Boskalis
Westminster

Dredging And Discharge Operations

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PROJECT NAME: **Cardiff Term Maintenance 2017-2022 Campaign No. 4**
PROJECT NUMBER: **826-12489**

CLIENT NAME: Cardiff Harbour Authority

Boskalis Westminster

DOCUMENT CONTROL

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Boskalis Westminster

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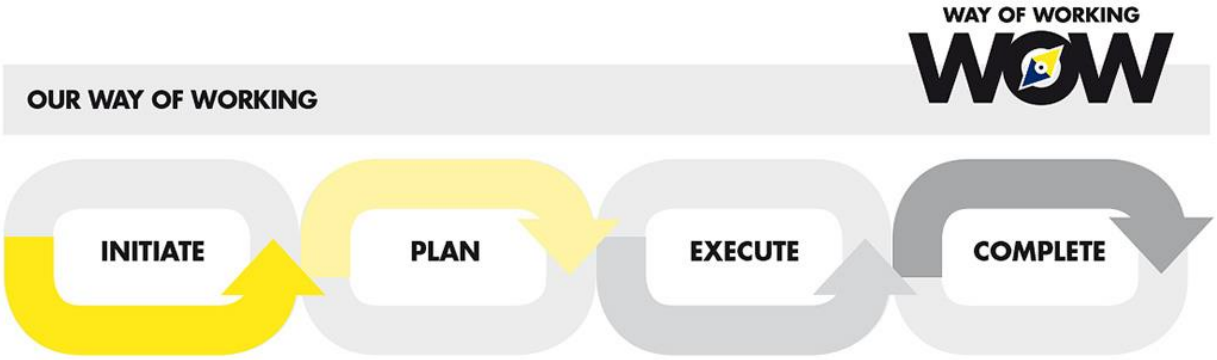
1. INTRODUCTION

This Method Statement may be used to support a Safe System of Work for a specific activity following the outcome of a SHE Risk Assessment.

The content of a Method Statement is adapted to meet certain project or client requirements, although the most likely Method Statement items to be considered are contained within this model.

The completed document shall be made available to every person identified as having a specific responsibility.

This document forms part of the Boskalis Way of Working, the integrated quality management system applicable to all operations in Boskalis. The Boskalis Way of Working is structured around four Phases as pictured below. This Dredging And Discharge Operations is typically used in the PLAN and EXECUTE Phases.



More detailed information about the Boskalis Way of Working can be found in the Group Manual and the User Guide. A dedicated website with all supporting materials is available at wow.boskalis.com.

2. DESCRIPTION OF TASK / OPERATION

Term maintenance dredge, 4th campaign of present contract from 2017 ending in 2022. The contract involves the maintenance dredging and ploughing of Cardiff Outer Harbour & Approach Channel & in general ploughing in locks 2,3, and on the odd accasion lock 1.
The dredged material is then discharged by the tshd at the designated sea disposal site, in accordance with the present marine disposal licence DML 1540 which is valid from 18-4-16 until 17-4-19. In addition to the actual dredging with the tshd, material from the centre area of the above mentioned locks is to be ploughed out into the Outer Harbour.
The works also involve the joint undertaking i.e CHA & BWL of a Pre & Post Outer Harbour structure survey.
Before the dredging works commence a Pre-Dredge survey will be carried out, and the 4 no. Approach Channel navigation buoys will be shifted off station by Cardiff Harbour Authority.
During the execution of the works interim dredge progress surveys will be done, and on completion of the works a Post-Dredge survey will be carried out.
Cardiff Harbour Authority will then put the 4 no. Approach Channel navigation buoys back on station.

2.1. Scope of Work

The works consist of maintenance dredging in the Outer Harbour & Approach Channel & locks, if so requested by the client, the works are split into three main areas as listed below:

- Area 1 dredge to -7.5m ODN (-1.2m CD), or hard sea bed.
- Area 2 dredge to -8.0m ODN (-1.7m CD), or hard sea bed.
- Area 3 Harbour slope area
- Centre area of locks 2&3 and possibly lock 1 to -7.0m ODN, (-0.70m CD).

