, or not required by the Authority.

Failure to comply with the above requirements will result in the Authority taking whatever action is considered necessary under the Contract to achieve compliance.

2.6 Contractor's Equipment and Temporary Works

The Contractor shall be responsible for the provision of all facilities and Equipment necessary for the proper execution of the Works.

The Contractor shall submit to the DIO PM, no less than 28 days prior to possession of the Site being given, a comprehensive Contractor's equipment schedule which shall include the proposed dates of arrival on Site of each item.

2.7 Contractor's Staff

On commencement of the Contract, the Contractor shall submit an organisation chart giving names and professional/trade details of site personnel and head office management: including the Site Agent, surveyors, engineers, H&S and QA managers and dredging personnel.

Competent Dredging Officers, Dredge Masters and Hopper and Tug Masters shall be employed on all shifts to ensure proper supervision during the execution of the Works.

2.8 Authority of the QHM

The Contractor shall comply with the requirements of the QHM, in respect of Navigation and movement of the Contractor's Equipment.

Vessels' Masters shall maintain a continuous listening watch on VHF Channel 11 which is used by the QHM to communicate with all shipping accessing Portsmouth Harbour.

QHM will require two-week advance notice of upcoming activities, including where the Contractor is intending to work, in order that appropriate notification can be provided to harbour users. In addition, the Contractor shall attend daily meetings with the QHM (or delegated person) at which the Contractor will be required to identify any changes in planned dredging or other activities which could impact on the Works or activities of other harbour users.

The Contractor shall comply with the requirements of QHM at all times. For the purposes of recording instructions issued by QHM, the Contractor's attention is drawn to the fact that all Channel 11 instructions are logged and can be interrogated if necessary. Other verbal instructions may be issued at meetings. In the event that the Contractor considers such dialogue constitutes formal instruction under the Contract, the Contractor shall submit a Change Notification to the DIO PM within 7 days.

At commencement of the Contract, the Contractor shall provide the QHM with a list of emergency contact personnel who shall be available on a 24-hour-a-day basis.

2.9 Authority of the Archaeological Contractor

The Archaeological Contractor shall have authority to require the Contractor to suspend work in a particular location in the event that objects of archaeological significance are encountered. On receiving such a request, the Contractor shall immediately inform the DIO PM verbally and shall redeploy the Contractor's Equipment to work in an alternative location. The Contractor shall submit a Change Notification to the DIO PM within 7 days.

The Contractor shall be entitled to payment for Standing Time arising as a result of a requirement to suspend work by the Archaeological Contractor.

2.10 Regulations

Without limiting his obligations under the Conditions of Contract, the Contractor shall observe all the Authority's and other Relevant Authorities' regulations. Abbreviated

guidance on harbour regulations is given in Appendix K, but this shall not be assumed definitive.

The Contractor shall be fully responsible for compliance with the requirements of all Consents notwithstanding any assistance provided by the Authority in the securing a Consent.

Should the Contractor for any reason cause the Consents to be withdrawn, the Contractor shall be fully responsible for their reinstatement or re-issuance, irrespective of whether such were originally procured by the Authority.

The Contractor shall be responsible for:

(i) Dredging in compliance with the Contract requirements and in compliance with the Authority's bylaws and regulations,
(ii) Radio communications,
(iii) Harbour Dues and Pilotage (if appropriate),
(iv) Records of dumping at sea in accordance with Marine Licence requirements. In the event of an absence of requirements in the disposal licence, comprehensive dumping records shall be maintained in a format to be agreed with the DIO PM.

2.11 Navigation and Lighting

The Contractor shall provide and maintain any lights, buoys or markers as required by the QHM or other Relevant Authority. Such lights or markers shall be to the characteristics required by the QHM and shall be displayed on the Contractor's Equipment and on temporary or completed works or other locations as required.

All vessels employed by the Contractor shall be operated in compliance with the International Regulations for Preventing Collisions at Sea 1972.

Permanent channel markers shall be removed and replaced by others. The Contractor shall give the DIO PM written notice a minimum of thirty days before any requirement to remove navigational markers and shall also advise the date for replacement of each marker. Requirements shall be further discussed during daily meetings with the QHM. The Contractor shall cooperate fully with the party removing or replacing markers and shall undertake works in the vicinity of the marker within the time period advised. The QHM may restrict the number of channel markers that may be absent from any one side of the navigation channel at any one time and the Contractor shall comply at all times with such restrictions

2.12 Berthing and Mooring

A dedicated berth shall not be allocated within the Naval Base for the Contractor's Equipment. However, it is likely that berthing will be locally available within the adjacent commercial harbour environment for which the Contractor shall make his own arrangements and include provision for such in his rates and prices.

In the event of any berthing facilities being made available within the Naval Base, it shall be the Contractor's responsibility to assess the suitability of the berth and associated structures for his purposes. Berths within the Naval Base shall not provide access to shore except in the case of nominated individuals and always subject to the relevant security clearances being in place.

The Contractor shall make his own arrangements in respect of identifying and procuring suitable mooring facilities outside the confines of the Naval Base.

The Contractor may, for the purposes of the Contract, be permitted to provide temporary moorings for his craft, in a position and manner to the acceptance of QHM and the relevant authorities. The Contractor shall not lay moorings so as to interfere with the traffic in the harbour navigation areas, and any such moorings shall be removed if and when required by the relevant authorities.

2.13 Maintenance of Craft

All floating craft and equipment shall have valid certification and shall be maintained in a seaworthy condition. They shall further be in good working order and shall be demonstrated suitable for their intended use to the satisfaction of the DIO PM and the QHM.

2.14 Transport of Labour, Equipment and Materials

The Contractor shall provide, as necessary, transport for the movement of his employees, equipment and materials to, from and about the Site. This shall include all marine craft required for safety purposes and for the transport of employees and the DIO PM's staff and others as required under the Contract to and from the Contractor's Equipment.

The Contractor shall provide the services of a workboat with crew when requested by the DIO PM to transport personnel to and from any marine craft. The boat shall be made available as and when required for inspection of the Works.

2.15 Services for Construction, Fuel and Consumable Stores

The Contractor shall provide all electricity, water and all other services which will be required during the Contract together with fuel, lubricants, gas and other consumable stores required for the Contractor's Equipment necessary for the execution of the Works.

2.16 Co-operation with other Contractors

The Contractor shall make himself aware of the operations and programmes of other parties engaged by the Authority, or by others, who may be undertaking works and maintenance within or adjacent to the Site and other areas, and shall make due allowance for such.

The Contractor's attention is drawn to the following works which may coincide with the dredging contract. These include, but are not necessarily limited to:

(i) Upgrade to Middle Slip Jetty (MSJ),
(ii) Construction of new Navigation Aids within the Harbour and Approach Channel areas (significant marine works including pile installation),
(iii) Removal and reinstatement of degaussing range in Harbour Entrance to enabled dredging
(iv) Maintenance dredging,
(v) Installation of a telecommunications cable along the northern edge of the Site from Fountain Lake Jetty to the Upper Harbour Ammunitioning Facility (future works; programme to be advised when known).

The Contractor shall make due allowance in his programme for any sequence of operations necessary for co-ordination with other parties using the Site.

In Zone E, programme constraints apply: refer to Section 2.21.

2.17 General Interfaces

The Contractor's attention is drawn to events that periodically take place within the Naval Base, Harbour and approach channel areas. Such events include, but are not limited to: open days, celebrations, fleet reviews, dinghy races, charity swims and sundry other events. Where such events are planned and publicised prior to award of the Contract, the Contractor shall be deemed to have consulted with the QHM prior to award to ascertain the implications of each event and to have made due allowance in his price; in such instances Standing Time shall not apply. Where events are not known prior to award, the Contractor shall consult with the QHM to ascertain the implications and shall make best efforts to redeploy his Equipment if necessary. Standing Time shall only be paid where stoppage is unavoidable.

During the course of the dredging contract, the Contractor shall interface with the Authority representatives, including but not limited to:

- DIO PM
- QHM
- Base Security Officer
- Base HSE Officer

2.18 Co-operation with Harbour Users

The Contractor shall liaise with QHM and the DIO PM prior to commencing operations in any area. The Contractor shall also attend a daily planning meeting with QHM to review and discuss ongoing / proposed dredging activities, issues arising and operational matters, in order to coordinate his activities with those of other harbour users and minimise disruption to all parties.

For the Contractor's information, a chart of the QHM organisation is provided in Appendix L.

The Contractor's attention is drawn to:

(i) The large number of vessel movements within the Harbour and its environs. Recent records indicate in the order of 79,000 significant vessel movements per annum (refer to Appendix H for data from 2012)

(ii) Approximately 40-50,000 recreational vessel movements occur annually, peaking during the summer months and, particularly, during weekend and holiday periods. Recreational vessel numbers are particularly concentrated through the Harbour Entrance and over the Hamilton Bank and Swashway.

(iii) Occasional vessel movements which can result in temporary restrictions being imposed in the Harbour Entrance (typically for approximately 1 hour duration) e.g. Aircraft Carriers and Type 45 Destroyer movements. Monthly fuel deliveries to the Oil Fuel Quay also initiate restrictions for a short period of time. Munitioning of naval vessels at the UHAF facility (immediately north of the turning circle) occurs two to three times per month and results in restrictions being put in place in the northern part of the harbour for a two to three day period per activity.

(iv) Ferries are fuelled by tanker on a daily basis.

Advance notice of significant vessel movements is published on the QHM website. Traffic is generally notified a day ahead but significant movements are normally planned two weeks in advance. The Contractor shall liaise with QHM on a daily basis to maintain awareness of forthcoming harbour activities and shall incorporate sufficient flexibility in his programme to accommodate them. QHM will provide details of forthcoming significant planned movements during daily communication meetings with the Contractor.

Subject always to operational considerations, the QHM will endeavour to manage conflicts between the Contractor and other harbour users. The Contractor shall cooperate fully with the QHM in this respect. In the Harbour Entrance (Zone B), the Contractor shall not assume that two-way traffic is permitted and shall allow for vacating the zone to permit passage of large vessels.

Where commercial vessels operate to published timetables or frequencies, the Contractor shall be deemed to be aware of these timetables and frequencies (and variations that occur in practice) and shall plan his operations to avoid conflict. **Standing Time shall not be paid in respect of delays arising through the need to accommodate such traffic.**

Commercial vessels that operate to published timetables or frequencies include, but are not limited to:

(i) Brittany Ferries,
(ii) Condor Ferries,
(iii) Gosport Ferries,
(iv) LD Lines,
(v) Hovertravel,
(vi) Wightlink,
(vii) Cruise ships.

For naval traffic, or for commercial vessels that do not operate to published timetables or frequencies, the Contractor shall be deemed to be aware of the typical frequency and routes of such traffic and, in particular, busy periods. Information is available from historical data held by the QHM and is included in Appendix H. This data is provided for information only and is not a forecast of future vessel movements. The Contractor shall be deemed to have incorporated sufficient flexibility in his programme to accommodate such movements. **Standing Time shall only be paid where the Works are unavoidably halted due to the need to accommodate such traffic on the instruction of the QHM.**

Naval and commercial vessels not operating to published schedules or frequencies include, but are not limited to:

(i) The Royal Navy,
(ii) Vessels using the Commercial Port,
(iii) Fishing vessels operated on a commercial basis,
(iv) Fuel vessels (refuel ferries on a daily basis).

Recreational users do not operate to published timetables and may not be obliged to carry radio communications. The Contractor shall make himself aware of the routes followed by recreational users and the periods during which recreational traffic is high. The Contractor shall programme his works to minimise the interface with recreational

traffic. **Standing Time shall not be paid in respect of delays arising through the need to accommodate recreational traffic.**

In addition, the Contractor shall provide a 'Patrol Boat' and Crew to patrol the dredge areas during dredging operations in order to liaise and direct recreational users as necessary to mitigate risk of conflict arising during the course of the dredging work.

Recreational users include, but are not limited to:

(i) Sail or engine powered leisure craft,
(ii) Swimmers,
(iii) Human-powered craft.

2.19 Datum & Tide Levels

The datum to which all levels and soundings of the seabed have been reduced is Chart Datum. Published astronomical tide data for the harbour at 50°48'N 01°07'E are given below. Actual levels will differ depending on location and meteorological conditions.

HAT	+5.13m
MHWS	+4.72m
MHWN	+3.87m
MLWN	+1.90m
MLWS	+0.73m
LAT	+0.14m

Chart Datum coincides with -2.73m ODN.

2.20 Programme

The Contractor shall at all times during the progress of the Works use reasonable endeavours to adhere to the Contract Programme and shall be deemed to have allowed in his price for all shift work, overtime and adequate equipment and labour to meet the programme.

2.21 Programme Constraints

Due to the prevalence of leisure traffic, works in the Harbour Entrance (indicated on the Drawings as Zone B) will not be permitted during the peak months of April to September inclusive.

In order that arrangements can be made for the degaussing range to be removed, the Contractor shall give the DIO PM six weeks' notice prior to commencing works in Zone B.

The Hamilton Bank area to the south west of the harbour entrance is busy with leisure traffic during the summer period and the adjacent Swashway is regularly used by ferry operators during suitable tides. The Contractor shall recognise the congestion and disruption that will occur in this area during the peak months (as defined above) and shall programme his works accordingly.

In Zone E, constraints shall apply to the following areas:

1. Middle Slip Jetty Area: defined as the area within twenty metres of the concrete cope edge and extending the whole length of Middle Slip Jetty.
2. Sheer and Victory Jetty Area: defined as the area of Zone E fronting the whole length of Sheer and Victory jetties.

In the Middle Slip Jetty Area, a contractor undertaking works on Middle Slip Jetty will be mooring a barge against the face of the jetty which will sterilise a twenty metre width from the face of the jetty in its immediate vicinity. The Contractor shall assume that this floating plant is present throughout the duration of the Contract but that it may be repositioned from time-to-time to accommodate dredging. The Contractor shall be responsible for negotiating moves with the Middle Slip Jetty contractor, subject to the agreement of the DIO PM. The Contractor shall make due allowance in his programme for all constraints this places on his operations.

In the Sheer and Victory Jetty Area, the Contractor shall anticipate naval vessels being moored up to two abreast. The Contractor shall assume that an operational berth suitable for a Type 45 Destroyer must be kept available at all times and shall programme his works in close consultation with the Queen's Harbour Master observing any exclusion zones required. The Contractor shall make due allowance in his programme for all constraints this places on his operations.

2.22 Sectional Completion

Sectional Completion requirements for completion of individual Sections of the Works are defined in Schedule 2 of the Terms and Conditions.

Sectional completion constraints will apply to

(i) Zone B, Harbour Entrance,
(ii) Zone E, Berth Pocket.

2.23 Existing Services and Facilities

Various services and facilities are present in the area to be dredged. Searches have been undertaken by the Authority but the Contractor shall not rely on these. An edited version of a report prepared for the Authority is presented in Appendix I. The report presents factual data and interpretation. The Contractor shall be responsible for undertaking services searches and shall develop his own interpretation based on factual data alone and shall not place reliance on any interpretative statements contained within the report.

The Contractor shall assess the impact of the existing services on the Works and shall make due provision in his tender offer for identification and removal or retention as appropriate.

Existing services and facilities are described below.

Degaussing Range
An underwater degaussing range is present in the Harbour Entrance, Zone B. This will be removed by others prior to commencement of dredging in that area, and will be reinstated by others on completion of dredging. Programme constraints associated with this area are identified in Clause 2.21.

Navigational aids
Existing navigational buoys will be replaced with temporary navigational buoys by others prior to commencement of the Contract. To facilitate dredging, buoys will be removed

and replaced by others subject to the notice periods and restrictions on the numbers removed and notice periods identified in this Specification.

BT Cables
BT cables cross the Harbour Entrance in Zone B and in the south eastern area of the Approach Channel. These will be removed or diverted by others prior to the commencement of the Contract.

Possible Defence Fixed Telecommunications Systems Cables
Two fibre-optic cables are indicated on Admiralty Chart 2631 (Portsmouth Harbour). One of these cables is shown to run between the South Railway Jetty and HMS Dolphin, the other runs from the Sheer Jetty in a northern direction. Available information indicates that these cables were installed in trenches in 1994 and 1995. The documents indicate that these cables were buried to a depth of 3m below maintained depth, which shallows to one metre in areas of Special Scientific Interest. BT Openreach has confirmed that they have no knowledge of these cables. The Authority is unable to confirm the location or purpose of these cables, or if these cables remain in place. There has been a suggestion that the cables are used or were used as part of the MOD telecommunications exchange network.

