MARINE WORKS MANAGEMENT PLAN (MWMP)

Kurnell Port and Berthing Project

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1.0 General

This Marine Works Management Plan (herein referred to as 'Plan') provides a management strategy to effectively manage Health, Safety & Environment risks associated with works undertaken by Contractors for Caltex Kurnell Port and Berthing Upgrade – Dredging Project.

This Plan is applicable to all encompassing Caltex and Contractor Construction staff, crews, vessels, equipment and sub-contractors.

This Plan establishes the baseline for Construction Management's commitment to Health, Safety and Environment on all aspects of its Marine Works within Botany Bay and surrounds.

2.0 Purpose

The safe coordination of works by Caltex employees and Contractors must be ensured. The primary consideration when undertaking dredging operations is to endeavour to adhere to the requirements of both legislation and specific client expectations, ensuring these are met and that risk to people, plant, property, equipment and the environment are adequately identified, assessed and managed to As Low As Reasonably Practicable (ALARP).

The purpose of this Plan is to provide minimum or standard requirements and information to ensure works are carried out in a safe and controlled manner and to ensure relevant hazards remain at a level as low as reasonably practicable in accordance with but not limited to the following Legislative requirements/regulatory bodies:

3.0 Introduction

Caltex Refineries are currently upgrading their berthing facilities at their Kurnell wharf. The Marine Work Area (MWA) is defined on the General Arrangement Drawing No: 148012 issued on 26.10.12. The MWA is comprised of three Zones:

AREA 1 – Turning Circle and Vessel Approach Area

- Approximately 32900 m^3 of Material is to be dredged and removed

AREA 2 – Sub Berth Area

- Approximately 8900 m^3 of material to be dredged and removed
- Installation of a new chain, Tanker Marine Buoys and an additional anchor

AREA 3 – Berth 1 and Berth 2 area

- Approximately 59100 m^3 of Material is to be dredged and removed
- Installation of 3 new Marine Loading Arms at Fixed Berth 1
- Sheet pile wall implementation to protect the seabed from subsiding in structural pile locations

4.0 Scope of works

4.1 Dredging (Heron Constructions)

4.1.1 Stage 1 – Area 1 Highly Contaminated Material

This dredging will be carried out first and be carried out to the details shown on the Drawings and in accordance with the technical specification. All dredging in this area will be carried out in accordance with instruction or directions of the Principal's Representative.

This area is to be dredged with no overflow allowed from loading of barges. All material dredged is to be disposed of in the designated offshore Spoil Ground area.

4.1.2 Stage 2 – Area 3 in the vicinity of the existing jetty:

Following Stage 1, dredging shall be undertaken for Under Jetty (Area 3) and for areas 10 m from the fender line. Under Jetty (Area 3) is defined as the area extending from the alignment of the fender line from Berth 1 (Area 3) to the alignment of the fender line from Berth 2 (Area 3).

This is to allow for potential slumping of material from areas not accessible by the dredge. The Principal's Representative can direct the Dredging Contractor to re-dredge this area at a later stage.

Dredging shall not be undertaken at the southern end of Berth 1 within 25 m of the proposed sheet pile wall and rock revetment.

Area 3 is to be dredged with no overflow allowed from loading of barges.

4.1.3 Stage 3 – Area 1 (Swing Basin and Approach Areas) (excluding Area 1 Highly Contaminated Material), Area 2 (Sub-Berth Area) and Area 3 (Berth 2)

This dredging will follow the Stage 1 and 2 dredging unless otherwise instructed by Principal's Representative. The dredging will be carried out to the details shown on the Drawings and in accordance with the technical specification. All dredging in this area will be carried out in accordance with instruction or directions of the Principal's Representative. Area 1 and 2 can be dredged with overflow allowed from loading of barges. Area 3 is to be dredged with no overflow allowed from loading of barges. Notwithstanding overflow being allowed, the Dredging Contractor is to limit turbidity generation as much as is practicably possible. All material dredged is to be disposed of in the designated offshore Spoil Ground area or where suitable used to cover pipelines or fill deepened areas as specified within this scope.

4.1.4 Stage 4 – Area 3 (Berths 1 and Under Jetty):

This dredging will follow the Stage 3 dredging unless otherwise instructed by Principal's Representative. All dredging in this area will be carried out in accordance with instruction or directions of the Principal's Representative.

This area is to be dredged with no overflow allowed from loading of barges. All material dredged is to be disposed of in the designated offshore Spoil Ground area.

A sheet pile wall and revetment will be constructed at the southern end of Berth 1 in Area 3. Dredging in the vicinity of the sheet pile wall is to be undertaken after its installation. The Dredging Contractor is to allow for carrying out the Works in a sequential manner to allow the installation of the sheet pile wall.

The Dredging Contractor is also to dredge the design profile required for the construction of the revetment and scour protection.

The Dredging Contractor may be directed by the Principal's Representative to re-dredge the area Under Jetty (Area 3).

4.2 Sheet Pile Wall and Rock Revetment (Waterway Construction)

Caltex Refineries are currently upgrading their berthing facilities at their Kurnell wharf facility. Part of the upgrade works is to remove seabed material so there is a depth of -12.8m CD (dredging) in berth 1 location (situated south side of the wharf). Due to the dredging works been in close proximity to the existing jetty structural piles, a sheet pile wall design has been incorporated to protect the seabed from subsiding in the pile location. The Contractor engaged by Caltex is to supply and install the sheet pile wall, along with scour protection and revetment works around the location.

The Sheet pile wall is approximately 82m long and will have a finished height approximately 10m below water level. Once the sheet pile wall installation is completed, bulk dredging will take place in the area east of the wall (berth 1). After the dredging is completed, the contractor will establish the Calliope barge again with an excavator on-board, to place scour protection rock at the walls base and behind so that no seabed material is required to be removed in future. There will also be some revetment works to the south of the wall, which will be undertaken with the excavator barge.

4.3 Berth and Mooring Equipment Upgrade (Ausbarge)

4.3.1 Number 1 Berth - Installation of the Marine Loading Arms (MLAs')

The Contractor is to assemble 3 new MLAs' at # 3 berth White Bay in Sydney Harbour. Once assembled the MLAs' will be loaded onto a crane barge and the necessary surveys and inspections are carried out the barge will be towed to the Caltex Marine Terminal Botany Bay and if conditions are suitable moored alongside the # 1 fixed berth. Given the proximity of the berth to the heads and the exposure to strong winds a suitable weather window will be required with particular emphasis on sea state. In the event of unsuitable weather and conditions the barge will be anchored in the eastern side of the wharf next to the existing workboat moorings or if conditions are excessive the barge will be towed to Woolooware Bay at the mouth of the Georges River until conditions improve. The MLA installation is planned to take approximately 1 week if conditions are suitable and upon completion the barge will be towed back to Sydney Harbour.