Applicable is also a paid tolerance of 0.30cm.

2.2. Working method

Trailer suction hopper dredger (tshd) ‘’Sospan Dau’’.
When there is sufficient water in the channel, and wind and sea state allow the (tshd) to sail safely, it will enter the work area to commence dredging the Approach Channel and Outer Harbour. Prior to commencing it may empty the hopper well of all water ballast via the overboard discharge pipe.

In the early part of the dredge programme it is anticipated that the bulk of material will be dredged from the Approach Channel. Soon to follow, it is also important that dredging commences as soon as possible in the Outer Harbour dredge area, as well.

Dredging in the Outer Harbour area, will only be carried out over a few hours on each side of high water, and only when weather and sea conditions permit.

Note: concerning the above mentioned operations with the (tshd), the dredge master will always have the final say on whether or not it is possible to dredge.

No dredging operations will be carried out within the contract specified distance off the Barrage structures, as there are areas of stone and rock protection built into the Barrage breakwater construction.

Outer Harbour Entrance – due to it’s narrow width between the breakwater arms, dredging in this location will be limited to the central section, with material expected to slump in from the sides.
Due to the tidal restrictions associated with the works, dredging operations will be undertaken primarily on a single shift basis.

Interim surveys will be carried out at frequent intervals in order to accurately monitor the works and to ensure that the (tshd) has updated information installed in the onboard dredge computer, in order to maximize production.

The trailing suction hopper dredger (tshd) is a normal sea going ship equipped with a suction pipe. At the end of the suction pipe is a draghead, which can be lowered onto the seabed while the (tshd)

navigates at a reduced speed. Horizontal control will be by Differential Global Positioning System (DGPS).

During the forward movement of the (tshd), a thin layer of material is loosened together with some transport water is sucked into the hopper well, via the suction pipe and a centrifugal pump, until the hopper well is filled, during loading excess water with minimal sediment content flows back out again.

On completion of loading the suction pipe with draghead is retrieved on board, the (tshd) will then sail to the designated spoil ground, which in this case is Cardiff Grounds LU110, and discharge load, then will sail back to dredge area for next load, and weather and tide permitting so this cycle will continue until completion of this campaign.

The dredging operations will continue over the available high water tides 24 hours per day 7days per week, assisted by a plough/survey boat .
See: also Method Statement included with BWL offer.

Plough/Survey boat Tioga B (Bay Towage)
The plough/survey boat will be tidally restricted almost to the same extent as the (tshd) ‘’SospanDau’’. The plough is used to assist maximizing the efficiency of the (tshd), and provide a reasonably uniform dredged profile, this is gradually achieved by ploughing material from areas above desgn depth into void spaces created by the (tshd).

In addition to the above mentioned the plough is very necessary in this location for pulling material out from corner areas inaccessible to the (tshd), into a location where it can be dredged.

The plough is essentially an open metal box approximately 4.5 metres wide suspended from a suitable vessel by control wires attached to an ‘A’ frame positioned on the stern of the vessel.

Vertical depth is monitored at all times by using a series of calibration marks on the plough control wires, in conjuction with tidal information taken from a RTG transmitter installed close to the operation area, which has been calibrated to the correct datum. Horizontal positioning is achieved using Differential Global Positioning System (DGPS).

Ploughing within locks – The material in the central part of the locks will be removed only, Barrage Control will then flush out the locks. The ploughed material will be pulled out into a suitable location in the Outer Harbour for the (tshd) to dredge.

3. WORK LOCATION, ACCESS AND SAFETY INSTRUCTIONS

Before any work commences, a toolbox talk/kick off meeting is to be held by the Project Manager to make all persons involved aware of the required works and possible risks.