MoD and other Electrical Services
There are no known energised MoD electrical connections across the harbour from HMNB Portsmouth to Gosport. However, a number of redundant power cables are located within the harbour area; these include two 6.6kV and two 11kV double Steel Wire Armoured cables crossing the harbour from the Victory Jetty sub-station to Gosport. These cables have a diameter of 185mm and are reported to be disconnected from the shore and left on the seabed. The cables are reported to have been laid in a trench; the depth of this trench is unknown. One 33kV oil filled cable is known to have run from Fountain Lake Jetty east sub-station to the upper harbour area. Again, this cable is reported to be disconnected and left on the seabed with the oil drained. The exact locations of these cables are unknown at present, and definitive cable traces were not detected during the course of the geophysical investigation.

Large-scale drawings indicate that many cables have been laid on the seabed in the past in the Harbour between Portsmouth and Gosport. They also show that many of them have been removed and that unsuccessful searches have been made for other power cables. The methods used by these unsuccessful searches are not known.

Other Services
Relevant authorities have indicated the following:

- Communications with a number of gas providers have indicated that no gas services are present in the area affected by the Works,
- Drawings received from Scottish and Southern Energy (SSE) show there are no electrical cables or gas mains in the area affected by the Works,
- Communications with Portsmouth Water have indicated that there are no water services in the area affected by the Works.

2.24 Environmental Control

The Contractor shall take precautions to control nuisance and pollution arising from noise, vibration, light, silt and sediment plumes from dredging and disposal activities, dust, grit and the like.

The Contractor shall take effective measures to prevent marine pollution resulting from his activities, particularly in relation to site clearance, dredging and disposal or re-use operations.

The Contractor shall comply with the terms of all Consents associated with the Works irrespective of whether these are obtained by the Authority or by the Contractor. The Contractor shall carry out the Works with full regard to the relevant requirements and mitigation measures contained in the Environmental Statement (ES). The Environmental Statement is available on Public Register and can be downloaded from the Marine Management Organisation website.

In particular, but without in any way limiting the Contractor's other environmental obligations under the Contract, the Contractor's attention is drawn to the following requirements:

The Contractor shall prepare and implement a Construction Environmental Management Plan (CEMP), which shall properly address the requirements of the environmental mitigation measures and constraints given in the ES, to the approval of the Relevant Authorities and acceptance of the Authority. The CEMP is to include, but not be limited to, an Ecological Monitoring and Management Plan highlighting proposed mitigation measures to:

(i) Avoid mortality of protected species,
(ii) Avoid pollution to fisheries and nursery grounds and other areas,
(iii) Protect the marine habitat (flora and fauna) and biodiversity,
(iv) Protect the principal ecological receptors,
(v) Handle any contaminated materials in accordance with the requirements of the Marine Licence.

In particular, the Contractor shall comply in full with the following:

- Portsmouth Harbour Oil Spill Contingency Plan.

The Contractor is referred to Appendix K for further requirements and advice.

2.25 Noise

The Contractor shall keep noise on the Site to a minimum and shall comply with the Consent Conditions, all relevant government legislation and Local Authority requirements regarding limitation of noise.

The Contractor shall comply with the general requirements of BS5228:1984 Noise and Vibration Control on Construction and Open Sites and at all times shall use 'best practicable means' of noise control as defined by the Control of Pollution Act (1974) and the specific requirements below. Compliance with this clause shall not relieve the Contractor of any obligations and liabilities under the Control of Pollution Act (1974), the Health and Safety at Work Act (1974) and any other legislation.

(i) Best practicable means shall include 'sound reduced' compressors fitted with properly lined and sealed acoustic covers which shall be kept closed when the machines are in use, and all ancillary pneumatic percussive tools with mufflers or silencers of the type recommended by the manufacturers.

(ii) Best practicable means shall include that all vessels, vehicles and mechanical plant, including generators, pumps, weldsets, etc. used for

the purpose of the Works shall be fitted with effective exhaust silencers and shall be maintained in good and efficient working order so that extraneous noise from mechanical vibrations, squeaking, hissing, etc. shall be reduced to a minimum.

(iii) Best practicable means shall include that machines in intermittent use shall be shut down in the intervening periods between work or throttled down to a minimum, subject to health and safety considerations.

(iv) Best practicable means shall include that all static plant, including that located on vessels, shall be sited and installed (with acoustic screens wherever practical) so as to minimise the nuisance to persons living or working in the vicinity, subject to health and safety considerations on the Site.

The Contractor shall maintain, on site, a currently calibrated sound level meter conforming with BS 5969 Type 1 or 2, and will carry out sound level tests where and when directed by the DIO PM to confirm compliance with noise obligations.

2.26 Dust

The Contractor shall exercise controls on the amount of dust and fine particles in the air arising as a result of the Contractor's operations. Controls shall be such as to avail all reasonable complaints by persons affected or likely to be affected and shall at all times conform to any conditions in the Marine Licence. Where disputes arise they will be referred to the DIO PM whose decision will be final.

2.27 Turbidity

The dredging methods adopted by the Contractor shall limit turbidity to no greater than any limits specified and at locations defined in the Marine Licence. The Contractor shall monitor turbidity levels in accordance with his CEMP and any requirements of the consents.

2.28 Overflow of Hoppers

Overflow during dredging or pumping of residual water from tanks prior to dredging shall not be permitted in Zones C, D and E. Likewise, overflow of dump barges shall be subject to the same restrictions.

In all circumstances, where overflow is permitted, the Contractor shall adopt recognised best practice which shall include the use of ‘Green Valves’ where appropriate to mitigate potential adverse effects on the environment.

2.29 Maintenance of Hoppers

The Contractor shall ensure that the closing faces of all split barges and doors and chain hopper barges used to convey dredged material, are in good repair and that such closing faces and doors are kept closed when the barges are in the dredging area, or are conveying such material. Dumping shall be carried out while the dump vessels are stationery and bottom opening doors or hoppers must be closed before leaving the dump site.

The Contractor shall take all necessary precautions to prevent overspill and to minimise overflow of material from dump barges during filling operations. Barges shall be fitted

with moveable 500mm square mesh debris screens over an area of at least 20 square metres, or alternatively the Contractor shall submit details of alternative proposals for removal of debris from the dredged material, which shall be to the approval of the DIO PM. Debris shall be removed and disposed of at an approved landfill site.

2.30 Workmanship

The Contractor shall allow for dredging in and disposal of all materials which may be encountered during the Works. Manufactured or fabricated items that are encountered in the dredging area, which are of no interest to the Archaeological Contractor, shall be cleared and disposed of at an approved landfill site. These may include, without limitation: sunken vessels, chains, wires, ropes, anchors, vehicles, cables, and other sundry debris, obstructions and materials.

2.31 Unexploded Ordnance

In the past, Portsmouth and its harbour have been subject to intensive aerial bombardment and there is a significant risk of encountering unexploded ordnance during execution of the Works. The Contractor shall undertake his own assessment of the risk of encountering unexploded ordnance and shall make full allowance for implementing suitable precautions. Ordnance and munitions may include without limitation, weapons, bombs, shells, grenades, depth charges, mines, torpedoes and the like. The Contractor's attention is drawn to the magnetometer and side scan sonar surveys carried out as part of the GI (Appendix B), however, these surveys do not constitute a sweep for ordnance and munitions.

The Contractor shall maintain on board each of its dredging plant at all times, a trained crew member to undertake an initial screening of suspect objects. The crew member shall be Level 1 trained in accordance with Annex A of the Crown Estate Guidance Note, March 2010, 'Dealing with Munitions in Marine Sediments' and shall be competent to identify UXO, differentiate non-UXO objects from UXO and assess whether UXO is inert. The trained crew member shall be consulted on each occasion that a suspect object is encountered and prior to notifying the QHM.

In the event of unexploded ordnance being encountered, and not confirmed as inert by suitably qualified personnel, the Contractor shall immediately cease work in that area and shall notify QHM, who in turn shall contact the Explosive Ordnance Disposal (EOD) team resident within the Naval Base. The EOD team shall promptly mobilise and initiate appropriate procedures for safe disposal of the ordnance. The Contractor shall comply with all associated instructions issued by the relevant authorities. Where not precluded by the foregoing, the Contractor shall at all times employ his reasonable endeavours to redeploy his Equipment elsewhere to the benefit of progressing the Works. The Contractor shall be entitled to Standing Time in respect of associated delays.

2.32 Wrecks

Wrecks are likely to be encountered during the course of the Works. The Contractor is referred to the site survey data presented in Appendices B and C for data on seabed anomalies and shall make his own interpretation of the data therein. The Contractor is also referred to the relevant Admiralty Charts.

For the purposes of the Contract, wrecks which are of no archaeological interest shall be classified as obstructions and shall be removed and disposed of by the Contractor.

2.33 Contractor's Tests on Materials and Equipment

The Contractor shall undertake all tests on materials and Equipment that may be required by the DIO PM to demonstrate compliance with the Contract.

The Contractor shall undertake all tests necessary to demonstrate suitability of material for reuse.

2.34 Temporary Works Requirements

The Contractor shall, no less than thirty days in advance of commencing associated works, submit to the DIO PM for comment in the form of Temporary Works method statements, all details required to enable the DIO PM to undertake a review of the suitability of any proposed Temporary Works.

Where such Temporary Works method statement has been requested, the Contractor shall not commence construction on any element of the Works until the DIO PM has made comment regarding the relevant method statements.

2.35 Safety of Adjacent Structures, Services and Works

A wide range of structures are present around Portsmouth Harbour shoreline. Many are sufficiently remote from the channel that they are unlikely to be affected by its dredging; however, some may be affected, particularly in the narrows of the Harbour Entrance as indicated in Figure 1. The Contractor shall develop and agree with the Authority a management strategy for the delivery of the works such that the structures are not compromised in any way.

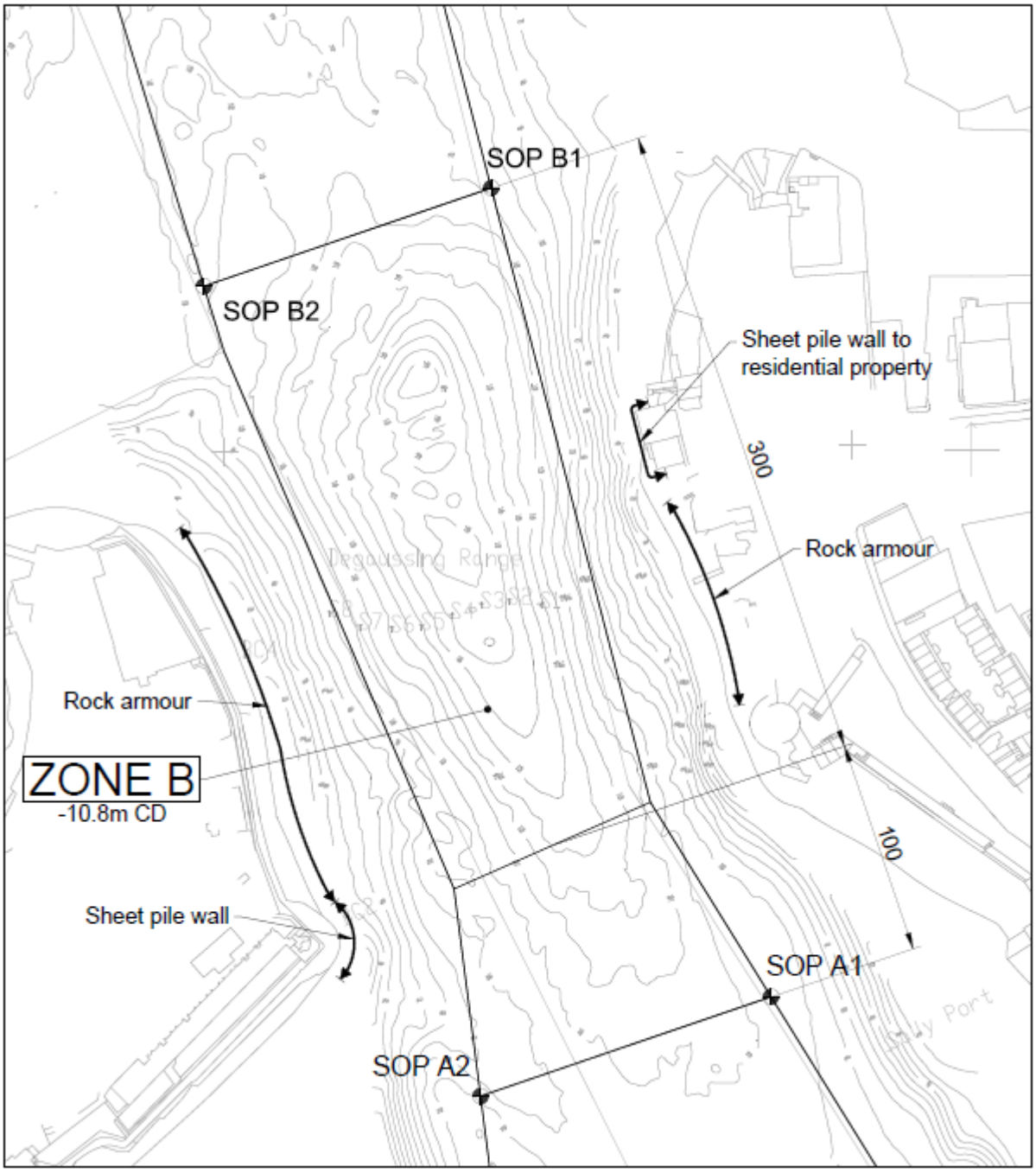


Figure 1

The management strategy shall include proposals for base-line survey of the condition of potentially affected structures and proposals for monitoring throughout the period of the Contract.

The Contractor shall be responsible for implementing the agreed management strategy.

2.36 Facilities on Equipment and Attendance to DIO PM

The DIO PM shall appoint representative(s) (the DIO PM's Representative) to observe and record dredging operations on board the Contractor's Equipment at all times. The Contractor shall cooperate fully with the DIO PM's Representative(s) and provide all facilities necessary to enable accurate records to be kept. The presence of the DIO PM's Representative(s) shall not replace the Contractor's responsibility to maintain accurate records.

The Contractor shall provide facilities on his Equipment for the DIO PM's Representative. These facilities shall consist of a small office or work space (complete with desk and chair) suitable for recording and filing records of the dredging operations. Access to welfare facilities shall also be provided together with facilities for making tea / coffee, etc. Where catering is provided on vessels, the DIO PM's representative shall be provided with meals.

The Contractor shall provide the DIO PM with:

- Three sets of survival suits and lifelines for the use of the DIO PM's Representative(s),
- A safe zone allowing maximum visibility of the dredged material.

Attendance for the DIO PM's Representative(s) shall include, but not be restricted to, transfer between vessel and shore, refer also to Clause 2.14.

During the course of the Works the Contractor shall permit all reasonable access by the DIO PM and his Representatives to his Equipment for inspection purposes and for monitoring progress of the Works.

2.37 Archaeological Supervision – Protocol for Archaeological Finds Reporting

The Contractor shall employ an Archaeological Contractor to undertake the work scope defined in Appendix R.

The Contractor shall implement a Protocol for Archaeological Finds Reporting (PAFR) as identified in Appendix R.

The Contractor shall:

(i) Make their staff aware of the possibility of archaeological discoveries,
(ii) Handle all finds with care,
(iii) Ensure that any rust, sediment, concretion or marine growth is not removed and that groups of finds or sediments are not separated,
(iv) Photograph the finds,
(v) Record the position at which the discoveries were recovered or identified,
(vi) Provide a unique reference number for each find, which is to be included on all recording and storage mediums,
(vii) Arrange for finds to be immersed in seawater in a suitable clean container which should be covered and stored in a cool dark place.

2.38 Archaeological Supervision – Watching Brief Archaeologist

There is no requirement for a Watching Brief Archaeologist on board any of the dredging equipment. The Archaeological Contractor shall, however, be provided facility to undertake a watching brief on materials transferred to shore for disposal. The

Contractor shall cooperate with the Archaeological Contractor and provide suitable facilities for the safe examination of items landed. The Contractor shall ensure that items of possible archaeological significance are set aside from other items landed.

2.39 Health, Safety and Welfare

Health, Safety and Welfare requirements are identified in Schedule 2 of the Conditions of Contract. The Contractor is bound to comply with all relevant legislation, and the following is provided for information only. Where operations are confined to marine works, the Contractor shall, as a minimum, comply with the Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997 and The Merchant Shipping and Fishing Vessels (Health and Safety at Work)(Amendment) Regulations 2001. Where operations include onshore works, e.g. landing of materials for beneficial re-use, other legislation may apply, including The Construction (Design and Management) Regulations 2007.