4.3.2 Number 3 Berth - Installation of new chain, TMBs' and Stevris anchor

As part of the upgrade project The Contractor will be towing a suitable crane barge ex Sydney Harbour to Botany Bay. The barge when not in use will be anchored on the eastern side of the Caltex Jetty in the area of the small vessel moorings. In the event of adverse weather conditions the tug and barge will move to a safe mooring within Woolooware Bay at the mouth of the Georges River. When in operation the barge will load chain and equipment at the Caltex Wharf and be towed to the intended location at the sub berth where it will replace existing mooring chain with new as well as carry out the installation of an extra # 6a anchor as per the Caltex berth upgrade design. Once the chain replacement and anchor installation is complete new TMBs will be installed. Operations are to be carried out in suitable shipping and weather windows as directed by Caltex and Sydney Ports Corporation. On days where operations cannot be carried out the equipment will be moored in locations as described above. The operations will be carried out over a number of months so as not to interfere with shipping movements or any other activities as prioritised by Caltex and SPC. On completion of the above works the plant and equipment will be demobilized back to Sydney Harbour.

5.0 Operations Plan

5.1 Weather Forecasts

Caltex and all of its contractors shall utilise the "One Single" Weather Forecasting Exchange System available at Caltex's Wharf Operations Control Room. SPC will maintain use and reference to the B.O.M. The system that indicates worse weather forecasts shall be followed and adhered to.

5.2 Dredging (Heron Constructions)

5.2.1 Mooring of Vessels - Normal Operations

a) Machiavelli – Backhoe Dredge

The Backhoe dredge Machiavelli during normal operations shall be moored via the spud leg system.

The dredger designed to withstand high side loads, be it from barges impacting the side, slewing with the excavator arm, or other such actions.

The two after-spuds can only be raised and lowered vertically. The forward spud is housed in a 'spud-carrier' and has approximately 7.5m of travel in a fore and aft direction, as well as the vertical movement. This feature is used to move the dredge along the line of dredging.

Where possible the dredger is to be positioned facing into the wind, and /or tide.

b) Tugs

In normal operating circumstances the tugs shall be moored in the following locations:

- Alongside the Backhoe dredge

c) Spilt Hopper Barges

In normal operating circumstances the Split Hopper Barges shall be moored in the following locations:

- Location 1 – Alongside the Backhoe Dredge
- Location 2 – Alongside the Tug at allocated moorings (western side of Runway 3LR)
- Location 3 – Caltex (Kurnell) moorings

5.2.2 Anchoring of Vessels – Inclement Weather

Weekly weather forecasts shall be received from Caltex Weather Exchange to ensure that operations are planned around poor weather events. This will allow the Dredge Superintendent to plan ahead for re-locating vessels as required.

The Contractor shall anchor all applicable vessels on the western side of the 3LR runway as weather dictates.

a) Machiavelli – Backhoe Dredge

In heavy weather (>2m significant wave height or >1.5m waves from the beam) the dredger should be lowered off the spud legs and secured by anchor/s; the spud legs may be kept partially extended to provide additional stability.

Two crews are usually required to let go or recover the anchor.

Only trained and experienced crew should be involved in the anchoring; new crew should understudy experienced personnel until they are fully familiar with the process and equipment.

Care needs to be taken at all times, but particularly when anchoring in heavy seas – the anchor-chain can 'snatch' without warning. The tug should be kept attached, with the tow taking the weight, until the anchor has been let go and the tow can be released and the anchor set.

When a forecast is received of potential poor weather, the Dredge Superintendent or Supervisor shall communicate with crew, as to the best available area for the backhoe to be moored and the timing of the relocation.

In inclement weather the Backhoe dredge shall be towed to the following 'safe haven' location on Western side of Runway 3LR. The estimated duration for the Dredger to relocate is approximately 40 minutes from the dredge site to the safe haven.

b) Tugs

When a forecast is received of potential poor weather, the Tug Master shall communicate with the Dredge Superintendent and his crew, as to the best available area for the tug to be moored and the timing of the relocation.

The following areas shall be utilised for the mooring of tugs depending on the formation of the weather event:

- Western side of Runway 3LR
- Alongside Dredger

The estimated duration to relocate the Tugs to the safe haven is approximately 20 minutes.

Tugs shall remain manned whilst on mooring or anchor.

c) Split Hopper Barges

When a forecast is received of potential poor weather, the Tug Master shall communicate with the Dredge Superintendent and his crew, as to the best available area for the SHB to be moored and the timing of the relocation. The following areas shall be utilised for the mooring of the SHB depending on the formation of the weather event:

- located on Western side of Runway 3LR
- Alongside Dredger

The estimated duration to relocate the barges to the safe haven is approximately 20 minutes.

The barges anchor shall be dropped as weather dictates in the allocated safe haven area.