Access to the vessels will be via gangway/pontoon at Penarth Marina. Ladders are avaibalble in the outer harbour and lock system for emergency use only.
Suitable vehicles will be available for shore personnel and for crew transportation as and when required. Land based personnel must always wear the appropriate PPE ie hard hat / hi-vis clothing and safety footwear. Water bound personnel must wear lifejackets when embarking or disembarking, and wherever there is a risk of falling into the water and where vessel procedures dictate. All personnel must wear hard hats when operations are taking place. All personnel must abide by instructions given to them by appointed crewmen. If at any time personnel feel at risk or unsafe stop the task or do not board the vessel and when safe to do so report the problem to a supervisor who will report it to the Project Manager.

On board the vessel each visitor must adhere to applicable safety instructions, as displayed on board and/or given by the captain or on his behalf.

- Visitors must sign the visitors log onboard the vessel.

- First Aid will be given only by qualified first aiders.
- A first aid kit will be available onboard the vessel.
- For any injury that requires attention the supervisor will assess the next necessary steps to be taken.
- Emergency contact numbers are aboard and in the site office.

In the event of a fire, ordinance find or any other emergency all shore based personnel are to muster at the assembly point as briefed by the project manager.

Weather forecasts and tide predictions will be gathered by the vessel themselves and shore personnel will be advised to do the same.

The project will operate 24 hours a day and 7 days a week.

4. RESPONSIBILITIES

Responsible staff and contact details can be found in the attachments

Although some tasks will be delegated, the Project Manager is ultimately responsible for all safety, health and environmental aspects of the project. The Project Manager shall be responsible for ensuring that all the necessary resources are made available to execute the work to programme and specification.

The Project Manager is in charge of the works and project employees, and has the responsibility to supervise and where relevant enforce the SHE aspects accompanying those works. This includes amongst others:to ensure that all the works are according to the safety standards set out for the project and that the vessel has all up to date information required.

Vessel Masters are responsible to comply with the SHE-Q Policy, Safety Instructions and project specific SHE instructions. They are furher responsible for the safety of all personnel onboard their vessel and are to ensure tool box talks are conducted with visitors and they are logged accordingly.

The Project Manager will liase closely with the client and his representative to ensure minimum disruption to the site, other vessels or members of the public.

5. INTERFACE MANAGEMENT

5.1. Progress meetings / monitoring

All reports (when practicable) to be sent before 06:00 AM the following day by e-mail to: Michael.brooke@boskalis.com .

The above mentioned report should contain the following information;

Daily Reporting
Among others:

- Sailing , working and all delay times
- Breakdown and delay times, incl. cause of delay
- Daily reports should close at 24:00

Weekly Reporting
Among others

- Fuel consumption
- Running hrs main engines
- Readings to be logged beginning each Saturday at 24:00 hrs.

Format is to be decided by agreement between Client and BWL

Other reports when available but before demobilisation;

- Electronic plots of Dumping Locations
- Written Log of Disposal

These will be a hand written log sheet or a computer generated form. Books and digital format are provided.

To be submitted after completion of the works.

- Incident, accident and damage reports, if applicable copy to be submitted soonest after incident took place.
- Engine room records showing running hours of main engines as well as fuel consumption during mobilisation with details of the bunkers taken

5.2. Containment of activities

Works vessels will keep a watch for unathorised vessel entering the works area. Constant contact with Cardiff Barrage Control will be maintained at al times.

5.3. Effect on local environment

There are no effects to the detriment to the local environment at this stage, Vessel when working at night will pay close attention to noise emissions.

5.4. Inductions and toolboxes

All Personnel and visitors will receive a site SHE Induction
Toolbox talk will be given as and when required.