2.40 Compliance with Mitigation Measures

The Contractor shall comply at all times with mitigation actions identified in the MOD Sustainability Appraisal Document for the QEC Base Porting Projects, provided in Appendix Q.

3 Design

3.1 Design

The Contractor shall design and construct stable slopes to the boundaries of all dredge areas to achieve the lines and levels defined in the Drawings within the tolerances defined. Where a slope is required between two adjacent areas, the toe (bottom) of the slope shall coincide with the boundary between the two areas that is indicated on the drawings.

The Contractor shall ensure that the designed slopes have no adverse implications on nearby structures including, but not limited to: coastal protection structures, slipways, land based structures (including MoD Jetties), infrastructure and moorings.

The Contractor shall carry out stability analyses to demonstrate, to the satisfaction of the DIO PM, that the stability of the slopes is acceptable. Slope stability analyses shall be carried out to examine all possibilities including circular and non-circular failures using methods of analysis in accordance with the recommendations of BS 6031 and BS EN 1997 or other established and recognised technique. Stability analyses shall include temporary, short term and long term conditions. All stability analyses shall include the influence of varying water levels, actions of tidal currents, and vessel movements including the effects of propeller wash and bow thruster action. The minimum factor of safety against slope failure shall be:

(i) 1.2 for the temporary and short term condition,
(ii) 1.5 for the long term condition.

Temporary and short term conditions shall be defined as ‘undrained’ and long term conditions shall be defined as ‘drained’ in the geotechnical sense.

Where a ‘step cut’ technique is employed to form slopes, the step cuts will be permitted to be locally unstable subject to their slumping to form a final slope that is demonstrated stable by the Contractor’s design.

The Contractor shall assess the impact that his slope designs will have on any structures, buildings or infrastructure that could be affected and shall design and construct whatsoever measures are necessary to prevent these from being adversely affected. Where specific slope strengthening works are necessary, the Contractor shall design and construct these in accordance with the Performance Specification contained in Section 8.

At the southern end of the berth pocket (Zone E) a maximum slope angle not to be exceeded is identified on the Drawings. The Contractor shall not design or construct the slope to a steeper angle, irrespective of whether such an angle would otherwise be in compliance with this Specification.

3.2 Contractor’s Designer

The Contractor shall be fully responsible for all aspects of the designs to meet the Specification and other contractual requirements. The Contractor shall employ only competent designers possessing the appropriate types and level of skills required of the disciplines involved in the Works. The Contractor shall submit to the DIO PM for comment, details of the experience and competency of the designer he proposes to employ. The DIO PM shall have the right to reject the Contractor’s proposed designer if competency is not deemed to be adequately demonstrated.

The Contractor shall arrange for an independent third party check of the designs in all areas, including the design of any protection works deemed necessary, and shall provide appropriate independent certification to confirm both the slope(s) stability as well as no adverse impact on adjacent structures, buildings or infrastructure.

The Contractor shall undertake the designs to minimise operating and maintenance costs to achieve an optimum lifetime cost and to minimise the extent and frequency of maintenance.

The Contractor shall ensure that a representative(s) of the designer(s) is / are available throughout the course of the Works to deal with any design issues which may arise.

As the Works proceed, and as part of any procedures implemented for offering up elements of the Works for acceptance, the Contractor's designer shall verify the adequacy and accuracy of that element of the Works in accordance with the approved design, as described elsewhere in these documents.

3.3 Design Life and Maintenance

Designed slopes without engineered protection shall have a design life of two years commencing on acceptance of the post dredge survey. Where slopes incorporate engineered protection, the design life of the slopes and protection shall be 50 years commencing on acceptance of the post dredge survey.

3.4 DIO PM Review and Comment

The Contractor shall submit comprehensive Design Documents covering principal elements of the Works no less than thirty days before the date on which it is intended to commence work to which the Design Documents relate. Amongst others, the design statements shall cover design philosophy and methodology, detailed design calculations, design loads, design codes and standards, design life, durability and proposed maintenance regimes. Specific details relating to design submissions for the various elements of the Works are given in the relevant clauses of this Specification.

The Contractor shall submit, with each and every design submission, design and check certificates confirming that the design work conforms in all respects to the requirements of the Contract. The Contractor shall also submit other certifications and documentation as appropriate in accordance with the requirements of the DIO PM.

The DIO PM may raise such questions as he requires for the purpose of considering whether the Design Document submitted is acceptable. The Contractor shall not be permitted to proceed or commence the Works to which the Design Documents relate unless the DIO PM confirms in writing that:

(i) He has no comments to make nor any questions to raise in respect of the Design Document submitted, or,

(ii) Having made comments or raised questions in respect of the Design Document submitted to which the Contractor has responded, he does not wish to make or raise any further comments or questions.

The Contractor shall respond promptly to any comments made or questions raised by DIO PM in relation to any Design Documents.

The DIO PM reserves the right to reappraise documents already issued, or parts thereof, where a later Construction Document or design submission so necessitates.

Nothing in this section shall relieve the Contractor of any liability under the Contract for any defect in the Design Documents or for any inconsistency between any of the Design Documents and no Design Document shall be deemed to satisfy the requirements by virtue of having been submitted to or considered by the DIO PM pursuant to the terms of this Section.

3.5 Slopes Adjacent to Portsmouth Harbour Ramsar and SPA

Slopes in this zone shall not be permitted to encroach on the protected areas. In designing the slopes, the Contractor shall assess the implications of the proposed increase in dredge depth on the stability of the slopes and shall report on options that minimise disturbance of the existing slope.

3.6 Slopes Adjacent to Middle Slip, Sheer and Victory Jetties

Slopes in these locations shall be deemed not to affect the jetties provided that no greater than one metre depth of overburden is lost from around the seaward piles.

4 Dredging – General

4.1 Scope

Scope shall comprise dredging and disposal in compliance with the Contract and all consents, design of slopes, design of slope protection (should that be necessary to prevent adverse impact of the Works on existing structures) and such other activities as are identified in the Contract.

4.2 Commencement of Dredging Activities

The Works are not to commence until the Contractor has obtained the written consent from DIO PM that he has no comments to make in respect of the Contractor's design, the methods for dredging and the disposal of dredged material. The Contractor shall also have made all notifications and complied with all notice periods as may be required by the Relevant Authorities. It is noted that this shall include submitting the names of any vessels to be used for taking material to the disposal site.

4.3 Specified Works

In general, the works shall comprise:

(i) The removal of all materials of any nature within the Site boundaries to the lines and levels indicated in the designs and shown on the Drawings, and the design and construction of stable side slopes,
(ii) The removal of any objects to below the lines and levels shown on the drawings where such objects if not removed would project above the lines and levels indicated in the designs and shown on the Drawings,
(iii) The removal of all side slope materials, within any area, as necessary for the functioning of the Contractor's designs,
(iv) Design and installation of any strengthening works or protection to slopes as required by the Contractor's designs,
(v) The disposal of material to the disposal site in accordance with the terms and conditions of all relevant consents and licences,
(vi) The disposal of materials to licensed landfill sites where not suitable for marine disposal,
(vii) The disposal of material to a recipient for beneficial reuse where appropriate
(viii) Monitoring and survey as required under the Contract or as a condition of any consents.

Maintenance dredging for other areas within the harbour may be required during the period of the Contract. In order to avoid having two Contractors working in the same area at the same time, Maintenance Dredging within areas of the harbour other than the QEC Capital Dredging Works may be requested. A more detailed description of this requirement is included at Appendix S. This will be subject to a Change Notification.

4.4 Materials to be Dredged

The types of materials to be dredged are described in the borehole logs and other investigation information contained in the appendices or available for inspection or available from other sources, and generally comprises alluvium, silt, sands, gravels, clays and peat. The Contractor shall be responsible for determining the nature of the material

4.5 Contamination

The presence of chemical and biological contaminants and physical obstructions and debris has been detected in and on the seabed deposits during ground investigations. Information is provided in the factual data and in the Environmental Impact Assessment.

Particular efforts are to be made by the Contractor to minimise the spread of contaminated material. The Contractor shall observe all conditions imposed by the Relevant Authorities and shall adhere to established best practice commensurate to the concentrations and nature of contamination present. The Contractor shall detail the procedures he intends to adopt to mitigate the risk of contaminating clean seabed material due to spillage and agitation of contaminated material and shall submit the procedures to the DIO PM for review.

The Contractor shall be liable for all costs that the Authority considers to have arisen as a result of migration of contaminated material occurring during the Works.

4.6 Setting Out the Works and Position Fixing in the Dredge Area

The Contractor shall submit details of his proposed method of position fixing for the acceptance of the DIO PM before any dredging or survey work is commenced.

The position for offshore dredging and survey works may be established using electronic positioning equipment interrogating a minimum of four stations.

The Contractor shall establish and accurately calibrate to Chart Datum, radio tide gauges at suitable locations to accurately represent the tide at the locations being dredged. The dredgers and survey launches shall be equipped to receive and display signals from the tide gauges.

All tide gauges shall be checked weekly against the Works temporary bench marks and they shall be re-calibrated if necessary.

The Contractor shall, as soon as practicable, supply the DIO PM with records in an approved form, relating to all references, pegs, temporary bench marks and tide gauges and shall keep such records up to date by formal notice to the DIO PM.

All vessels performing dredging or survey functions shall be fitted with Differential Global Positioning Systems (DGPS), which shall be used for horizontal control. Differential corrections must be received and applied at all times (e.g. IALA). The DGPS received on board the survey vessel shall be checked for accuracy prior to deployment. Positions output will be in the Ordnance Survey OSGB 36 co-ordinate system.

On satisfactory completion of the Works, the Contractor shall remove all gauges, profiles, transit stakes, stations, buoys, marks and other temporary work which he may have erected for the purposes of the Contract.

The Contractor shall allow all reasonable access to the DIO PM for checking the setting out of the Works and positioning of the dredging Equipment to be checked.

The Contractor shall give the DIO PM not less than 48 hours' notice in writing of his intention to set out or give levels for any part of the Works in order that arrangements may be made to carry out any checks required.

4.7 Not Used

4.8 Dredging Surveys and Setting Out

Record Surveys
Record surveys shall be carried out by the Contractor and monitored by the DIO PM or his nominated representative as follows:

Pre Dredge Survey:

(i) One survey covering the entire Site undertaken prior to commencement of the Works,
(ii) One survey covering areas outside of the Site as defined in the Drawings, to be undertaken prior to the commencement of the Works.

Post Dredge Survey:

(i) Where permitted under the Contract, any defined sectional completion zone on completion of that zone,
(ii) On completion of the whole of the Works, one survey covering the whole of the Works excepting zones to which sectional completion applies but covering all slopes including those in sectional completion areas,
(iii) In any of the above areas following remedial dredging necessitated by non-compliance with the Contract requirements.

Interim Surveys:

(i) Interim surveys to demonstrate progress of the Works for Progress Payment and quality purposes.

All surveys shall be carried out in accordance with Section 7 of the Specification.

Each survey report shall be agreed with the DIO PM's nominated representative, who shall record his agreement in writing on the report. In the event that a report cannot be agreed for whatever reason, the DIO PM's nominated representative shall record his reasons in writing on the report.

Pre-Dredge Surveys
The surveys shall cover all the areas of the Site to be dredged as defined on the Drawings plus areas identified in the Drawings outside of the dredge area. In areas to be dredged, the surveys shall extend at least 100m beyond the actual dredging area except where survey is prevented by proximity of the shore or shallow water. In areas outside of the dredge zones, the extent of survey shall be as shown on the Drawings. The Contractor shall give the DIO PM not less than seven days' notice of his intention to undertake the pre-dredge surveys and shall make arrangements for the DIO PM to be present at the surveys, should he so require.

Post-Dredge Survey
Not more than thirty days prior to the Completion Date of the Works, a post-dredge survey shall be carried out. The Contractor shall give the DIO PM not less than seven days' notice of his intention to undertake the post-dredge survey and shall make arrangements for the DIO PM to be present at the survey, should he so require.

Where a zone is identified for Sectional Completion, the Contractor shall give the DIO PM not less than seven days' notice of his intention to undertake the post-dredge survey

of that zone and shall make arrangements for the DIO PM to be present at the survey, should he so require.

Interim Surveys
During the period of the Works, interim surveys shall be undertaken by the Contractor to control quality and to support interim measurement submissions. These shall not be specifically instructed by the DIO PM.

Additional Surveys Specifically Instructed by the DIO PM
From time to time, the DIO PM may specifically instruct the Contractor in writing to undertake additional surveys. The Contractor shall undertake such surveys without undue delay and report the results to the DIO PM in accordance with the requirements of Section 7.

4.9 Sweeping

On completion of the dredging and prior to the Post-Dredge Survey, the Contractor shall sweep the designated dredged areas to detect the presence of any obstructions or protrusions which might not be detected in a sounding survey.

This sweep shall be carried out by combined bathymetric and side-scan sonar survey (checked at intervals by chain sounding), or by physical bar sweep (by means of a rail suspended from two launches), or such other method as may be agreed by the DIO PM. The Contractor shall remove any projections found during the sweep and sweep the area again to confirm that their removal is complete. Sweeping shall be carried out in the joint presence of the DIO PM and the Contractor.

If the Post-Dredge Survey and bar sweep prove that parts of the dredged area are above the required dredged level(s), the Contractor shall be responsible for the dredging and removal of such materials. Further bar sweeps, as necessary, shall be undertaken to confirm that no part of the dredged area is above the specified levels.

4.10 Accumulated Material arising from Dredging Operations

Dredging shall be carried out in such a manner and sequence as to minimise accumulation of semi-fluid or disturbed seabed outside of the Site.

The Contractor shall be responsible for the following:

(i) The removal and disposal of accumulated material or debris as demonstrated by the difference in levels between the Pre-Dredge Survey and the Post-Dredge Survey over the full extent of the Site.

4.11 Standing Time

Standing Time is defined as the period for which dredging has stopped production due to an occurrence for which Standing Time is measurable under the Contract. In all cases, the Contractor shall use reasonable endeavours to minimise Standing Time. Where production can be recommenced at an alternative location within the Site, Standing Time shall be measurable only for the period between cessation of production and resumption at the alternative location. If, instead of moving to an alternative location, the dredger departs to sail to a disposal site, Standing Time shall end on departure.

Where the Contractor's Equipment ceases production under circumstances for which the Contractor considers he is entitled to payment for Standing Time, he shall immediately advise the DIO PM verbally of the time, location and reason for the delay and his

proposals for mitigating the delay. On resumption of production, he shall immediately advise the DIO PM of the time and location. He shall formally record all this information in writing at the earliest opportunity (and no later than 24 hours after the beginning of the Standing Time) and submit to the DIO PM for consideration. Any signature by the DIO PM's representative at any stage shall be deemed to be confirmation of the factual information, but not confirmation of entitlement to payment for Standing Time. Any notification of Standing Time for which a written report is not received within the above timescale shall be rejected.

5 Dredging – Operations

5.1 Notice of Dredging Operations

The Contractor shall give the DIO PM not less than seven days' notice in writing prior to the commencement of dredging operations.

Notice to Mariners: Further to the Contractor having provided the above-referenced notice, the QHM will issue a general Notice to Mariners regarding the proposed Works. In the event of any subsequent significant deviation from the information notified to Mariners, the Contractor will advise QHM in advance who in turn will issue an appropriate updated Notice to Mariners.

5.2 Informing Progress

The Contractor shall keep the DIO PM informed of the progress of the works on a regular basis in full accordance with the requirements of the Conditions of Contract.

5.3 Dredging Method

Dredged material shall only be disposed of at approved disposal locations. Seabed material, whether dredged or in-situ, shall not be deposited, moved or encouraged to move into depressions or other areas within or adjacent to the Site.

5.4 Limits and Levels

The limits of the areas designated to be dredged and the levels to which the dredging shall be carried out are shown on the Drawings. With the exception of side slopes, no dredging shall be carried out beyond the horizontal limits (excepting permitted tolerances) shown on the Drawings. Stable side slopes shall be formed outside those limits.

Coordinates defining the dredge channel are presented in the Drawings. Contract Pay Lines are presented in the Drawings and summarised below:

Area	**Contract Pay Line**
Berthing Pocket (Zone E)	-13.8m CD
Inner Harbour channel (Zones C & D)	-11.0m CD
Harbour Entrance (Zone B)	-10.8m CD
Approach channel (Zone A)	-10.8m CD

5.5 Existing Structures

See Clause 2.35.