Barges will need to be lit

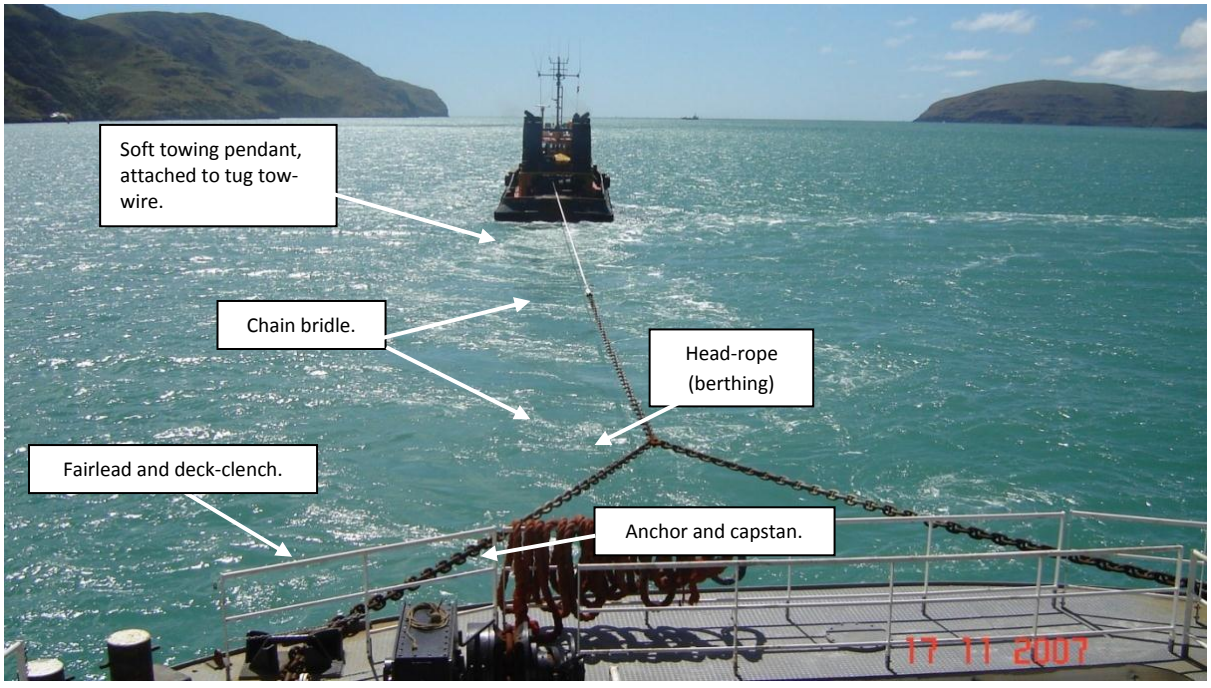
5.2.3 Towage

ALL towage movements of tug and barge that cross or use the Shipping Channel must be booked through the ShIPS system for approval by VTS staff. All other movements not utilising the Shipping Channel will not require booking into the ShIPS System.

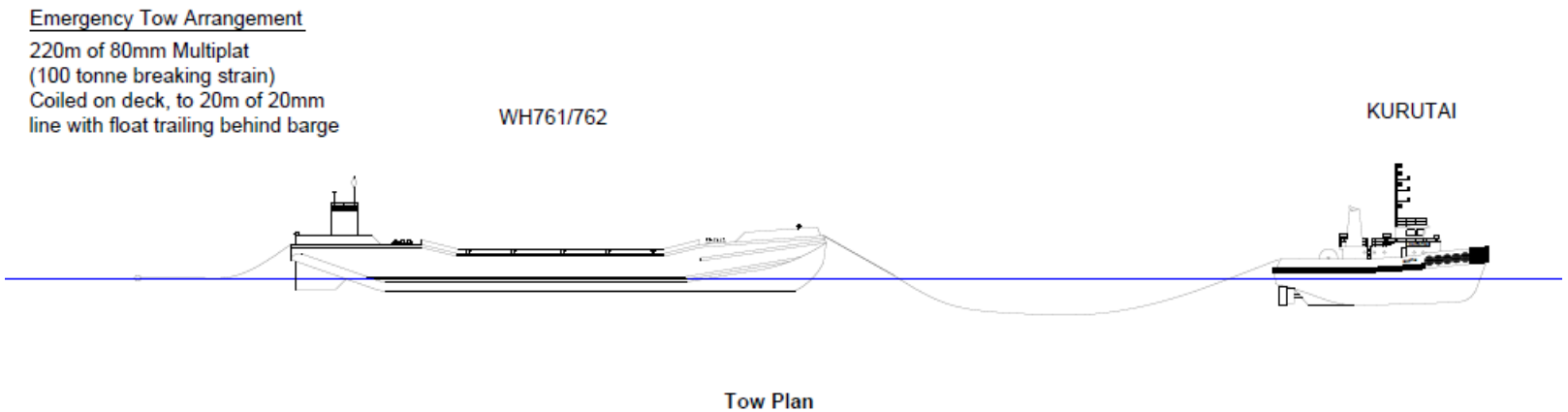
All movements of tug and barge must comply with the relevant sections of HMD and have VTS approval before moving.

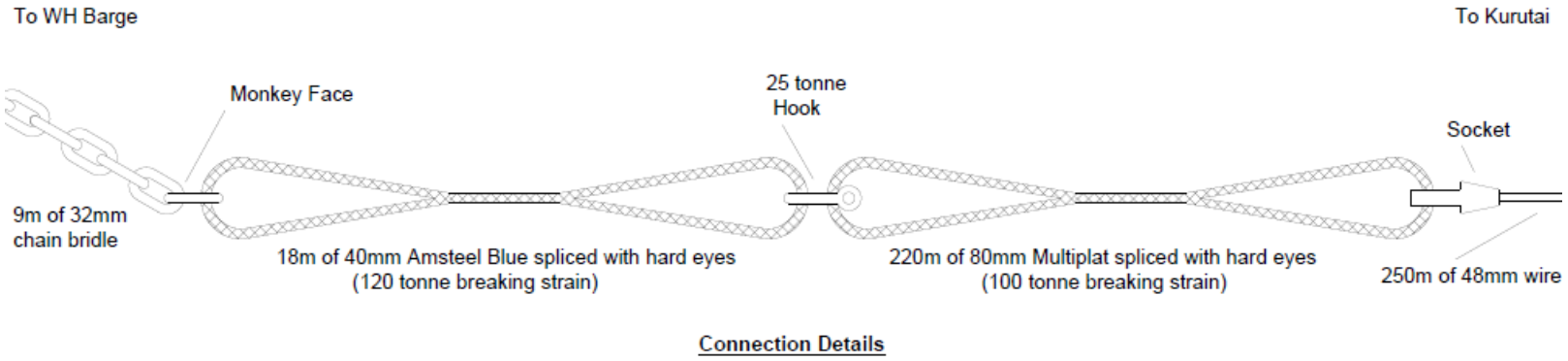
Machiavelli

The Machiavelli towage arrangement shall be in accordance with the following picture.



Tugs & Split Hopper Barges Towing Configurations





AS PER DREDGING AND OFFSHORE DISPOSAL METHODOLOGY

5.3 Sheet Pile Wall and Rock Revetment (Waterway Construction)

5.3.1 Operational Activity and Duration

The Calliope I crane barge is a brand new build 55m LOA x 18m wide dumb barge, wholly owned by The Contractor. The barge is fitted with Site Office, Workers amenities, ablution, generators, mooring winches and a 160Tonne Liebherr crawler crane fitted to the purpose built mountings on the barge deck.

The Calliope I barge will take part in the installation of sheet pile wall and rock placement to the western side of Caltex berth 2.

5.3.2 Installation AZ Sheet piles

- The Calliope I will be used as the platform for the sheet piles and vibratory equipment that shall be used to store and install sheet piles. The sheet piles will be installed fully by vibrational means.
- When installing the sheet piles, a temporary guide frame will be used to ensure the correct line and distance is maintained.

5.3.3 Scour and Revetment Rock Placement

The Calliope I will be used as the work platform for a long reach excavator, which will be used to place all rock on the seabed floor.