6. SHE CONSIDERATIONS, HAZARDS AND PRECAUTIONS

- Striking of unidentified objects with draghead
- Potential fouling of draghead through debris
- Potental propeller fouling due to ropes and debris

7. PLANT, EQUIPMENT AND WELFARE

The TSHD Sospan Dau under supervision of Boskalis Westminster is planned for the removal of the material from the dredge area. Prior sailing to site a pre mobilization inspection to be undertaken whereby, among others, all necessary and required certification will be checked to ensure they are valid. The crew remain aboard operating a shift pattern.

The workboat Tioga B under the supervision of Boskalis Westminister is planned for the ploughing and survey works. The crew will stay ashore in local hotels and berth in Penarth Marina.

For the works the following PPE will be used:
Land Based: Hardhat, High vis clothing, safety footwear and gloves
Vessel Based: As above with addition of lifejackets.

Vessel details of the Sospan Dau can be found in annex 2.

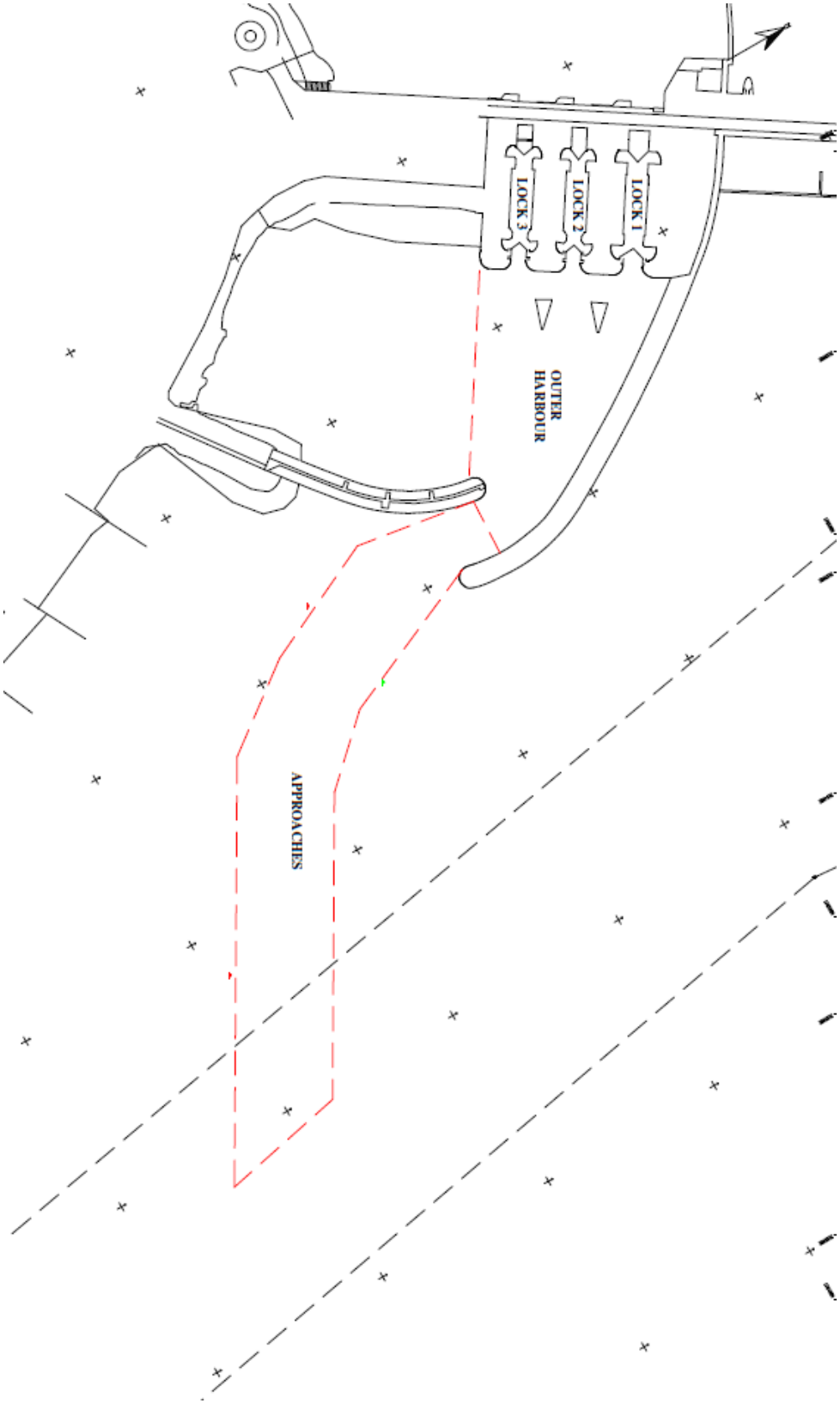
8. EMERGENCY PROCEDURES

All personnel will be made famillure with the BWL Emergency Plan and any additional Emergency procedures and contact detail of the client.