5.6 Dredging Tolerances

The designated dredging shall be carried out to the lines and levels shown on the Drawings or such modified lines and levels as may be notified by the DIO PM to the Contractor in writing. Dredging to designated dredge areas shall be permitted outside the designed lines and level provided that it does not create unstable slopes and does not exceed the following tolerances (see Note 1):

Outer Approach Channel (Zone A)
Vertical Tolerance +0mm (negative tolerance not specified)
Horizontal Tolerance[1] +2000mm to -0mm

Harbour Entrance (Zone B)
Vertical Tolerance +0mm to -300mm
Horizontal Tolerance[1] +1000mm to -0mm

Inner Harbour Channel, Inner Harbour North & Turning Circle (Zones C & D)
Vertical Tolerance +0mm (negative tolerance not specified)
Horizontal Tolerance[1] +2000mm to -0mm

Berth Pocket (Zone E)
Vertical Tolerance +0mm to -200mm
Horizontal Tolerance[1] +1000mm to -0mm

No additional payment will be due for dredging beyond the payment lines identified on the drawings.

Note 1: Positive horizontal tolerances shall mean tolerances outside of the specified channel limits; negative horizontal tolerance shall mean tolerance inside of the specified channel limits.

5.7 Side Slopes

Care shall be taken when dredging side slopes to avoid slumping and disturbance of the seabed and foreshore. Where there is a risk of slumping or collapse of the side slope the depth of each cut in a stepped slope shall be limited to 1m.

Tolerances on side slopes shall be generally as specified above except that vertical tolerances shall be measured perpendicular to the slope. In a step cut, material may remain above the required slope line provided that, in any cross section, the material above the line in any step must be less than or equal to the dredged void below the line in the same step on the assumption that one may fall into the other to leave no material above the slope line.

5.8 Over-dredging

If required by the DIO PM, the Contractor shall make good at his own cost any over dredged areas with such material and in such a manner as the DIO PM may direct. This Clause shall only apply to Zones B and E.

5.9 Debris and Obstructions

Various surveys have been undertaken that indicate the extensive presence of debris and obstructions on the sea bed. The Contractor shall be deemed to have interrogated this information prior to tendering. Irrespective of his interpretation of the data, the Contractor shall anticipate encountering frequent and widespread debris and obstructions on and within the seabed and shall be deemed to have included for the same in his tender.

The Contractor shall review the data in respect of the hazards that it indicates. This review shall form part of his hazard survey to be undertaken prior to commencement of the Works. He shall identify any hazards that may impede on the safety and progress of the Works and take the requisite and appropriate action to overcome them. Prior to commencement of dredging an investigation and clearance campaign shall be undertaken, as described in Clause 6.7.

Debris is defined as objects, irrespective of being man-made or natural and irrespective of weight, that are recoverable using the dredging equipment being employed for the Works at the location that the object is encountered.

Obstructions are defined as objects, irrespective of being man-made or natural and irrespective of weight that cannot be recovered using the dredging equipment being employed for the Works at the location that the object is encountered.

All obstructions that obstruct the Works shall be removed. Where an obstruction, if left in place, will not protrude above the Contract Pay Lines the DIO PM may give consent to it being left in place.

Payment for dealing with debris and obstructions shall be as identified in the method of measure and the Preamble to the Bill of Quantities. A flow chart is contained in Appendix A to give guidance on the procedure for dealing with debris and obstructions.

The Contractor shall remove and dispose of all debris and obstructions encountered in the course of the work wherever it requires to be removed to comply with the Specification and shall provide all Equipment and personnel required to so do. Recovered debris and obstructions shall be disposed of in a licensed landfill site or as permitted in the licence conditions. All licences or permits required for disposal of debris and obstructions shall be obtained by the Contractor where they are not encompassed by the scope of the Marine Licence.

On encountering an obstruction, the Contractor shall at all times employ reasonable endeavours to redeploy his Equipment elsewhere to the benefit of progressing the Works. Standing time when substantiated and agreed by the DIO PM shall be payable in relation to obstructions, but not in relation to debris.

When an obstruction is encountered that requires to be removed, the Contractor shall assess the obstruction and submit to the DIO PM his proposals and programme for its removal. In most circumstances, the Standing Recovery Plant shall be deployed to remove the obstruction. Where this has insufficient capacity or is demonstrated unsuitable for other reasons, the Contractor shall identify suitable alternative recovery plant and submit a formal method statement and programme to the DIO PM for removal of the obstruction. On acceptance of the method statement by the DIO PM, the Contractor shall mobilise the alternative recovery plant to remove the obstruction.

5.10 Diving Operations

QHM shall be notified in advance of all intended diving operations

Diving Operations shall be undertaken in accordance with the ‘Diving Operations at Work Regulations 1997 and with any subsequent amendments or additions thereto. In addition, the Contractor shall at all times comply with the requirements contained within the Dockyard Diving Regulations (Appendix N).

5.11 Contractor to Provide Special Equipment etc.

If the DIO PM orders, in the interest of the Works, that special Equipment and tools should be used, the Contractor shall be bound to provide and use such plant and tools forthwith.

5.12 Use of Explosives

The use of explosives shall not be permitted.

5.13 Ownership and Disposal of Dredged Material

Materials of any kind arising from dredging or excavation under the Contract shall remain the property of the Crown Estate and shall be disposed of in accordance with the Marine Licence.

Licensing requirements for the handling and disposal of the dredged material will be dependent on the recovery and disposal methods adopted. Where the Contractor's proposals depart from the activities covered by the Marine Licence, the Contractor shall be responsible for obtaining all additional consents that may be necessary.

Where material is beneficially reused, the Contractor shall be responsible for payment of all dues to the Crown Estate.

Prior to the Completion Certificate for the Works being issued, the Contractor must provide documentary evidence to the DIO PM which proves that all the dredged material has been disposed of in a legal and responsible manner.

5.14 Daily Report

The Contractor shall maintain a daily report for each dredger and other Equipment. Each report shall be agreed with the DIO PM's Representative, who shall record his agreement in writing on the report. In the event that a report cannot be agreed for whatever reason, the DIO PM's Representative shall record his reasons in writing on the report. A copy of each report shall be forwarded to the DIO PM within 24 hours of completion. These daily reports shall record, as a minimum, the following data for a Trailer Suction Hopper Dredger, in a format agreed with the DIO PM:

(i) Date,
(ii) Dredge name and fleet number,
(iii) Schedule of dredging time, delays for position shifts, maintenance, down time due to shipping movements, drag head blockage, breakdowns, etc.,
(iv) Position fix, original ground level, cut depth and cut width at start of each shift,
(v) Description of materials being dredged,
(vi) Estimated daily production,
(vii) Presence or otherwise of booster pump or pumps with pump fleet number and position,
(viii) Hopper load,
(ix) Number of pipes in use,
(x) Dredging cycle time: loading, sailing and deposition time,
(xi) Notes concerning operating conditions, delays, etc.,
(xii) Weather conditions.

Disposal returns shall provide all information stipulated in the Marine Licence and, as a minimum:

(i) Time of day,
(ii) Position fix, course and heading at time of disposal,
(iii) Hopper load.

Daily reports shall also be provided for any other types of dredger that is working on the project, together with any associated Equipment, such as hopper barges. The reports shall contain the above information, but shall be modified as appropriate for the type of Equipment.

The Contractor shall also provide such other reporting as is set out in the Conditions of Contract.

5.15 Removal of Sunken Equipment

The Contractor shall, without delay, raise and remove any equipment (floating or otherwise) belonging to him or to any subcontractor or to any person employed by him that may be sunk or stranded or gone adrift in the course of the Works or otherwise deal with the same as directed by the DIO PM or the QHM. Until the same shall be raised, removed or recovered the Contractor shall set such buoys and display at night such lights and do all such things for the safety of navigation as required by the QHM or authorities having jurisdiction.

In the event of the Contractor not carrying out the obligation imposed upon him by this Clause or in the event of the authorities having jurisdiction electing to buoy and light such sunken equipment and raise and remove or otherwise recover the same (without prejudice in the first mentioned event to the right of the Authority to hold the Contractor liable) the Contractor shall be liable under the Contract for all costs incurred in connection therewith.

The fact that the equipment sunk, stranded or gone adrift is insured or has been declared an actual or constructive loss shall not absolve the Contractor from his obligation under this Clause.

The Contractor shall give to both the DIO PM and the QHM immediate notice of the occurrence of any such sinking, stranding or going adrift as is referred in this Clause.

5.16 Lighting, Marking, Buoying and Watching

During the execution of the Works, the Contractor shall provide all navigation lights and markers required by QHM for the proper indication of submerged work and moorings for his vessels. The Contractor shall also provide every description of watching and maintenance required in connection with the foregoing and provide and maintain at his own cost any guards and fencing required by the DIO PM or Relevant Authority for the protection of the Works, and for the safety and convenience of the public or others. The Contractor shall maintain all such lights, markers, buoys, guards and fencing in sound condition until the Works are completed and all the Contractor's craft and equipment have been removed from the Site.

The Contractor shall so place or screen all lights provided by him as may be required by QHM or Relevant Authority, so as not to interfere with or be mistaken for any navigation light or with or for any signal lights.

Should the Contractor in any way obscure or affect lights, signals, buoys or navigational aids the Contractor shall at his own expense pay all costs whatsoever for the re-siting and reinstating or providing alternatives to the reasonable satisfaction of the QHM.

All vessels used for night work shall carry warning lights in accordance with the International Regulations for Preventing Collisions at Sea 1972 (COLREGs).

5.17 Standing Recovery Plant

The Contractor shall provide, maintain, fuel and crew, for the duration of the Contract, a pontoon mounted crane (or similar) with both grab and conventional lifting facilities suitable for the purpose of recovering obstructions and transferring them to shore for

disposal. This shall be termed ‘Standing Recovery Plant’. The equipment shall have a minimum lifting capacity of 5Te and shall be suitable for deployment anywhere on the Site. It shall be either self-propelled or provided with a dedicated tug and shall be fitted with suitable means of securing it in position during the process of recovering obstructions. Standing Recovery Plant shall be employed in the first instance to remove obstructions except in particular cases where it is apparent that it will be unsuitable and this has been agreed by the DIO PM.

The Standing Recovery Plant shall be accompanied by a dedicated dive team, dive vessel and all necessary equipment with, capability of operating in any of the zones being dredged.

6 Other Requirements

6.1 Pilotage

Vessels longer than 48m (including towed length) using the harbour must employ a commercial pilot. The Contractor is referred to the Dues, Portsmouth International Port Rates, Charges and Pilotage Arrangements handbook which is available on the website (http://www.portsmouth-port.co.uk/about_us/dues,_permits_and_pilotage).

At the earliest opportunity, the Contractor shall apply for a Pilotage Exemption Certificate (PEC) for any vessel operating in the harbour. A PEC will only be awarded to masters that have demonstrable experience of navigating the harbour and have passed a formal exam.

Once a master is sufficiently familiar with the Harbour, pilotage requirements may be waived when dredging the outer channel or for passage between the outer channel and the Nab Tower disposal site. The Pilotage Authority has the sole discretion to make this decision.

The Contractor shall include for all costs relating to provision of pilotage during the course of the Works.

The pilot has authority to call in a commercial tug to assist transit within the Harbour should he deem it necessary. The cost of such tug assistance shall be borne by the Contractor.

The Contractor is referred to Appendix K for further requirements.

6.2 Standing Orders

The Contractor shall comply with all relevant standing orders in force in the harbour and its environs, and is referred to the QHM website for further requirements. The Contractor's attention is drawn to the following standing orders applicable to marine operations within HMNB Portsmouth which are available on QHM website:

- Fog Routine,
- Operation of Small Boat Channel (Harbour Entrance),
- Closed Channel,
- General Directions.

The Contractor is referred to Appendix K for further requirements.

6.3 Meeting Requirements

In addition to the general requirements contained within the Conditions of Contract, the Contractor shall attend daily 'Plan of Day' meetings with QHM.

The Contractor shall attend ad hoc meetings as required by the DIO PM or QHM to discuss progress and other aspects of the Works as may be necessary.

6.4 Security

Refer to Schedule 6 of the Conditions of Contract.

Project Security Status

Project Classification
The Project is termed as OFFICIAL (previously known as Unclassified).

Storage of classified material
Access to or secure storage of classified material will not generally be required for this Project. However, all Project documents shall be stored in normally secure systems and access shall be regulated on a 'need-to-know' basis. In the event of any Project documentation being of 'Official Sensitive' status, the provisions of JSP 440 Part 5 Section 1 Protectively Marking Information shall apply (Annex P refers).

Security Clearance
The Contractor and his employees including Supply Chain members shall undergo a security check to establish both their identity and integrity. Higher levels of clearance may be required where employees have access to classified material, or require unescorted access to certain Establishments e.g. Diving Personnel. Non-British EU nationals must have resided in the UK for at least 1 year to gain 'Unescorted' security clearance. Non-EU nationals will have great difficulty in gaining any level of security clearance.

A copy of the 'Baseline Personnel Security Standard' application form is contained in Appendix G, successful application will result in 'Unescorted' access. Unescorted status allows free movement within external areas or HMNBP, Escorted status personnel must be accompanied by an Unescorted status colleague at all times, with the exception of inside the secured Contractor's Compound. The ratio of 'Escorted' to 'Unescorted' personnel should not exceed 8 to 1. The ratio of 'Escorted' to 'Unescorted' vehicle escorts shall not exceed 1 to 1.

Security and Counter Terrorism
The Contractor's proposals must be compliant with the security requirements of the Authority, and the Authority's Security Policies and Regulations shall govern operations of the Contractor.

The Contractor shall comply with the requirements of the Security Officer (NBC(P)) for design, and with other relevant documents including - JSP 440 Defence Manual of Security if appropriate.

Security of the Construction Sites, Site Access, and Contractor Site Compound and Storage Area

The Contractor shall be wholly responsible for the supply, erection and maintenance of appropriate fencing, e.g. Heras Security fencing or similar, for security of the Contractor's Compound.

Where the Contractor's compound is within HMNB Portsmouth, the following shall apply:

The Contractor shall provide a security gate for controlled access and egress to the Site Compound which shall be manned at all times that the compound is open and left secure at all other times. If the base perimeter security is required to be breached, the

Contractor shall provide additional security measures and/or personnel, at each location for the duration of the breach and to the satisfaction of the Security Officer NBC(P).

All non-construction vehicles must be parked within the Contractor's Compound when not in use. Under no circumstances will the Contractor's site personnel be allowed to use HMNBP car parking facilities, this includes the visitor car parking facilities at each access gate. All non-delivery vehicles entering HMNBP must be in possession of a valid parking pass issued by the Security Officer NBC(P) or their delegates. Only 'Unescorted' personnel can apply for a parking permit.

6.5 Health and Safety

Refer to Schedule 2 of the Conditions of Contract.

6.6 Quality Management

Refer to Schedule 2 of the Conditions of Contract.

6.7 Pre-Dredge Investigation and Clearance Campaign

Prior to arrival of dredging equipment on site, the Contractor shall complete an investigation and clearance campaign, the purpose of which shall be to identify and remove debris and obstructions (including cables) that present a significant risk to the dredging programme. The Contractor shall apply his knowledge of the capabilities of his dredging equipment in order to assess the level of technical and commercial risk that such objects, or group of objects, present. The campaign shall target clearance of debris and obstructions that present the highest risk. The campaign shall be **six weeks** in duration and shall employ the Standing Recovery Plant and its accompanying dive team for its duration, together with such other equipment as is necessary to effect clearance. A survey capability sufficient to effectively locate and identify objects for removal shall also be deployed for the duration of the campaign. The Contractor shall maintain a management organisation at Portsmouth sufficient to effectively oversee the campaign and shall provide appropriate onshore facilities for it to perform its functions.

Prior to commencement of the campaign, the Contractor shall develop a detailed method statement defining the scope and objectives of the campaign. The method statement shall clearly describe:

(i) How the campaign will be managed
(ii) The programme for the campaign
(iii) The criteria by which the risk presented by objects will be assessed
(iv) How objects will be located and investigated
(v) How cables will be located
(vi) Plant and equipment requirements
(vii) How objects will be removed and transferred to shore
(viii) The strategy for dealing with objects that cannot be cleared by the equipment available during the clearance campaign

The method statement shall be submitted to the DIO PM for comment a minimum of two weeks prior to commencing mobilisation for the campaign. The Contractor shall respond promptly to any comments made or questions raised by DIO PM.