The rock will be transported to site by means of dumb barge and tug. Loading will take place at an offsite facility by WWC, which is yet to be determined. The dumb barge will be equipped with appropriate side barriers to prevent rocks from falling overboard. The transport barge has not yet been procured.

5.3.4 Navigation Equipment and Operations

The Contractor currently intend on using AusBarge tugs, "Blue Bulla" & "Mt Morpeth" to tow the Calliope I crane barge. This barge is well known by The Contractor from consistent towage in their home port and other projects by both companies.

The Contractor will Utilise AusBarge to assist with movements of barges to and from the Caltex Refinery construction area.

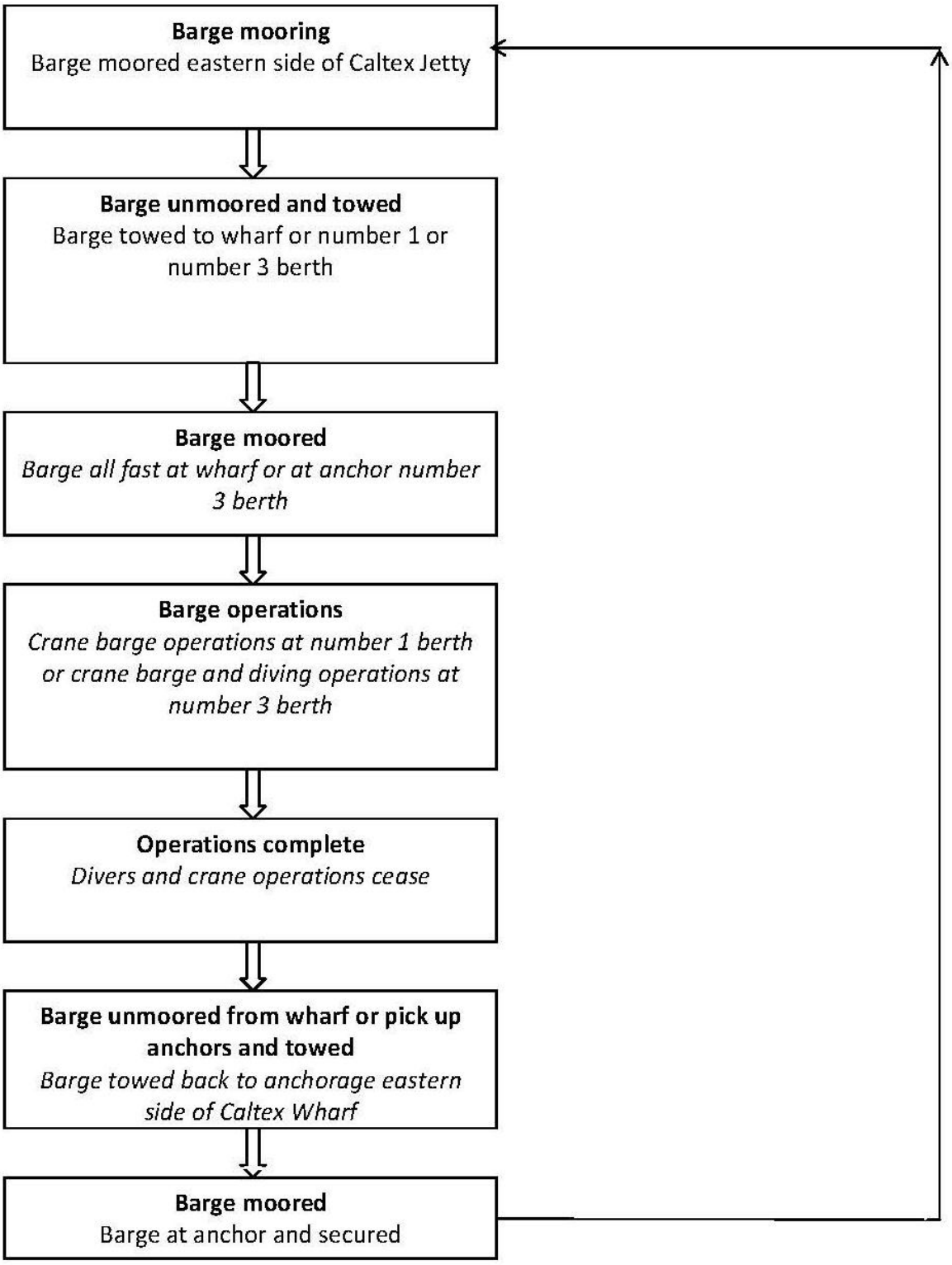
Navigational equipment is not installed on the Calliope I crane barge as it is not self-propelled and will always be towed with a tug. The navigation equipment installed on the AusBarge tugs is recent and of the highest quality electronics available.

Any passengers boarding the Calliope I and all other vessels are required to be inducted. As a consequence all crew and passengers are recorded for every passage conducted for notification to authorities when required

5.4 Berth and Mooring Equipment Upgrade (Ausbarge)

5.4.1 Barge Cycle

In general terms and subject to daily Caltex and SPC approvals and on the –proviso that all movements are cleared with VTS prior to execution, the barge cycle will be conducted as follows:



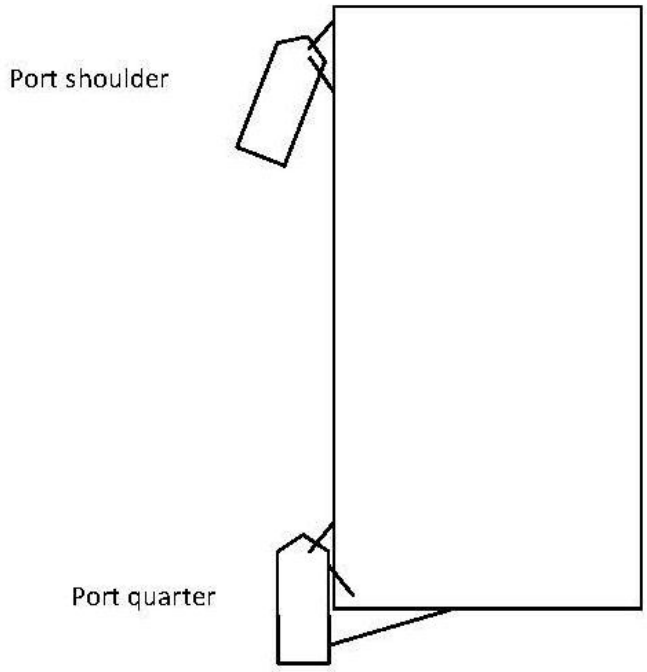
5.4.2 Operational premise

Both the installation of MLA's and the Sub berth upgrade will be carried out within the Caltex berths and adjacent area. There should be no reason to transit outside of this area other than in the event of taking shelter at Woolooware Bay in inclement weather conditions which given the draft of the vessels involved the vessels would navigate on the southern side of the Bay well away from other shipping channels. In considering on a daily basis whether operations are to be carried out the following points will be considered.