First Aid and fire fighting equipment will be available on all vessels and administered by trained competent personnel.

For any injury that requires attention the supervisor will assess the next necessary steps to be taken. Emergency contact numbers are aboard and in the site office

9. ANNEX 1 – DREDGE AREAS



10. ANNEX 2 - VESSEL SPECIFICATION "TSHD SOSPAN DAU"

Boskalis
Dredging & Marine Experts

EQUIPMENT SHEET

SOSPAN DAU
TRAILING SUCTION HOPPER DREDGER

CONSTRUCTION/CLASSIFICATION	
Built by	Ateliéres et Chantiers de la Manche
Year of construction	1978
Year of modification	2001 / 2012
Classification	I 3/3 hopper barge coastal waters – deep sea occasionally

MAIN DATA	
Gross tonnage	1,546
Length overall	72.80 m
Breadth	14.30 m
Moulded depth	3.80 m
Min. draught empty	1.80 m
Max. draught Int. load line	2.80 m
Max. draught dredging load line	3.30 m
Carrying capacity (D.W.)	1,850 t
Hopper capacity	1,500 m³
Suction pipe diameter	0.50 m
Max. dredging depth	32.00 m
Discharge systems	6 bottom doors/pump ashore/ rainbow installation
Sailing speed loaded	8.0 k
Total installed power	3,200 kW
Sand pump output	1,000 kW
Jet pump output	450 kW
Pump ashore output	1,000 kW
Propulsion power sailing	2 x 600 kW
Bow thruster	300 kW