6.8 Zone B Survey and Investigation

The Contractor shall scope such additional ground investigations and topographic survey in Zone B as necessary to inform his engineering assessment of the effects of dredging on overall slope stability. The Contractor shall submit scoping proposals to the DIO PM for comment and shall address any comments to the satisfaction of the DIO PM.

The Contractor shall submit a quotation and programme for undertaking the agreed scope. The quotation shall be based on the best value of competitive offers from a minimum of three specialist subcontractors and shall identify percentage additions for the Contractor's management.

6.9 Water Temperature Monitoring

The Contractor shall monitor water temperatures within the inner harbour throughout the period that dredging is being undertaken. The monitoring shall be in accordance with the requirements of the MMO. The Contractor shall fully describe his proposals for temperature monitoring in his detailed dredging method statement which shall be submitted to the MMO under Condition 3.1.1 of the Marine Licence.

7 Hydrographic Survey

7.1 General Responsibilities

The draft Execution Plan submitted at time of tender shall be updated by the Contractor immediately following award of the Contract and shall be submitted to the DIO PM for comment. In addition, the Contractor will be responsible for:

- Providing and maintaining a suitable and stable survey vessel,
- Providing an adequate number of survey/oceanographic personnel to complete all work to agreed timescales,
- Mobilisation to the site of all equipment and all other materials, tools, and supplies necessary to perform the work,
- Provision and maintenance of all required health and safety equipment over and above that provided by the Authority,
- Completing the work to the agreed specifications as outlined in the Execution Plan,
- Demobilisation, general clean-up after completion of the work, and all incidentals necessary to complete the work.

7.1.1 Permits and Notifications

The Contractor shall ensure that all statutory obligations and requirements are observed in connection with Notices to Mariners.

On commencement of the Contract, the Contractor shall notify all relevant authorities and interested parties of its survey program and shall liaise with them throughout the course of the survey operations. Copies of all such notifications shall be provided to the Authority.

Any special permissions required shall be obtained by the Contractor prior to the commencement of survey operations. Any delay to the proposed program due to difficulties in obtaining such permissions shall be advised to the Authority. No compensation shall be made for any costs incurred due to delays in obtaining permissions.

7.1.2 Survey Vessel

The Contractor is responsible for ensuring that all survey and/or support vessels used during the course of the survey are suitably equipped and maintained to perform safely all specified survey activities. Due consideration shall be given to the expected weather conditions and sea-state, and physical environment of the survey area.

The survey vessels shall be capable of being held on station for extended periods during equipment deployment and retrieval and during measurement activities. Vessels shall be capable of making good time whilst travelling between sites.

The Contractor shall ensure that the vessels carry sufficient spares for equipment so that the failure or loss of one or more components does not jeopardise survey operations.

The Contractor shall observe the regulations for vessel lights/marks as prescribed by the International Association of Lighthouse Authorities (IALA) and the International Regulations for the Prevention of Collisions at Sea.

The Contractor shall make arrangements and obtain permission to use such safe harbours as it considers necessary.

Approved (SOLAS) and good quality lifejackets shall be provided for all personnel on board the survey vessel(s). These shall be serviced every 12 months by a recognised SOLAS agent, with service documentation provided by the Contractor.

The use of VHF radios shall be in accordance with the appropriate legislation and regulations.

All lifting operations and equipment must conform with the UK Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) and the Provision and Use of Work Equipment Regulations 1998 (PUWER).

7.1.3 Meteorology

Estimates made at sea of wind speed and direction shall be logged before and during all survey operations as part of a survey log sheet. At the same time an estimate of the visibility and sea-state shall be made.

7.1.4 Instrument Calibration and Verification

All instruments (including back-up instrumentation) shall be subject to full pre-survey and post-survey verification calibration and testing to ensure that they are functioning correctly and are operating according to the manufacturer's specifications.

Calibration or conformity certificates for all survey instruments shall be submitted to the Authority at least one (1) week prior to the commencement of survey activities, unless otherwise stated. Failure to do so could result in a delay to the start of the survey.

Interim calibrations and/or in-situ checks, using a higher order calibrated instrument or standard, shall be required during the project (e.g. Bar check, Patch test, etc.). These shall be undertaken both periodically (no greater than fortnightly) and following changes that are likely to effect the geometry of the vessel.

The calibration and in-situ check documents shall be submitted to the Authority at the time of submitting all interim and final reports. The most recent calibration shall also be available for inspection on request at any time throughout the survey operations.

The GPS based survey-navigation system installed aboard the vessel(s) (RTK GPS) shall be calibrated against a higher order system, or as an offset (bearing and distance) from a known location or benchmark. This calibration check shall be undertaken at the start and end of each day of site works e.g. when the survey vessel(s) is alongside the berth in the local port of operations. Full records, and comprehensive station descriptions of any "offsets", shall be provided in all interim and final reports.

Any instruments and/or sensors found to be or suspected to be malfunctioning shall not be used for deployment/re-deployment until they have been repaired and/or re-calibrated and a new calibration certificate issued and copied to the Authority.

The relationship between the vertical land survey datum for orthometric heights, local Mean Sea Level (MSL) and local Chart Datum (CD), and any other relevant datum, shall be defined and documented and shown on all bathymetric charts, data tabulations, as well as being clearly identified in all interim and final reports.

7.1.5 Back-up Instruments, Manuals and Spares

The Contractor shall provide sufficient spares and/or back-up instrumentation, including but not limited to: GPS equipment, PCs, hydrographic survey equipment, etc., and other "consumable" spares to ensure that any failures and/or malfunctions encountered do not jeopardise the data collection program.

The Contractor shall maintain on site and/or also on the survey vessels at sea, a full set of all manufacturer's manuals and software for all required survey related instrumentation.

7.1.6 Data Validation and Processing

Initial validation checks shall be applied to gathered data prior to any editing or further analysis in order to identify any erroneous or spurious data.

Any gaps in the data shall be identified and discussed in the reporting of the results.

Final quality control and validation of the data shall include an assessment of the data quality. Consideration shall be given to expected patterns or trends in the data and to comparisons with any other available data sets.

All data validation and correction procedures shall be documented both in the Contractor's Execution Plan and in the Final Hydrographic Survey Report.

When Geospatial data is collected to demonstrate progress for payment, the survey shall be witnessed by a representative of the Authority as specified in Clause 4.8.

An Authority representative may also witness Pre-dredge surveys, Interim surveys, Post-dredge surveys, and the installation or translocation of base stations or tide gauges. Invitation to witness surveys shall be extended to the Authority at least 7 days in advance of survey where possible.

7.1.7 Instrumentation Security

Onshore installations required to support survey operations shall be suitably located in an area inaccessible to the general public. Installations shall be checked weekly and where possible monitored remotely by a telemetry system.

7.2 Survey Control

Prior to commencement of survey operations, survey control shall be established in such a manner that it can be used for the hydrographic surveys, where possible, for the remainder of the project.

All positioning for hydrographic survey operations shall be conducted using Real Time Kinematic (RTK) GPS. In order to achieve this, base station(s) and repeater station(s) (as required to provide full coverage of the site area) shall be installed and calibrated using optical levelling to known benchmarks or through continuous logging.

Periodically, the base station(s) and repeater station(s) shall be checked by measuring a fixed location. These results shall be logged and reported accordingly.

7.2.1 Horizontal

Survey Grids shall be related to Ordnance Survey National Grid (OSGB36).

Example transformation

OSGB36 → WGS84

Bursa-Wolf (7 parameter)

Parameter	**Value**
Ellipsoid Name	Airy 1830
Translation X (meters)	446.45
Translation Y (meters)	-125.16
Translation Z (meters)	542.06
Rotation X (radians)	0.150
Rotation Y (radians)	0.247
Rotation Z (radians)	0.842
Scale Factor (ppm)	-20.4894

Datum:	WGS84	OSGB36
Latitude/Northing	50.81	101540.51
Longitude/Easting	-1.11	462804.63

7.2.2 Vertical

The level datum to be used on all surveys shall be Chart Datum. This shall be referenced against Ordnance Datum Newlyn (ODN) in any drawings or reports issued to the Authority. Chart Datum coincides with -2.73m ODN.

In addition to the use of RTK GPS for survey measurements, agreed existing tide gauges or a specially installed network of temporary tide gauges shall be used to check RTK measurements against, and where necessary to reduce sounding data to Chart Datum. The selected tide gauge network shall allow any wide-area slope in water level to be accounted for.

The tide gauge(s) shall be able to output data in cm resolution at 1 minute intervals and shall be checked and if necessary re-calibrated at regular intervals (no greater than fortnightly) against a known benchmark.

Tide gauge(s) should be monitored remotely using a radio telemetry link.

If the tide gauge network is installed in a suitable location and manner, it may also be used for determining the vertical position of dredging operations, however, intention to do so shall be expressed in the Contractor's Execution Plan, and indication should be made with regard to preferred tide gauge locations.

7.3 Multi Beam Echo Sounder Bathymetry

7.3.1 Introduction and Objectives

The following specification applies to the collection of bathymetry data using a Multi Beam Echo Sounder (MBES). Reference should also be made to the general specifications given above.

The standards identified in this section shall, meet or exceed those set down by IHO Special Publication No. 44 for "Special Order Surveys".

The Contractor shall provide in his Execution Plan a detailed description of the procedures to be implemented, including but not limited to:

- Geodetic parameters,
- Survey boat/launch choices,
- Positioning system used for vessels,
- Echo sounding equipment and associated calibration method,
- Proposed survey grid pattern and spacing,
- Measurement of tidal levels and correction of sounding data for tidal levels,
- Where used, motion compensation equipment, and limiting sea-states,
- Survey record keeping, data storage and archiving procedures,
- Processing details (spike removal, interpolation method, bin sizes, etc.),
- Document submittals including their format,

This Execution Plan may also include the plan for Single Beam Echo Sounders.

7.3.2 Survey Planning

As the area to be dredged is largely deep water, bathymetry data within the areas to be dredged shall be collected using a Multi Beam Echo Sounder. However, it is expected that some areas may only be accessible by a shallow draft vessel best suited to Single Beam surveys (see Section 7.4).

The objective of the Multi Beam bathymetry survey shall be to create an accurate topographic survey of the seafloor, with full coverage when gridded to an interval of 0.5m x 0.5m, and with a vertical accuracy of better than that specified by the IHO for Special Order Surveys (0.25m).

Hit counts for the survey area shall exceed 10 hits per grid square (for areas of shallow water depth – less than 20m Chart Datum).

Frequency of the Multi Beam Echo Sounder shall be selected such that interference from Single Beam Echo Sounders, sidescan sonars or ADCP's shall be minimal.

The Contractor shall select a line spacing such that, for the utilised beam angle, the entire seafloor is ensonified with a minimum 10% overlap between swaths to ensure there are no significant gaps.

Where possible, run-in lines shall be made in combination with slow loose turns to improve Motion Reference Unit (MRU) accuracy.

7.3.3 Instrumentation

Instrumentation for Multi Beam Echo Sounding shall be of an approved 'survey type' operating between 300-450 kHz, capable of providing cm resolution data. The instrumentation/frequency to be used shall be agreed with the Authority prior to commencement of the pre-dredge survey and shall then be used for all further surveys. The same operating frequency shall be used for all surveys.

The vessel's geometry shall be established through a 'local' survey, conducted whilst the vessel is secured alongside a quay wall or similar. Appropriate vessel geometry survey methods include total station, tape and level line, and RTK GPS measurements. Particular care should be given to installations on larger scales to reduce 'lever arm' inaccuracies. Furthermore, all distances must be made to the proper locations (phase centres, acoustic centres and rotational centres).

Sound velocity shall be measured at the Multi Beam transducer head and used to calculate propagation angles and water depth. Sound velocity profiles shall also be

taken with a dedicated sound velocity probe (SV) prior to commencement of each survey and further SV profiles shall be taken at an interval defined by the surface conditions such that surface speeds do not separate from the applied speed by more than ~2ms^{-1}. Equipment type and calibration procedures shall be described in the Contractor's Execution Plan.

Where possible, daily checks shall be made over an outcrop, wreck, pipeline or similar feature of constant depth to establish consistency from one survey to another. These results shall be averaged over a defined area and logged accordingly, their results shall be included in the Hydrographic Survey Report.

A Patch test shall be conducted before logging survey data for the first time, after equipment changes are made and at monthly intervals throughout the project to ensure correct equipment geometries are applied, the results of these patch tests shall be included in the Hydrographic Survey Report.

An appropriate Motion Reference Unit (MRU) shall be utilised in conjunction with a heading sensor and RTK GPS receiver to ensure that beam-forming and survey results are as accurate as possible. The MRU shall be monitored using appropriate software to check that it has initialised before any survey begins and to ensure its correct operation throughout survey operations.

7.3.4 Data Analysis and Processing

Initial data analysis shall be carried out daily on board the survey vessel by the operating surveyor to confirm correct operation of all instruments and allow an early interpretation of the results, including identification of areas of interest for possible further survey.

Where spikes are removed from raw data, care shall be taken to ensure sufficient data remains in the corresponding grid cells such that interpolation over distances greater than 5m does not occur. Furthermore, for witnessed Pre-dredge surveys, Interim surveys and Post-dredge surveys, data shall not be interpolated over distances greater than 2m.

All depths shall be corrected to Chart Datum before reporting, as agreed with the Authority.

The original raw data clouds shall be backed up and made available to the Authority on request in addition to the processed equivalents.

7.4 Single Beam Echo Sounder Bathymetry

7.4.1 Introduction and Objectives

Where necessary, Single Beam Echo Sounder surveys (SBES) shall be undertaken to supplement Multi Beam Echo Sounder survey data. This would most likely be in areas of restricted navigation and/or of limited depth.

The following specification applies to the collection of Single Beam sonar data. Reference should also be made to the general specifications given above.

The Contractor shall provide in the Execution Plan a detailed description of the procedures to be used, including but not limited to:

- Geodetic parameters,
- Survey boat/launch choice,

- Positioning system of vessels,
- Echo sounding equipment and associated calibration method,
- Proposed survey grid pattern and spacing,
- Measurement of tidal levels and correction of sounding data for tidal levels,
- Where used, motion compensation equipment and limiting sea states,
- Survey record keeping, data storage, archiving procedures,
- Processing details (spike removal, TIN/interpolation method, etc.),
- Document submittals including their format.

7.4.2 Survey Planning

As the area to be dredged is largely deep water bathymetry data shall be collected using a Multi Beam Echo Sounder. However, particularly during Pre-dredging and Post-dredging monitoring surveys, it is expected that some berths adjacent to the dredged areas may be shallow or intertidal so only accessible by a shallow draft vessel best suited to Single Beam surveys.

The objective of the Single Beam Bathymetric Surveys shall be to supplement the MBES data where necessary, in order to create an accurate topographic survey of the seafloor; particularly in the shallow areas encountered in and adjacent to neighbouring berths.

For those areas where vessel draft is an issue, a line plan shall be created that allows maximum data recovery from the area, including a margin of 30m around the defined area. This margin shall create an overlap between relevant the Multi Beam data and that collected from the Single Beam system.

Survey line spacing shall be selected to ensure no prominent seabed features are missed between the survey lines. Line spacing shall not exceed 3 times the water depth.

For inshore surveys, the survey lines shall extend towards the shoreline and conclude either before the point where personnel, vessel and equipment are compromised or until usable survey data is no longer attainable.

Additionally, survey cross-lines shall be run at a suitable interval to verify vertical data reductions. These cross-lines shall be chosen to allow best comparison between surveys i.e. not on steep slopes or areas of uneven seafloor.

The works identified in this section shall exceed an accuracy of ±0.25m in the vertical plane and ±2m horizontally.

Where Single Beam surveys are conducted in the same areas as Multi Beam surveys sufficient overlap shall be made between the two for the purpose of QC checking between the two data-sets; However, after checks have been made SBES data in these overlap areas should be discarded in favour of the MBES data.

7.4.3 Instrumentation

The equipment provided for Single Beam bathymetry survey shall be of an approved ‘survey type’ capable of providing data in cm resolution.

Preferably the measured data shall be reduced to Chart Datum directly from a logged RTK GPS signal, however, it is recognised that Single Beam surveys can be conducted in conjunction with recorded tidal levels, the data being reduced either in real-time or during post processing. Where this occurs, specifications for a suitable tide gauge/tide gauge network shall to be laid out in the Contractor’s Execution Plan. Whichever of

these methods is used great care must be taken to ensure the most accurate bathymetry measurements are made;

- Where the system is set-up to use tidal levels for reduction to Chart Datum, the Contractor must ensure that a suitably regular update of tidal level can be received at all locations across the survey area.
- Where RTK GPS is used to directly reduce the data to Chart Datum in real-time, the Contractor must ensure that either motion of the vessel is compensated for in the software by use of an appropriate Motion Reference Unit (MRU) or that distances between components in the system are kept to a minimum and that the survey vessel is operating in stable sea conditions at all times.