1. Suitable weather forecast
2. Other shipping entering, departing or occupying Caltex berths
3. Other commercial activities taking place within the area of operation ie dredging, wharf construction, ongoing berth maintenance, diving operations or any recreational extra ordinary event that may be taking place
4. Unless circumstances require it all work will be carried out in daylight hours as it represents the lowest risk profile for the project.

5.4.3 Barge handling guidelines

Whilst the barge is in transit, subject to the discretion of the Master, the tug and workboat will be made fast to the barge in the following way:



5.5 Operational Discussion:

In general terms the quarter tug will be attached to the barge in order to form a composite unit engine tug (head line, spring and stern line). Generally the tug will remain as a composite unit for berthing and mooring operations on either the port or starboard side of the barge depending on conditions ie wind or current or in the event of having to go alongside a berth the side to required. In the event of inclement weather it may be necessary for the tug to tow the barge on a tow line behind the tug.

The workboat when required will be made fast on either port or starboard shoulder depending on operational circumstances in such a manner that it can square off and push/pull at low speed and can provide propulsion and braking assistance as required when alongside.

The barge will be fitted with winches and a 4 point mooring system fit for purpose. The barge anchors will be fitted with buoys and retrieving pennants. The mooring system will enable the barge to anchor and accurately position over the worksite. When not in operation the mooring system will allow the barge to occupy a relatively small mooring envelope given it will not swing at anchor. Anchor chains or cables will not be placed in any area that will be utilized by commercial shipping during that operational window.

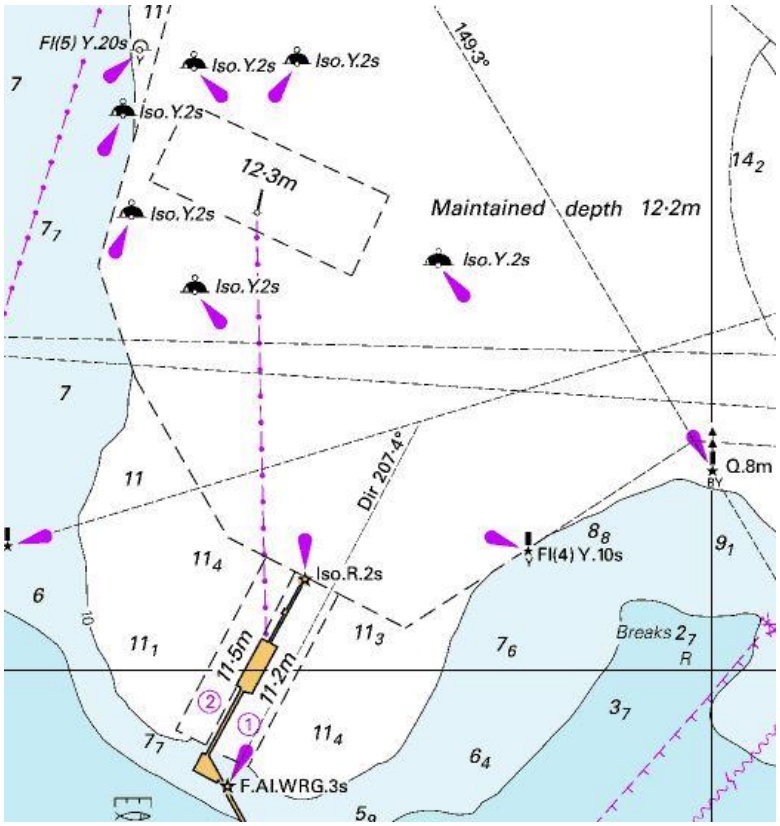
If the mooring wires and anchors protrude outside the Caltex leased areas (which is not foreseen) exclusion buoys will be placed in consultation and approval with SPC.

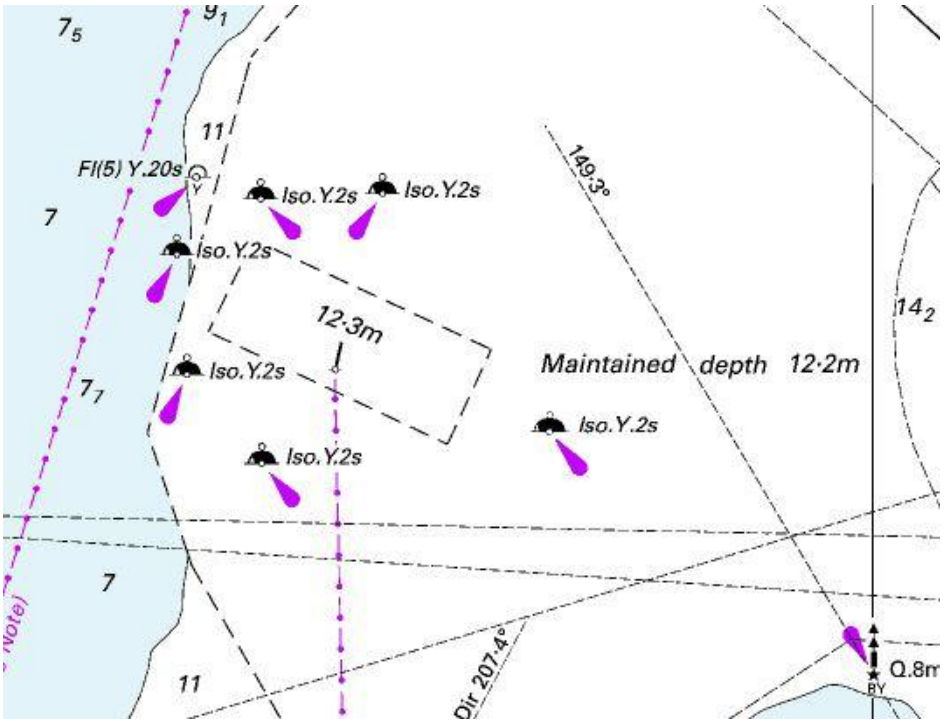
The barge and tug will display the appropriate day shapes and lights when required under the International Rules for Prevention of Collision at Sea, Automatic Identification System (AIS) as well as any additional requirement that the SPC, Caltex or The Contractor may deem necessary at the time.