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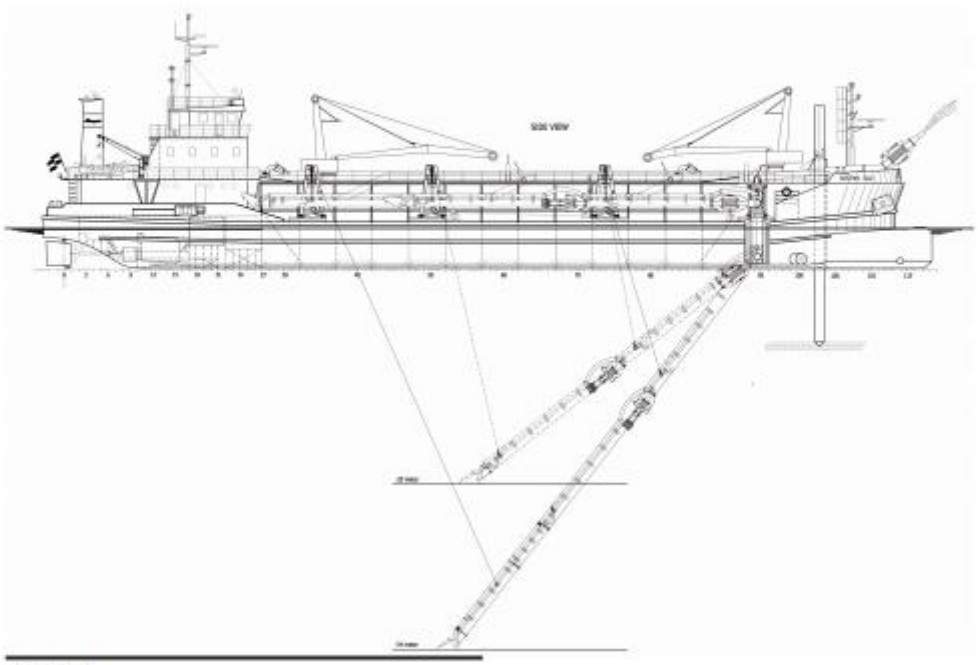
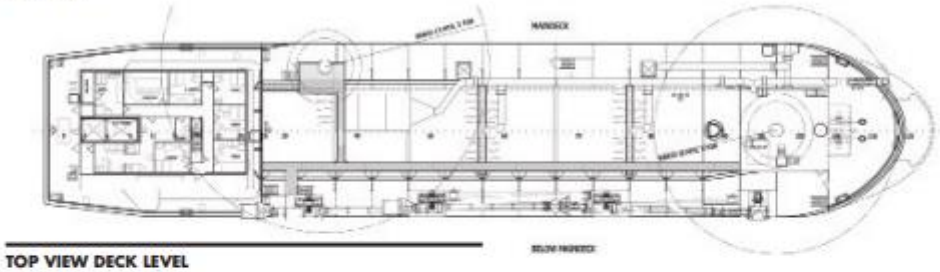
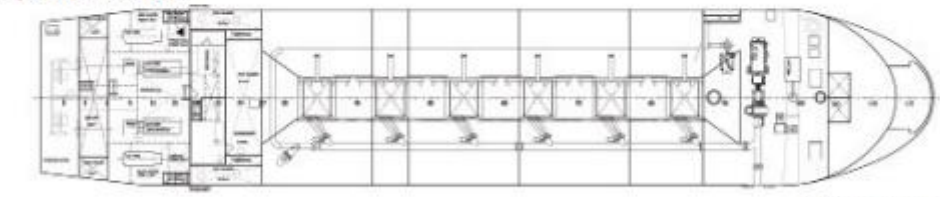


SIDE VIEW



TOP VIEW DECK LEVEL



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11. ANNEX 3 – VESSEL SPECIFICATION "WORKBOAT TIOGA B"

Bay Towage
Tugs & Workboats

Bay Towage & Salvage Co Ltd.
Anchorline Basin
Ramsden Dock
Barrow-in-Furness
Cumbria LA14 2TB
Tel 01229 830388
Email: info@baytowage.co.uk

TIOGA B

Certificate No: 11009
Iso 9001

UVDB Verify
empowered by Achilles

GENERAL
Deltatug 1575
Builder Damen Shipyards
11 ton Bollard Pull
Workboat Code Cat 2 – 60 miles offshore
Perkins Generators – 1 x 20kva , 1 x 12kva
8 ton Hydraulic Fwd Winch
11 ton Hydraulic Aft Winch
Plough 5.1m x 2m x 1m – weight 2.5 ton
Moonpool

DIMENSIONS
Length 15.93m
Beam 5.03m
Draft 2.2m

PROPULSION
2 x GM 12V71N with Kort Nozzles
2 Fixed Pitch Propellers

POWER
Output 730hp
Service Speed 10 knots
Bollard Pull 11 Tons

TANK CAPACITIES
Fuel Capacity 9000 ltrs
Water Capacity 1000 ltrs

DECK SPACE
2 Overnight cabins

NAVIGATION & COMMUNICATION
Furuno 1832 Radar
Raymarine Radar
2 x Sailor RT 2048 VHF
Furuno GP35 DGPS
Raymarine C120W Plotter
Furuno FA150 Class A AIS
Navtex
Koden Echosounder
Navitron NT921 Autopilot
Cellphone
Euronav Laptop Navigation
Furuno 1650 GPS Plotter
Icom ICM421 GMD85 VHF
Fluxgate Compass
Epirb

www.baytowage.co.uk