The primary Single Beam Echo Sounder shall operate in the range of 200-220kHz, alternatively a dual frequency echo sounder operating in the range (30-35kHz/200-220kHz may be employed. The instrumentation/frequency to be used shall be agreed with the Authority prior to commencement of the pre-dredge survey and shall then be used for all further surveys.

The equipment shall be calibrated for transducer depth and velocity of sound by means of a 'bar check' or sound velocity probe prior to commencement of each survey and at intervals as dictated by the environmental conditions.

It is likely that the vessel will need to be of a shallower draft than that used to conduct the MBES surveys.

Equipment type and calibration procedures shall be described in detail in the Contractor's Execution Plan.

7.4.4 Data analysis and Processing

All depths shall be corrected to Chart Datum, in a suitable manner as agreed with the Authority and outlined in the Contractor's Execution Plan, before reporting.

Initial data processing and analysis shall be undertaken as soon after completion of the survey as is reasonably practical.

Spikes shall be removed from any datasets. Either an automatic filter or manual filter may be employed, however, data should be checked against previous surveys to ensure that quality and consistency are achieved.

7.5 Reporting

The Contractor shall prepare and submit to the Authority for review and comment interim survey reports within 48 hours of completing surveys associated with either completion of sections of the Works or interim surveys undertaken on the instruction of the DIO PM. The reports shall contain all field data in a completed format, evaluations and interpretations of all survey data and supporting text. The reports shall use SI units throughout and contain a summary of all geodetic parameters applied.

The Contractor shall prepare and submit to the Authority for review and comment a Final Report compiling the results of all post-dredge surveys within 48 hours of completing the final post-dredge survey.

The Contractor shall submit to the Authority within 14 days of receiving comments from the DIO PM, final copies of all reports addressing to the satisfaction of the DIO PM all comments raised.

7.5.1 Data

Deliverables shall clearly display the scale and geodetic parameters applied, along with all necessary supplemental information.

For both Single Beam and Multi Beam Surveys, data shall be provided in RAW format along with its accompanying metadata.

Data shall also be provided in a reduced format such as Grid models, TIN models and/or X, Y, Z point files with its accompanying metadata. Unless prohibited by the file size, these files shall have a cell size no greater than 0.5m x 0.5m.

In the interest of consistency, all depths below Chart Datum shall be provided as negative values and all heights above Chart Datum shall be recorded as positive.

Metadata shall include:

- Collection date/time,
- Equipment,
- Weather/Sea State Conditions,
- Surveyor,
- Horizontal and vertical datum applied.

7.5.2 Reports

The interim reports, and Final Report shall, where relevant for each aspect of the survey(s), contain the following as a minimum:

- A full factual account of the survey activities,
- Times and dates of the activities reported in UTC for the duration of the survey operations and post-processing activities,
- Description of the methodologies adopted and equipment used,
- the Grid System used and whether or not this is based upon existing survey control.
- Details of vessels, plant and equipment used,
- Name and title of all project field and office personnel,
- Comments on factors affecting the survey(s) including any problems encountered, particularly those which might have affected the quality of the results,
- Presentations of the gathered data,
- A discussion of the results,
- Log reports of checks made (including position checks, survey checks and patch test results).
- A summary of accuracy achieved and validation undertaken with reference to his Quality System. A schedule of calibration and confidence checks undertaken to control and check dimensional accuracy, their frequency and results shall be detailed.

The Contractor shall ensure that footer details and the table of contents are correct prior to delivery of the report.

7.5.3 Charts

Charts provided to the Authority shall be issued in both electronic .pdf and hardcopy formats and shall outline:

- The horizontal and vertical geodetic parameters used,
- The shift between Chart Datum and ODN,
- The scale of the drawing,
- The method of reduction to Chart Datum,
- The main equipment used.

7.5.4 Profiles

Where required, profiles shall be issued relative to a given centreline and Chart Datum at intervals of 50m. Profiles shall be drawn for:

- Design Level,
- Over Dredge Tolerance,
- Survey Level.
- If necessary, a distinction shall be made between Multi Beam and Single Beam data used to draw the profiles.

7.5.5 Volumes

Where Interim surveys are conducted for payment, the Contractor shall provide volume information in addition to other required reporting. These volumes may be calculated using either a gridded or profiling method however the procedure shall be consistent throughout the duration of the survey operations and documented within the Contractor's Execution Plan.

Volumes shall be given as:

- Volume dredged since Pre-dredge survey above design,
- Volume dredged since Pre-dredge survey below design,
- Volume filled since Pre-dredge survey above design and,
- Volume filled since Pre-dredge survey below design.

These volumes shall be calculated and issued independently for each separate area of the works.

8 Performance Specification for Slope Strengthening Works

8.1 General

The design of any slope strengthening works shall, as a minimum, be in accordance with the following requirements.

The design, checking and design submission of any slope strengthening works shall be in accordance with Section 3 of the Specification.

The design shall be carried out in accordance with Eurocodes or other relevant standards and methods as accepted by the DIO PM.

The Contractor shall consult and comply with the requirements of all Relevant Authorities and owners of structures, buildings and infrastructure which may be affected by the Works and shall be responsible for obtaining all Consents necessary.

Slope strengthening works shall be designed such that no adverse impacts are imposed on nearby structures, buildings or infrastructure by the implementation of the Works.

8.2 Location and Description of Structures

The requirement for and the location and extents of slope strengthening works shall be determined by the Contractor.

8.3 Design Working Life

The design working life shall be in accordance with Section 3.3 of the Specification.

8.4 Design Loading

The slope strengthening works shall be designed to accommodate the effects of all of the following actions as appropriate:

a) Geotechnical stability of existing soils,

b) Influence of adjacent structures and their foundations,

c) Compatibility with the foundations and actions of adjacent structures,

d) Waves,

e) Currents,

f) Vessel movements / Propeller wash / Bow thruster action,

g) Tidal action / varying water levels,

h) Surcharge,

i) Loads imparted by existing structures,

j) Hydrostatic pressures,

k) Any other relevant action.

The design loadings shall be combined in accordance with the requirements of BS EN 1990 and the National Annex to BS EN 1990.

8.5 Structural Form

The forms of the slope protection works shall be determined by the Contractor subject to the requirements of all Consents.

8.6 Appearance

Appearance shall be appropriate for the location of the structure and in accordance with the conditions of all Consents and applicable codes and standards.

8.7 Durability

Refer to Clause 3.3 of the Specification.

8.8 Proprietary Products

Any proprietary products used shall be designed and installed in full accordance with the manufacturer's recommendations.

8.9 Existing Structures

The Contractor shall ensure that slope protection works have no adverse implications on nearby structures including, but not limited to: coastal protection structures, slipways, land based structures (including MoD Jetties), infrastructure and moorings. The Contractor shall ensure that his designed slopes and slope protection works do not encroach on the Ramsar area adjacent to the turning circle.

8.10 Structures Design Statement

Prior to commencement of the design, the Contractor shall submit a Structures Design Statement, fully defining the design assumptions and parameters to be used in the design of the slope protection structures.

Following completion of the design the Contractor shall submit comprehensive Design Documents, with the Design Certificate and Design Check Certificate, which shall record all decisions made by the Designer regarding the design of the Works.

Where information is required to be recorded in a Designer Record, it shall be provided to the Design Checker prior to commencement of the design check and shall also be included with the As-Built records described in Section 8.11.

8.11 As-Built Records

As-Built records shall be provided in accordance with Schedule 2 of the Conditions of Contract.

ANNEX A – TECHNICAL LIBRARY DOCUMENTS LIST

Appendix A – Flowchart for dealing with obstructions

Appendix B – 2011 Ground Investigation Information

Appendix C – Historic Ground Investigation and Survey Data

Appendix D – As Built Information Middle Slip Jetty

Appendix E – As Built Information Sheer Jetty

Appendix F – As Built Information Victory Jetty

Appendix G – Baseline Personnel Security Standard

Appendix H – Compiled Harbour Traffic Information

Appendix I – Desk Study of Utilities and Cables

Appendix J – Site Drawings

Appendix K – Port Operations Guide

Appendix L – QHM Organisation Chart

Appendix M – Base Security Procedures

Appendix N – Dockyard Diving Regulations

Appendix O – Authority Archive Information

Appendix P – Marine Licence

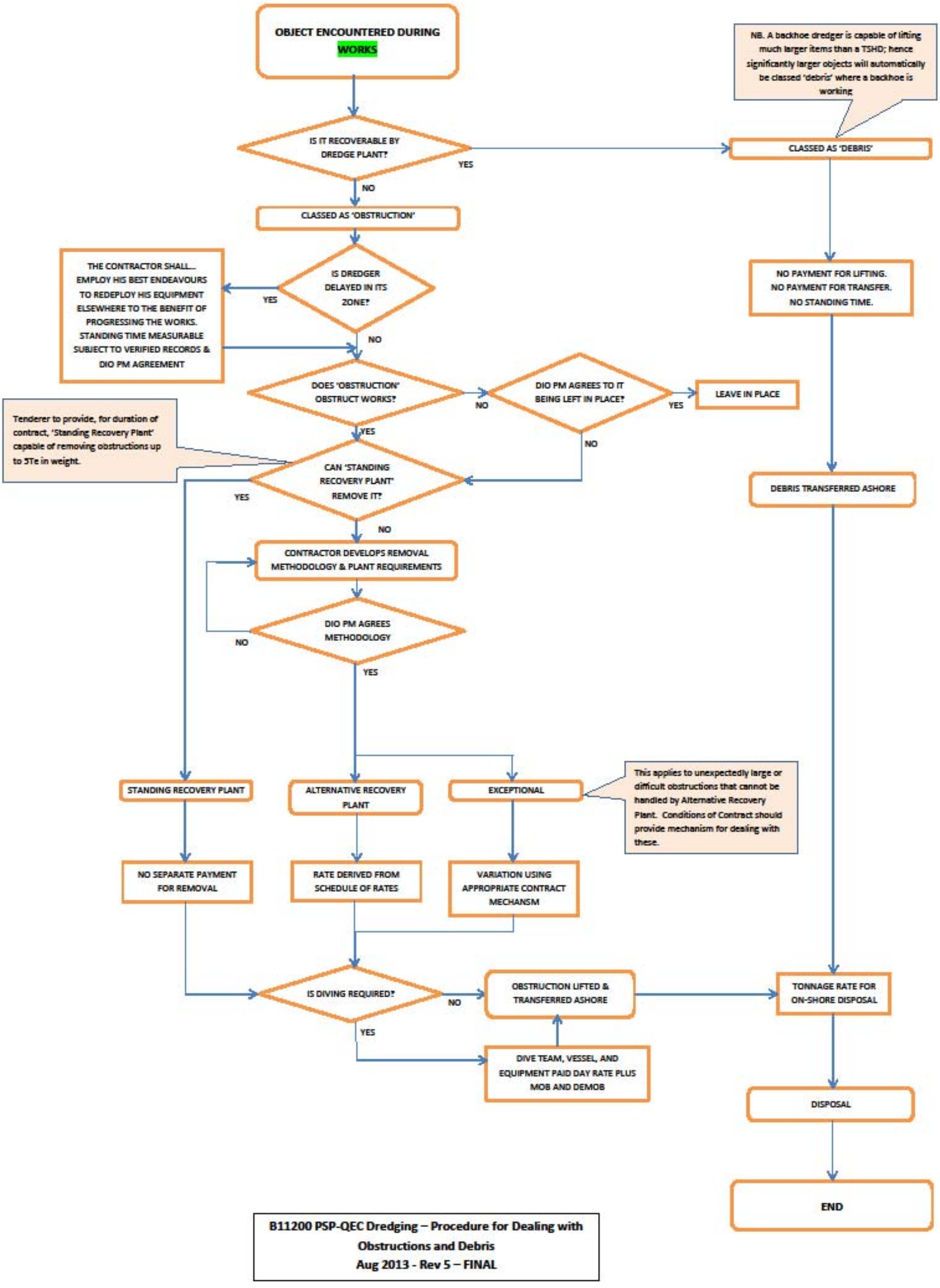
Appendix Q – MOD Sustainability Appraisal for the QEC Base Porting Projects

Appendix R – Archaeological Written Scheme of Investigation

Appendix S – Maintenance Dredging Data

Appendix T - Clarifications Table

Appendix A – Flowchart for Dealing with Obstructions



B11200 PSP-QEC Dredging – Procedure for Dealing with Obstructions and Debris
Aug 2013 - Rev 5 – FINAL

Appendix B – 2011 Ground Investigation Information

Information that has previously been provided in the tender period and has not changed will not be reissued.

1. Portsmouth Harbour Approved Dredge Depth Report R.1983. ABPmer June 2012

2. Portsmouth QEC Simulation Study Head Report. Hyder July 2012

3. Portsmouth QEC Simulation Study Supplementary Report, Aids to Navigation Requirements Definitions. Hyder Dec 2012

4. HMNB Portsmouth Approach Channel Dredging and Associated Works ES Volume 1: Non Technical Summary. Royal Haskoning November 2012

5. Bathymetric Calibration Report, Marine Geotechnical Investigation of Portsmouth Harbour and its Approach Channel, Non-intrusive Survey. Debut (South West) Ltd 28 Nov 2011

6. Bathymetric Survey Report, Marine Geotechnical Investigation of Portsmouth Harbour and its Approach Channel, Non-intrusive Survey. Debut Services (South West) Ltd 28 Nov 2011

7. Chirp Sub-Bottom Profiler survey in Portsmouth harbour area and its approach channel. Deltares 2012

8.] Side scan sonar and magnetometer survey for vibrocore planning and object detection. Deltares 11 May 2012

9. Portsmouth Resistivity Survey. Demco NV November 2011

10. Marine Geotechnical Investigation of Portsmouth Harbour & its Approach Channel, Non-intrusive Survey, Multibeam Echosounder Bathymetric Survey Drawings

11. Outline Marine Geotechnical Investigation TAF026 Report. Jacobs March 2011

12. Drawing B11200F9\K01A\1000 Marine Geotechnical Investigation at Portsmouth, Site Plan Exploratory Hole Location Plan North

13. Drawing B11200F9\K01A\1001 Marine Geotechnical Investigation at Portsmouth, Site Plan Exploratory Hole Location Plan South

14. Geological and Geotechnical Pre-Dredge Desk Study and Outline Channel Modifications Design. Jacobs March 2011

15. Defence Infrastructure Organisation HMNB Portsmouth Harbour & Approaches Vibrocore Survey 2011-2012. Coastline Surveys Ltd March 2012

16. Defence Infrastructure Organisation, Portsmouth Harbour & Approach Channel Intrusive Investigation, Final Factual Report on Ground Investigation. Fugro Seacore Ltd May 2012

Appendix C – Historic Ground Investigation and Survey Data

Information that has previously been provided in the tender period and has not changed will not be reissued.

1. Portsmouth Harbour and Approaches Deepening Geotechnical Investigation, Final Geotechnical Report on Acquisition and Logging of Vibrocore Samples. Issue 2. Lankelma Cone Penetration Testing Ltd – May 2006

2. Reconstruction of North, Middle and South Slip Jetties Geotechnical Investigation with Annex A - Report on Site Investigation, Lab Ref No S/12125. Wimpey Laboratories Ltd - March 1977

3. HMNB Portsmouth, Western Jetties, Factual Report on Ground Investigation, Vols 1, 2 and 3, Report Ref 147123 - Exploration Associates - November 1997

4. HMNB Portsmouth Jetty Replacement Factual Report on Site Investigation Report No. 51081. Scott Wilson Kirkpatrick. February 1996

5. HMNB Portsmouth Jetty Replacement Stage 2 Ground Investigation Part 1 Factual Report. Soil Mechanics. October 1996

6. HMNB Portsmouth Jetty Replacement Project No N3/06488 Geotechnical Interpretive Report. Scott Wilson Kirkpatrick. September 1996

7. Tidal Streams in the approaches to HM Naval Bases NP167. Hydrographic Office August 1991

8. Wind Data, Solent MRSC 2002 to 2011. Met Office 2012

The following information is publicly available for the Bidder to consult:

9. Admiralty Standard Chart 2625 – Approaches to Portsmouth

10. Admiralty Standard Chart 2631– Portsmouth Harbour

11. British Geological Survey sheet 331 - geology of Portsmouth - scale 1:50,000

Further historic survey data is included at Appendix S – Maintenance Dredging Data

Appendix D – As Built Information Middle Slip Jetty

Information that has previously been provided in the tender period and has not changed will not be reissued.