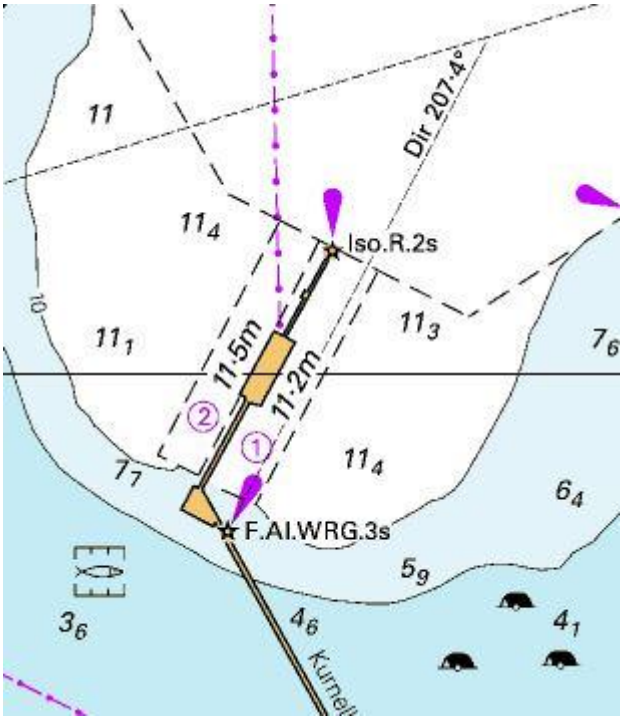
The Contractor will ensure during the induction process that all personnel are aware of the possibility of risk of injury to marine mammals and comply with the specific Marine Mammal Management Plan provided by the Caltex Environmental department. This process will include the reporting of any relevant sightings by Contractor personnel to Caltex and SPC. Project operations will be suspended in the event of any sightings that may risk injury to marine mammals.

NOTE:
This operational plan is based on many years operational experience of The Contractor, however the plan will be closely monitored, in its execution, and adjusted to provide the lowest possible risk profile.

5.6 Barging corridor



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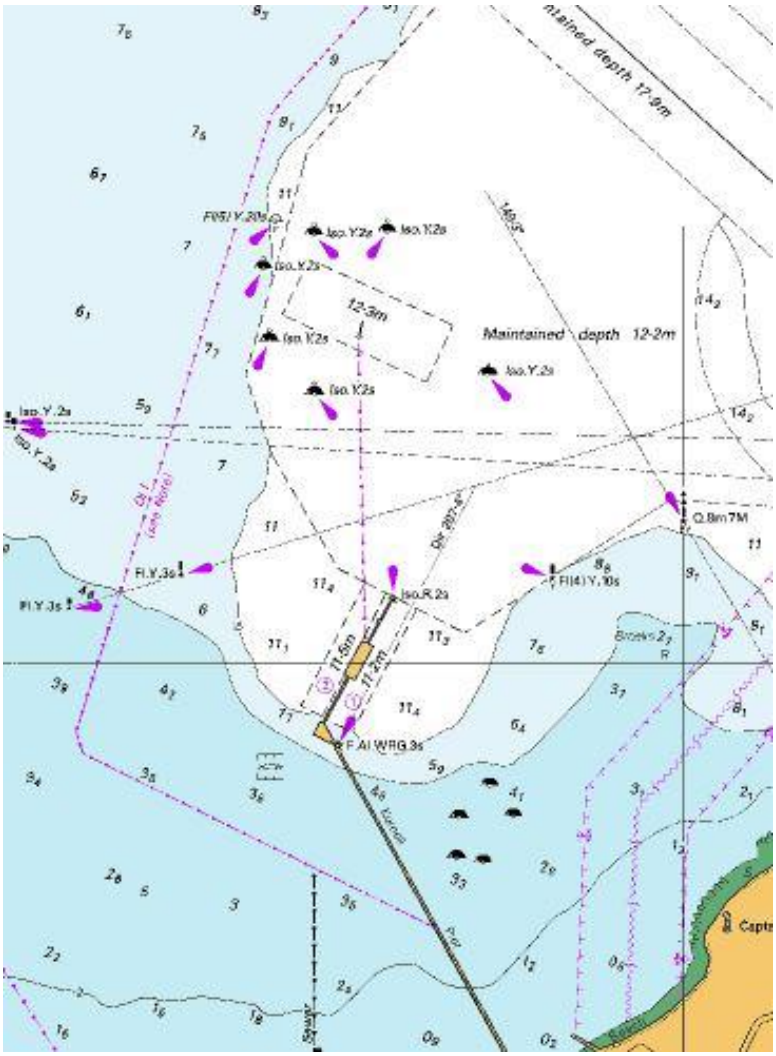
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12·3m
Iso.Y.2s
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F.Al.WRG.3s
Kurnell

5.7 Diving Operations

All diving work will be carried out by professional diving teams complying fully with local diving practices and appropriate Dive Manual. Dive Plan to be prepared with separate risk assessment. It will be the onus of the Diving Company to apply for the applicable permits and liaise with Sydney Ports Corp. Before diving operations will commence, Caltex and it's Contractors will ensure dive company has required approval from the HM.

Diving will be required on most days as part of the Sub Berth Upgrade as they will be an integral part of the project requirement. The dive company will be Gray Diving Services which have serviced the Caltex Berths since the commencement of the refinery in the mid 1950s'. They work closely with Caltex and it's contractors on Caltex sites, and have the highest of SMS standards within the diving industry. They operate regularly in accordance with Caltex and SPC requirements.

Diving equipment will be independently inspected and certified as required.

5.8 Maintenance plan

The Contractor Plant Supervisor will carry out regular three monthly inspections and maintenance of plant and record the outcome. Where a relevant Australian Standard is applicable, eg, AS-2550 for cranes, the inspection, use and maintenance of the plant will comply as a minimum with the Standard. Where no Australian Standard is provided, the inspection, use and maintenance of the plant will comply as a minimum with the Manufacturer's Recommendations.

No item of plant and equipment will be brought on site without proof of current service and maintenance records or registration where required.

Inspections and checks will take place monthly to ensure that the Plant Register (OHS-058) is being maintained and that all plant and equipment on site has appropriate documentation, including maintenance records and is being operated by qualified and authorised personnel.

Daily prestart inspection will be carried out on all plant prior to use.

5.9 Fuelling

5.9.1 Generators/mobile equipment

The re-fuelling of onsite generators/mobile equipment will happen with the fuel bowser or by bringing the generators to the re-fuelling area.

The flexible pipe connected to the bowser will be fitted with a manually operated pump.

The pump will be equipped with a lock and locked shut when not in use.

As for each re-fuelling situation, a spill kit and a fire extinguisher will be positioned in a suitable position.