1. HMNB Portsmouth Maritime Infrastructure Principle Support Provider Middle Slip Jetty Structural Assessment Report. Jacobs October 2010

Other information held in Authority Archive

Appendix E – As Built Information Sheer Jetty

Information held in Authority Archive

Appendix F – As Built Information Victory Jetty

Information held in Authority Archive

Appendix G – Baseline Personnel Security Standard

Information that has previously been provided in the tender period and has not changed will not be reissued.

Appendix H – Compiled Harbour Traffic Information

Information that has previously been provided in the tender period and has not changed will not be reissued.

Appendix I – Desk Study of Utilities and Cables

Information that has previously been provided in the tender period and has not changed will not be reissued.

HMNB Portsmouth Study of Utilities and Cables crossing the Proposed Navigation Channel. Doc Ref: B11200C8/K.06a/2001/01. Jacobs 19.04.2012

Appendix J – Site Drawings

Information that has previously been provided in the tender period and has not changed will not be reissued.

1. F8 Dredging Contract Drawings – B11200/0001 to 0010 Document Control Sheet. Rev Date 07/10/13

2. B11200_G0_0001-Rev1 0001.pdf

3. B11200_G0_0002-Rev1 0002.pdf

4. B11200_G0_0003-Rev1 0003.pdf

5. B11200_G0_0004-Rev1 0004.pdf

6. B11200_G0_0005-Rev1 0005.pdf

7. B11200_G0_0006-Rev1 0006.pdf

8. B11200_G0_0007-Rev1 0007.pdf

9. B11200_G0_0008-Rev1 0008.pdf

10. B11200_G0_0009-Rev1 0009.pdf

11. B11200_G0_0010-Rev1 0010.pdf

Appendix K – Port Operations Guide

Information that has previously been provided in the tender period and has not changed will not be reissued.

The Contractor is also referred to and shall comply with the 'Dockyard Port of Portsmouth Order 2005, Schedule 2, Clause 4 - Shipping Movement Control' which may be viewed at http://www.qhm.mod.uk.

Appendix L – QHM Organisation Chart

Information that has previously been provided in the tender period and has not changed will not be reissued.

Appendix M – Base Security Procedures

The Contractor shall be deemed to have fully appraised himself of the security procedures in force and the extent to which they impact on his operations. Advice on security procedures can be obtained from the Base Security Officer. (Tel 02392 722358)

The Contractor shall be deemed to have consulted fully with the Base Security Officer,

Appendix N – Dockyard Diving Regulations

Information that has previously been provided in the tender period and has not changed will not be reissued.

Portsmouth Diving Instructions HSE 527 Issue 4. 14 Mar 2013

Appendix O – Authority Archive Information

Supplementary Information
HMNP Portsmouth – CVF Base Porting, Approach Channel Options Assessment and Harbour Dredge Study, Head Report, July 2005 (Final)
BMT SeaTech Limited - Access to Portsmouth by CVF, A Simulation Study of Some Approach Channel Options, 31 March 2005
City of Portsmouth Statutory List of Buildings and Scheduled Monuments – Special Architectural and Historic Interest
JSP 440 Defence Manual of Security
DRPHAF054_0 UHAF Explosives Arcs
Middle Slip Jetty Information
Jacobs – Middle Slip Jetty, Inspection Report Rev 4 ISSUED 02-07-10
Jacobs – HMNP Portsmouth, QEC Aircraft Carrier, Base Port Infrastructure Upgrade, Assessment Study, Volumes 1 & 2, Version 1.0, Final, Z9L1209Y06, Jacobs, 12 June 2009
Evans Grant Opus – Report on Inspection and Assessment of Middle Slip Jetty, 14 January 05, 5199/MSJ/CGS/CJW Rev A
Evans Grant Opus – Report on Inspection and Assessment of Middle Slip Jetty, 9 June 06, 5199/MSJ/CGS
Jacobs [July 2010] HMNB Portsmouth Maritime Infrastructure, Principal Service Provider, Middle Slip Jetty Structural Assessment Report
Jacobs [29 March 2012] HMNB Portsmouth Middle Slip Jetty Upgrading Works, Site Survey, Technical Note
Jacobs [2012] Middle Slip Jetty Upgrade, Topographical Survey Ref JG12147-01
Jacobs [2012] Middle Slip Jetty Upgrade, Topographical Survey Ref JG12147-02
Royal Haskoning [2010] HMNB Portsmouth Maritime Infrastructure, Principal Support Provider, Middle Slip Jetty Inspection Report
Evans Grant [Feb 2005] Inspection and Assessment of Middle Slip Jetty
Evans Grant [June 2006] Middle Slip Jetty Structural Assessment Supplementary Report
Evans Grant [June 2004] MSJ Topographical Survey North
Evans Grant [June 2005] MSJ Topographical Survey South
[26 April 2010] Concrete testing report
Middle Slip Jetty North Ref NBM022, Technical Reports
Middle Slip Jetty South Ref NBM021, Technical Inspection Reports
Professional Maritime Structural Appraisal, Middle Slip Ref 35353
Report on Load Assessment, MSJ Ref 35352
Report on Cracking and Spalling of Soffit, Concrete Deck at Middle Slip Jetty Ref 35354
Technical Inspection Report, Middle Slip Jetty Ref 35347
Technical Inspection Report, Middle Slip Jetty Ref 417
Professional Appraisals, Middle Slip Jetty Ref 35356
Assessment Report, Middle Slip Jetty Ref 35351
Pile Inspection Records
North, Middle and South Slip Jetties Reconstruction (FB3)

North, Middle and South Slip Jetties 1/209 reconstruction (FB3) - Reconstruction PSTO(N) Storage facilities. Sheet No 2 South Furnishings Store, No 1 Smithery
AREA 1-REDEVELOPMENT OF NORTH,MIDDLE AND SOUTH JETTIES
AREA 1-REDEVELOPMENT OF NORTH,MIDDLE AND SOUTH SLIP JETTY
Middle Slip Jetty
Middle Slip Jetty
Middle Slip Jetty - Crane track survey
Middle Slip Jetty - Deck slab reinforcement centre portion of middle slip
Middle Slip Jetty - Deck slab reinforcement north end portion
Middle Slip Jetty - Deck slab reinforcement south end portion
Middle Slip Jetty - Detail of catamaran moorings onto swinging fenders
Middle Slip Jetty - Details of suspended fenders
Middle Slip Jetty - General details
Middle Slip Jetty - New deck slab over existing north end portion
Middle Slip Jetty - Swinging Fender details
Middle Slip Jetty North - File Ref: NBM022, Technical Reports
Middle Slip Jetty South - File Ref: NBM021, Technical Inspection Reports
MSJ Intrusive Inspection
Report on Load Assessment - MSJ
Specialist Information/C4 Responses/General - Middle Slip Jetty
Technical Inspection Reports - Middle Slip Jetty, File Ref: 417
West Wall Middle Slip Jetty - Deck Slab Reinforcement, North Slip Portion
West Wall Middle Slip Jetty - New Deck Slab Over Existing Centre Portion, Middle Slip
North Corner and Middle Slip Jetty - Survey
North, Middle and South Slip Jetties Reconstruction - Item FB 3
Reconstruction of North, Middle & South Slip Jetties - Item FB 3; Final Sketch Plans
West Wall - Reconstruction of Middle Slip Jetty
Middle Slip Jetty, West Wall - Proposed strengthening and extension
West Wall, Middle Slip Jetty - Approach to existing bridge at south end
West Wall, Middle Slip Jetty - Back crane beam
West Wall, Middle Slip Jetty - Deck slab sections showing reinforcement
West Wall, Middle Slip Jetty - Details of coping bolt oxy-acetylene and telephone points
West Wall, Middle Slip Jetty - Details of duplex track and crossing
West Wall, Middle Slip Jetty - Details of greenheart fender pile assembly
West Wall, Middle Slip Jetty - Fendering
West Wall, Middle Slip Jetty - Fixing details of additional fairleads
West Wall, Middle Slip Jetty - Layout and pile plan
West Wall, Middle Slip Jetty - M.E.D. Trench details
West Wall, Middle Slip Jetty - New deck slab over existing north slip jetty
West Wall, Middle Slip Jetty - New deckslab over existing south end portion of middle slip
West Wall, Middle Slip Jetty - Pile records

West Wall, Middle Slip Jetty - Piling Journal
West Wall, Middle Slip Jetty - Piling Journal
West Wall, Middle Slip Jetty - Piling Journal
West Wall, Middle Slip Jetty - Piling Journal
West Wall, Middle Slip Jetty - Plan and elevation as existing
West Wall, Middle Slip Jetty - Precast crane beam, position of tubes for bonding bars.
West Wall, Middle Slip Jetty - Precast shuttering
West Wall, Middle Slip Jetty - Precast shuttering
West Wall, Middle Slip Jetty - Precast units at cope for shuttering
West Wall, Middle Slip Jetty - Proposed crane foundation
West Wall, Middle Slip Jetty - Proposed extension and srengthening
West Wall, Middle Slip Jetty - Proposed jetty reconstruction and tracks for 20 ton crane and railway (scheme 1)
West Wall, Middle Slip Jetty - Proposed jetty reconstruction and tracks for 20 ton crane and railways (scheme 2)
West Wall, Middle Slip Jetty - R.C. Beams to replace existing R.S.J.(s)
West Wall, Middle Slip Jetty - Rubber spring assembly for suspended fenders
West Wall, Middle Slip Jetty - Schematic arrangement for lateral supports to P.C. Cope units
West Wall, Middle Slip Jetty - Section of revised scheme showing clearances
West Wall, Middle Slip Jetty - Sections and details
West Wall, Middle Slip Jetty - Shuttering for swinging fender
West Wall, Middle Slip Jetty - Swinging fenders, diagram of forces, calculations of resistance to normal blow
West Wall, Middle Slip Jetty - Temporary support for fender unit
West Wall, Middle Slip Jetty - Walkway under jetty for servicing salt water pump suction
West Wall, Middle Slip Jetty - Welding Plinth Details
West Wall, Middle Slip Jetty and Dolphin Jetties - Roller fixings to pile gates
West Wall, Middle Slip Jetty Reconstruction
Wst Wall, Middle Slip Jetty - Approach gradient levels of rail track
West Wall, Middle Slip, Dolphin and North Jetties 0 Travelling pile template
FB3 Slip Jetty Reconstruction - Block 2, general arrangement
(FB3, FB45) Fountain Lake Jetty - Geotechnic investigation for proposed jetty extension at east corner
North Corner FB3/FB45 Project - Existing jetty edge beam modification
NORTH WEST WALL-FB3-JETTIES RECONSTRUCTION-PILE LAYOUT
NORTH WEST WALL-FB3-JETTY DECK R.C. DETAILS-GRIDS 1/5
NORTH WEST WALL-FB3-JETTY DECK R.C.DETAILS-GRIDS 17/22
NORTH WEST WALL-FB3-JETTY DECK R.C.DETAILS-GRIDS 22/26
NORTH WEST WALL-FB3-JETTY DECK R.C.DETAILS-GRIDS 26/30
NORTH WEST WALL-FB3-JETTY DECK R.C.DETAILS-GRIDS 30/34
NORTH WEST WALL-FB3-JETTY DECK R.C.DETAILS-GRIDS 34/38
NORTH WEST WALL-FB3-JETTY DECK R.C.DETAILS-GRIDS 38/42
NORTH WEST WALL-FB3-JETTY DECK R.C.DETAILS-GRIDS 42/47

NORTH WEST WALL-FB3-JETTY DECK R.C.DETAILS-GRIDS 47/51
NORTH WEST WALL-FB3-JETTY DECK R.C.DETAILS-GRIDS 5/9
NORTH WEST WALL-FB3-JETTY DECK R.C.DETAILS-GRIDS 51/55
NORTH WEST WALL-FB3-JETTY DECK R.C.DETAILS-GRIDS 55/59
NORTH WEST WALL-FB3-JETTY DECK R.C.DETAILS-GRIDS 59/63
NORTH WEST WALL-FB3-JETTY DECK R.C.DETAILS-GRIDS 9/13
NORTH WEST WALL-FB3-JETTY PILE LAYOUT
Jetty - Deck general arrangement grid lines 16 to 23
Jetty - Deck general arrangement, grid lines 1 to 16, as built
Jetty - Deck general arrangement, grid lines 50 to 66
Jetty - Deck R.C. Details, grids 5 to 9, as built
Jetty Deck - R.C. Details grid 63 to end of jetty, as built
R.C. Details typical sections, as built
Slip Jetties - Miscellaneous drainage details
Slip Jetties Reconstruction - Crane rail details
Slip Jetties Reconstruction - Details of pumping main
Slip Jetties Reconstruction - Jetty - General arrangement sections
Slip Jetties Reconstruction - Jetty deck general arrangement guidlines 33 to 50
Slip Jetties Reconstruction - Jetty pile layout sheet 1 of 5
Slip Jetties Reconstruction - Joint details
Slip Jetties Reconstruction - Layout of external services trenches
Slip Jetties Reconstruction - Lighting mast bases, R.C. Details H.D. Details
Slip Jetties Reconstruction - Service trenches R.C Details
Slip Jetties Reconstruction - Service trenches R.C Details, where trenches pass under kerbs
Slip Jetties Reconstruction - Service trenches R.C. Details
Slip Jetties Reconstruction - Service trenches R.C. Details where trenches pass under kerbs
Slip Jetties Reconstruction - Service trenches, R.C Details - Sheet 6, Detail 20. Culvert from dieso trench to YSM Planthouse
Slip Jetties Reconstruction - Service trenches, R.C. Details, sheet 5. Entries into services subway
Slip Jetties Reconstruction - Victoria Road external services plan (sheet 7) and long section
Slip Jetties Reconstruction - Victoria Road external services plan (sheet 6) and long section
Slip Jetty Reconstruction - Jetty general arrangement sections
Slip Jetty Reconstruction - Jetty general arrangement sections
Professional Appraisals - Middle Slip Jetty:
TECHNICAL INSPECTION REPORT - MIDDLE SLIP JETTY
Additional Photos taken by BAE Systems Dive Team - MSJ 2008
Additional Photos taken by BAE Systems Dive Team - MSJ PHOTOS 2007
Additional Photos taken by BAE Systems Dive Team - MSJ photos from Jan 2009 Swim through
Evans Grant MSJ Defect Plan
Evans Grant MSJ Elevation
Evans Grant MSJ GA

Evans Grant MSJ Restricted Load Capacity
NCJ Design Basis Report
NCJ Drawings
NCJ General Arrangement
Pile Inspection Records:
MSJ 1950's Pile Summary Table
MSJ 1977 Pile Summary Table
MIC-ALWC Photos
North Corner Jetty Photos:
Rows 1-20 1977 Behind Service Gallery
Rows 1-66 1977 In front of Service Gallery
Rows 21-45 1950's
Rows 45-48 1977 Behind Service Gallery
Rows 49-55, 61-66 1977 Behind Service Gallery
Rows 55A-61 1950's
Concrete testing report 26-04-2010
Concrete Condition Photographs - 1920's Walkthrough
Concrete Condition Photographs - Concrete Cores
Concrete Condition Photographs - Concrete Defects Behind Service Gallery
Concrete Condition Photographs - Concrete Soffit and Defects in Front of Service Gallery
MSJ Topo Survey North - Evans Grant 2004
MSJ Topo Survey South - Evans Grant 2005
Travelling Scaffold
Jetty Pile Layout & Driving Record Sheet 4 of 5
Jetty Pile Layout & Driving Record Sheet 3 of 5
Jetty Pile Layout & Driving Record Sheet 2 of 5
Jetty Pile Layout & Driving Record Sheet 5 of 5
Service Trenches RC Details Sheet 3
Service Trenches RC Details Where Trenches Pass Under Kerbs
Details of Pumping Main
Service Trenches RC Details Where Trenches Pass Under Kerbs
Evans Grant Report on Inspection & Assessment of Middle Slip Jetty Feb 2005
Evans Grant Report on Inspection & Assessment of Middle Slip Jetty June 2006
Archive Boring from 1881
MSJ Inspection Pile Dive Videos, Survey Disc 1-7
Middle Slip Flood Risk Assessment, dated March 2013, Revision 7

	Victory Jetty Information/Drawings
46286/MAR/C/1001 Rev B	Refurbishment of Western Jetties - Stage 1A Jetty - GA
46286/MAR/C/1002 Rev F	Refurbishment of Western Jetties - Stage 1A Jetty - Typ Construction Sequence

46286/MAR/C/1003 Rev F	Refurbishment of Western Jetties - Stage 1A Jetty - Typ Sections & Dets - Sheet 1
46286/MAR/C/1004 Rev E	Refurbishment of Western Jetties - Stage 1A Jetty - Typ Sections & Dets - Sheet 2
46286/MAR/C/1005 Rev G	Refurbishment of Western Jetties - Stage 1A Jetty - Pile Layout and Schedule
46286/MAR/C/1006 Rev D	Refurbishment of Western Jetties - Stage 1A Jetty - Pile Plug Details
46286/MAR/C/1007 Rev F	Refurbishment of Western Jetties - Stage 1A Jetty - Layout of Precast Units
46286/MAR/C/1008 Rev J	Refurbishment of Western Jetties - Stage 1A Jetty - GA & Dets of precast Units - Sheet 1
46286/MAR/C/1009 Rev D	Refurbishment of Western Jetties - Stage 1A Jetty - GA & Dets of precast Units - Sheet 2
46286/MAR/C/1010 Rev F	Refurbishment of Western Jetties - Stage 1A Jetty - Dets of Berth Fittings & Furniture - Sheet 1
46286/MAR/C/1011 Rev D	Refurbishment of Western Jetties - Stage 1A Jetty - Dets of Berth Fittings & Furniture - Sheet 2
46286/MAR/C/1013 Rev C	Refurbishment of Western Jetties - Stage 1A Jetty - Layout and Dets of Trench Covers
46286/MAR/C/1014 Rev G	Refurbishment of Western Jetties - Stage 1A Jetty - Deck Framing Plan
46286/MAR/C/1015 Rev F	Refurbishment of Western Jetties - Stage 1A Jetty - RC Dets of Deck Beams C Sheet 1
46286/MAR/C/1016 Rev E	Refurbishment of Western Jetties - Stage 1A Jetty - RC Dets of Deck Beams C Sheet 2
46286/MAR/C/1017 Rev E	Refurbishment of Western Jetties - Stage 1A Jetty - RC Dets of Deck Beams B Sheet 1
46286/MAR/C/1018 Rev E	Refurbishment of Western Jetties - Stage 1A Jetty - RC Dets of Deck Beams B Sheet 2
46286/MAR/C/1019 Rev B	Refurbishment of Western Jetties - Stage 1A Jetty - RC Dets of Deck Beams C Sheet 3
46286/MAR/C/1020 Rev F	Refurbishment of Western Jetties - Stage 1A Jetty - RC Dets of Precast Deck Slab Units
46286/MAR/C/1021 Rev E	Refurbishment of Western Jetties - Stage 1A Jetty - RC Dets of Insitu Deck Slab Units Sheet 1
46286/MAR/C/1022 Rev D	Refurbishment of Western Jetties - Stage 1A Jetty - RC Dets of Insitu Deck Slab Units Sheet 2
46286/MAR/C/1023 Rev B	Refurbishment of Western Jetties - Stage 1A Jetty - RC Dets of Deck Beams B Sheet 3
46286/MAR/C/1024 Rev B	Refurbishment of Western Jetties - Stage 1A Jetty - RC Dets of Deck Beams B Sheet B
46286/MAR/C/1025 Rev D	Refurbishment of Western Jetties - Stage 1A Jetty - Service Gallery RC Dets - Sheet 1
46286/MAR/C/1026 Rev E	Refurbishment of Western Jetties - Stage 1A Jetty - RC Dets of Precast Units A, B, C Sheet 1

46286/MAR/C/1027 Rev D	Refurbishment of Western Jetties - Stage 1A Jetty - RC Dets of Precast Units A, B, C Sheet 2
46286/MAR/C/1028 Rev D	Refurbishment of Western Jetties - Stage 1A Jetty - RC Dets of Precast Units A, B, C Sheet 3
46286/MAR/C/1029 Rev D	Refurbishment of Western Jetties - Stage 1A Jetty - RC Dets of Precast Units A, B, C Sheet 4
46286/MAR/C/1030 Rev D	Refurbishment of Western Jetties - Stage 1A Jetty - RC Dets of Precast Units A, B, C Sheet 5
46286/MAR/C/1031 Rev B	Refurbishment of Western Jetties - Stage 1A Jetty - RC Dets of Precast Units Sheet 6
46286/MAR/C/1032 Rev F	Refurbishment of Western Jetties - Stage 1A Jetty - RC Dets of Transverse Beams Sheet 1
46286/MAR/C/1033 Rev E	Refurbishment of Western Jetties - Stage 1A Jetty - RC Dets of Transverse Beams Sheet 2
46286/MAR/C/1034 Rev E	Refurbishment of Western Jetties - Stage 1A Jetty - RC Dets of Transverse Beams Sheet 3
46286/MAR/C/1035 Rev E	Refurbishment of Western Jetties - Stage 1A Jetty - RC Dets of Transverse Beams Sheet 4
46286/MAR/C/1036 Rev C	Refurbishment of Western Jetties - Stage 1A Jetty - RC Dets of Transverse Beams Sheet 5
46286/MAR/C/1037 Rev B	Refurbishment of Western Jetties - Stage 1A Jetty - Service Gallery RC Dets - Sheet 2
46286/MAR/C/1038 Rev E	Refurbishment of Western Jetties - Stage 1A Jetty - RC Dets of Misc Deck Beams
46286/MAR/C/1040 Rev F	Refurbishment of Western Jetties - Stage 1A Jetty - Substation Building GA and Foundations
46286/MAR/C/1041 Rev D	Refurbishment of Western Jetties - Stage 1A Jetty - RC Dets of Substation Foundations
46286/MAR/C/1042 Rev E	Refurbishment of Western Jetties - Stage 1A Jetty - Layout and Dets of Sewage Tank
46286/MAR/C/1043 Rev E	Refurbishment of Western Jetties - Stage 1A Jetty - RC Details of Sewage Tank
46286/MAR/C/1044 Rev C	Refurbishment of Western Jetties - Stage 1A Jetty - RC Details of Oil Interceptor Housing
46286/MAR/C/1046 Rev B	Refurbishment of Western Jetties - Stage 1A Jetty - RC Details Type P9 Precast Units - Sheet 1
46286/MAR/C/1047 Rev D	Refurbishment of Western Jetties - Stage 1A Jetty - RC Details Type P9 Precast Units - Sheet 2
46286/MAR/C/1048 Rev C	Refurbishment of Western Jetties - Stage 1A Jetty - RC Details Substation Founds - Sheet 1
46286/MAR/C/1049 Rev C	Refurbishment of Western Jetties - Stage 1A Jetty - RC Details Substation Founds - Sheet 2
46286/MAR/C/1050 Rev D	Refurbishment of Western Jetties - Stage 1A Jetty - Service Gallery Precast Type 4 Units GA
46286/MAR/C/1051 Rev C	Refurbishment of Western Jetties - Stage 1A Jetty - Misc Dets - Sheet 1

46286/MAR/C/1052 Rev B	Refurbishment of Western Jetties - Stage 1A Jetty - RC Dets of Misc Dets
46286/MAR/C/1053 Rev B	Refurbishment of Western Jetties - Stage 1A Jetty - RC Dets of Service Trenches
46286/MAR/C/1055 Rev D	Refurbishment of Western Jetties - Stage 1A Jetty - Road Layout and Details
46286/MAR/C/1060 Rev D	Refurbishment of Western Jetties - Stage 1A Jetty - Jetty Earthing Layout and Details
46286/MAR/C/1065 Rev F	Refurbishment of Western Jetties - Stage 1A Jetty - Layout of Substation Building
46286/MAR/C/1058 Rev C	Refurbishment of Western Jetties - Stage 1A Jetty - Layout and Details of Floating Fenders
46286/MAR/C/1080 Rev C	Refurbishment of Western Jetties - Stage 1A Jetty - Misc Dets - Sheet 2
46286/MAR/C/1090 Rev B	Refurbishment of Western Jetties - Stage 1A Jetty - Pile A8 Remedial Works - RC Details of Type 3 Units
46286/MAR/C/1060 Rev A	Refurbishment of Western Jetties - Stage 1A Jetty - Precast Units Type 1 & 2 - Misc RC Dets

	Western Jetties Drawings - CIVILS
46286/MAR/C/1101 Rev D	Refurbishment of Western Jetties - Stage 1B Jetty - GA
46286/MAR/C/1102 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - Typical Construction Sequence Grids A, B and C
46286/MAR/C/1103 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - Typical Sections and Details - Sheet 1
46286/MAR/C/1104 Rev D	Refurbishment of Western Jetties - Stage 1B Jetty - Typical Sections and Details - Sheet 2
46286/MAR/C/1105 Rev D	Refurbishment of Western Jetties - Stage 1B Jetty - Pile Layout and Schedule
46286/MAR/C/1106 Rev D	Refurbishment of Western Jetties - Stage 1B Jetty - Pile Plug Details
46286/MAR/C/1107 Rev G	Refurbishment of Western Jetties - Stage 1B Jetty - Layout of Precast Units
46286/MAR/C/1108 Rev E	Refurbishment of Western Jetties - Stage 1B Jetty - GA and Details of Precast Units
46286/MAR/C/1109 Rev D	Refurbishment of Western Jetties - Stage 1B Jetty - GA and Details of Precast Units - Sheet 2
46286/MAR/C/1110 Rev D	Refurbishment of Western Jetties - Stage 1B Jetty - Service Gllery Precast - Type 4 Units GA
46286/MAR/C/1111 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - Details of Berth Fittings and Furniture - Sheet 1
46286/MAR/C/1112 Rev B	Refurbishment of Western Jetties - Stage 1B Jetty - Details of Berth Fittings and Furniture - Sheet 2

46286/MAR/C/1114 Rev E	Refurbishment of Western Jetties - Stage 1B Jetty - Deck Framing Plan
46286/MAR/C/1115 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - Layout and Details of Floating Fenders
46286/MAR/C/1116 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - Jetty Earthing Layout and Details
46286/MAR/C/1117 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - Road Layout and Details
46286/MAR/C/1119 Rev B	Refurbishment of Western Jetties - Stage 1B Jetty - Layout and Details of Service Trench Covers
46286/MAR/C/1120 Rev B	Refurbishment of Western Jetties - Stage 1B Jetty - RC Details of Precast
46286/MAR/C/1121 Rev E	Refurbishment of Western Jetties - Stage 1B Jetty - RC Details of Precast
46286/MAR/C/1122 Rev D	Refurbishment of Western Jetties - Stage 1B Jetty - RC Details of Precast
46286/MAR/C/1123 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - RC Details of Precast
46286/MAR/C/1124 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - RC Details of Precast
46286/MAR/C/1125 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - RC Details of Precast
46286/MAR/C/1126 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - RC Details of Precast
46286/MAR/C/1128 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - RC In-Situ
46286/MAR/C/1129 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - RC In-Situ
46286/MAR/C/1130 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - RC In-Situ
46286/MAR/C/1131 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - RC In-Situ
46286/MAR/C/1132 Rev D	Refurbishment of Western Jetties - Stage 1B Jetty - RC Deck Beams Grid C Sheet 1
46286/MAR/C/1133 Rev D	Refurbishment of Western Jetties - Stage 1B Jetty - RC Deck Beams Grid C Sheet 2
46286/MAR/C/1134 Rev D	Refurbishment of Western Jetties - Stage 1B Jetty - RC Deck Beams Grid C Sheet 3
46286/MAR/C/1135 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - RC Deck Beams Grid C Sheet 4
46286/MAR/C/1137 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - RC Transverse Beams Sheet 1
46286/MAR/C/1138 Rev D	Refurbishment of Western Jetties - Stage 1B Jetty - RC Transverse Beams Sheet 2
46286/MAR/C/1139 Rev D	Refurbishment of Western Jetties - Stage 1B Jetty - RC Transverse Beams Sheet 3

46286/MAR/C/1140 Rev D	Refurbishment of Western Jetties - Stage 1B Jetty - RC Transverse Beams Sheet 4
46286/MAR/C/1141 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - RC Transverse Beams Sheet 5
46286/MAR/C/1142 Rev D	Refurbishment of Western Jetties - Stage 1B Jetty - RC Transverse Beams Sheet 6
46286/MAR/C/1143 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - RC Miscellaneous Beams Sheet 1
46286/MAR/C/1144 Rev D	Refurbishment of Western Jetties - Stage 1B Jetty - RC Miscellaneous Beams Sheet 2
46286/MAR/C/1146 Rev E	Refurbishment of Western Jetties - Stage 1B Jetty - RC Precast Slab Units Sheet 1
46286/MAR/C/1147 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - RC Precast Slab Units Sheet 2
46286/MAR/C/1148 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - RC Precast Slab Units Sheet 3
46286/MAR/C/1149 Rev B	Refurbishment of Western Jetties - Stage 1B Jetty - RC Insitu Deck Slab Sheet 1
46286/MAR/C/1150 Rev B	Refurbishment of Western Jetties - Stage 1B Jetty - RC Insitu Deck Slab Sheet 2
46286/MAR/C/1151 Rev B	Refurbishment of Western Jetties - Stage 1B Jetty - GA & RC Details of In-situ Deck Planks
46286/MAR/C/1152 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - Service Gallery Details Sheet 1
46286/MAR/C/1153 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - Service Gallery Details Sheet 2
46286/MAR/C/1154 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - RC Details Oil Interceptor Housing
46286/MAR/C/1155 Rev D	Refurbishment of Western Jetties - Stage 1B Jetty - Layout of Substation Building
46286/MAR/C/1156 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - Substation Building - GA and Civil Works
46286/MAR/C/1157 Rev B	Refurbishment of Western Jetties - Stage 1B Jetty - Substation Building - GA and Civil Works Dets
46286/MAR/C/1158 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - Substation Building - RC Details Sheet 1
46286/MAR/C/1159 Rev B	Refurbishment of Western Jetties - Stage 1B Jetty - Substation Building - RC Details Sheet 2
46286/MAR/C/1160 Rev B	Refurbishment of Western Jetties - Stage 1B Jetty - Substation Building - RC Details Sheet 3
46286/MAR/C/1161 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - Middle Slip Jetty Modification - GA
46286/MAR/C/1162 Rev B	Refurbishment of Western Jetties - Stage 1B Jetty - Middle Slip Jetty Modification - RC Dets
46286/MAR/C/1163 Rev B	Refurbishment of Western Jetties - Stage 1B Jetty - Misc Dets

46286/MAR/C/1165 Rev B	Refurbishment of Western Jetties - Stage 1B Jetty - RC Dets Service Trenches
46286/MAR/C/1166 Rev B	Refurbishment of Western Jetties - Stage 1B Jetty - Substation Building - RC Details Sheet 4
46286/MAR/C/1170 Rev B	Refurbishment of Western Jetties - Stage 1B Jetty - Elevation on Grid B
46286/MAR/C/1171 Rev C	Refurbishment of Western Jetties - Stage 1B Jetty - RC Details of Precast
46286/MAR/C/1172 Rev B	Refurbishment of Western Jetties - Stage 1B Jetty - GA and Dets Units Type B Sheet 2
46286/MAR/C/1173 Rev B	Refurbishment of Western Jetties - Stage 1B Jetty - RC Dets Units Type B Sheet 1
46286/MAR/C/1174 Rev B	Refurbishment of Western Jetties - Stage 1B Jetty - RC Dets Units Type B Sheet 2
46286/MAR/C/1175 Rev B	Refurbishment of Western Jetties - Stage 1B Jetty - RC Dets Units Type B Sheet 3
46286/MAR/C/1176 Rev B	Refurbishment of Western Jetties - Stage 1B Jetty - RC Dets Units Type B Sheet 4
46286/MAR/C/1180 Rev B	Refurbishment of Western Jetties - Stage 1B Jetty - GA & RC Details Type 12a

Appendix P – Marine Licence

The Marine Licence (Ref: MLA2012/00474/1) dated 17 September 2014, is attached.

Appendix Q – MoD Sustainability Appraisal for the QEC Base Porting Projects

Information that has previously been provided in the tender period and has not changed will not be reissued.

Appendix R – Archaeological Written Scheme of Investigation

Information that has previously been provided in the tender period and has not changed will not be reissued.

Appendix S – Maintenance Dredging Requirements

Information that has previously been provided in the tender period and has not changed will not be reissued.

Appendix T – Clarifications Table

The Project Clarifications Table version as at issue of the Invitation to Submit Final Tender is attached.