All personnel will wear the necessary PPE:

- Rubberised gloves
- Appropriate eye protection
- Long pants
- Hi-Vis long sleve shirt
- Safety boots
- Chemical gloves
- Personal floatation device

Signage will be posted and no smoking will be allowed.

SDS shall be available and utilised.

5.9.2 Transfer from vessel to vessel

ALL Ship to Ship transfers must be booked through the ShIPS system

Prior to the start of any ship to ship fuel transfer, the Engineer will seek permission from the Master or Dredge Superintendent to conduct the operation. Weather conditions will be paramount to the transfer process.

All hot work permits will be suspended during re-fuelling operations. Smoking on the deck will be prohibited as well.

Prior to receiving any diesel deliveries the duty engineer is to:

a. Advise the VTS that refuelling is about to take place. VTS will send a port corporation rep to approve the operation.
b. Dip the tanks to confirm the quantity of diesel to be taken on; confirm with the tanker driver the expected amount.
c. Ensure that crossover valves between all tanks are open.
d. Put all the freeing ports in the deck scuppers into the 'Closed' position.
e. Place absorbent booms/pads around the filling manifolds to catch any small spills when the hoses are connected and disconnected.
f. Secure the 3" Cam-lock hose fitting latches with wire (mouse off) to prevent accidental opening.
g. Hoist flag 'Bravo' for the duration of the refuelling.
h. Complete and sign the applicable forms
i. Collect sample from supplier for potential testing if required.

Mooring lines will be checked and tightened. If required, extra lines will be used.

The Engineer shall personally inspect all the connections and hoses, and only when he is satisfied of the condition of the transfer, will the transfer of fuel begin. All flange connections will be secured.

Drip trays and drip buckets will be in place where applicable. Oil spill kits will be kept within easy access of the hose termination. Suitable fire extinguishers will be positioned in a location where they can be reached in the event of a fire during the re-fuelling.

During the transfer operation the Fuel transfer point is not to be unattended and the duty engineer is to supervise the filling operation on the dredge. The engineer will regularly dip the tanks during fuel transfer to prevent overfilling.

Cell phones are not to be used in the vicinity of the refuelling operation and any 'hot works' are to cease for the duration. Fire extinguishers are to be at hand during refuelling.

On completion of refuelling the engineer is to:

a. Drain the refuelling hose to the vessels tanks before disconnecting.
b. Note the start and completion times and the total fuel received; enter into the vessel's log, together with the new total of fuel on-board. Advise the dredge-master at the earliest opportunity.

5.9.3 Weather

All re-fuelling operations will be planned in advance in accordance to the weather forecasts for the area. If an unexpected change of weather were to take place, the Master of the vessel or dredge supervisor conducting the re-fuelling will decide if conditions are good enough to proceed or if the operation should be aborted and/or postponed

6.0 Vessel Specification

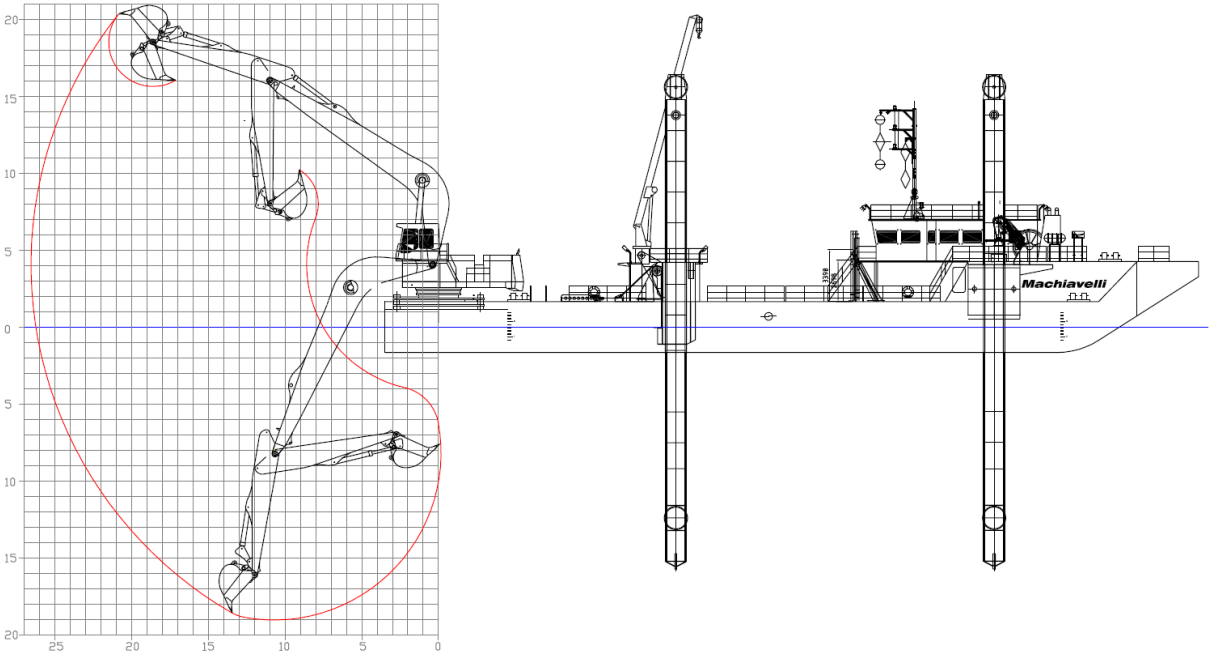
6.1 Dredging (Heron)

6.1.1 Machiavelli

The Dredging Contractor has owned the Machiavelli for the past 8 years, operating it in New Zealand and Australia.

The Machiavelli was built in 2005 in Turkey by shipyard De Donga. The Machiavelli is fitted with a Liebherr 994 Excavator.

The 994 Liebherr is fitted with a Dipmate Version 3 by Sea tools and a twin 5700 Trimble RTK GPS.



Name	**Machiavelli**
Type	**De Donge 'D' Type Backhoe Dredge**
Official Number	**876411**
Class	**Bureau Veritas**
Port of registry	**Auckland, New Zealand**
Year built	**2005**
Operators	**Heron Construction Company Ltd**
Gross tonnage	**648**
Displacement	**1,200 tonne**
Length overall	**53.0m**
Breadth	**15.0m**
Excavator	**Liebherr P994**
Monobloc (boom) length	**16.0m, 19.0m**
Stick (dipper) lengths	**4.0m, 5.6m, 8.0m and 9.5m**

Bucket sizes	**4.0m^3, 5.0m^3 and 5.7m^3,6.0 m^3**
Clamshell sizes	**3.5 m^3 Heavy duty and 6.0m^3 Environmental**
Dredging control	**DipMate v3 by Seatools**
Position and height control	**Twin 5700 Trimble RTK GPS**
Aft spuds	**Two @ 30m long x 60 tonne each**
Forward spuds	**One @ 30m long x 60 tonne in carrier**
Spud carrier stroke	**7.5m**
Jack up capacity	**780 nnes**

6.1.2 Kurutai Tug

The Contractor has owned the Kurutai for the past 4 years, operating it in New Zealand, Australia and the Pacific Islands

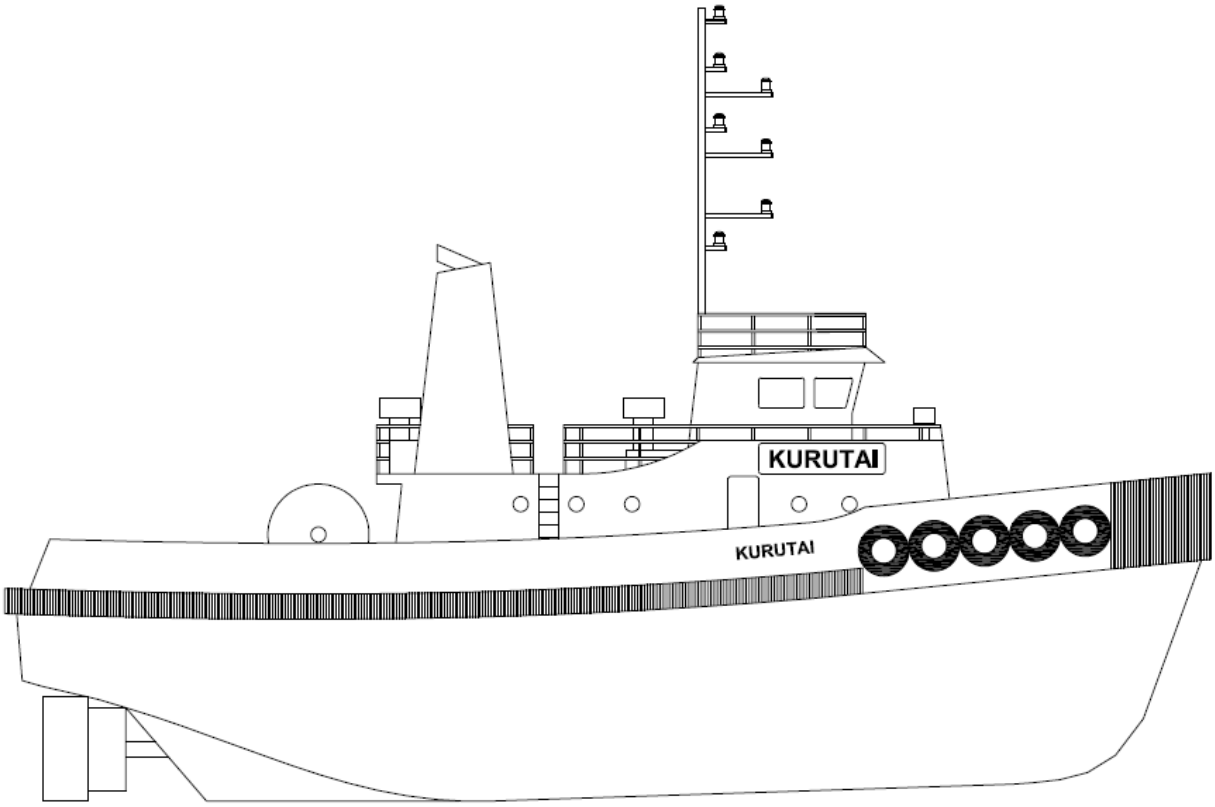
The tug was built in 1991 at Marine Steel in Auckland for the Original owners Sea Tow. The Kurutai is fitted with twin Caterpillar 3512B Diesel engines developing 3000hp.

The winch is fitted with a 730m x 48mm diameter steel tow wire.

The tug is predominately used for towing hopper barges and the back hoe dredge 'Machiavelli'.

The Kurutai is currently in Class 2B With NSW Maritime

The Kurutai carries 4.0 metre rescue boat.



Name	**Kurutai**
Type	**Ocean Going Tug**
Official Number **IMO #**	**875798** **9638921**
Class	**Maritime NZ – Unlimited and South Australia – 2B**
Call Sign	**ZMA 2815**
Port of registry	**Auckland, New Zealand**
Year built/place	**1991, Auckland New Zealand**
Operators	**Heron Construction Company Ltd**
Gross tonnage	**199**
Nett tonnage	**94**
Displacement	**312 tonne**
Length overall	**23.46m**
Breadth	**8.0m**
Max draft	**3.8m**
Main engines	**2 x Caterpillar 3512B**
Power	**3000 hp**
Auxiliaries	**1 x 6BT Cummins, 1 x 6CT Cummins**
Propellers	**Twin screw, 4 blade Kaplan type inside kort nozzles**
Bollard pull	**30 tonne**
Towing specifications	**Tow winch 80 tonne brake capacity** **Tow wire – 730m x 48mm dia, with tandem tow link**
MMSI # **Satcom**	**512016000** **Furuno Saturn C Felcom 15 & PP - 510**
S/S radio telephone	**Furuno FS1550 - 15**
VHF radio telephone	**Sailor RT 2048**
2182 Watch receiver	**Sailor RT 501**
EPIRB **Radar transponder** **Radar** **GPS** **Plotter** **Echo sounder** **Auto pilot**	**ACR Satellite 406FH Auto** **Kannad Rescuer** **Furuno** **Furuno GP 50** **Furuno GP 1610CF** **Furuno LS 6100** **FAP 330**

6.1.3 Split Hopper Barges SB101 and SB102

SPLIT HOPPER BARGE – HONGO SB 101 & HONGO SB 102

General

Type of Vessel	Non Propelled Split Type Hopper Barge
Material to be handled	Sand, Decomposed Granite and Mud
Propulsion	Towed or push by tug boat
Material of Construction	Steel
Year Built	2010
Where Built	China
Port of Registry	Singapore

Principal Dimensions

Length (OA)	49.8	Metres
Breadth (MLD)	14.0	Metres
Depth (MLD)	5.3	Metres
GRT	1011	
Class	Germanisher Lloyd (GL)	

Capacities

Hopper Capacity	Approx. 1200 Cubic Metres

6.1.4 Kythira Tug

PRINCIPAL PARTICULARS	
Vessel Type	Twin Screw Tug
Year Built	2008
Flag	Australian
Operational Area	Unlimited
Class	NKK
GRT / NRT	192 / 58
Speed (free run)	11 knots
Accommodation	10 persons. All spaces air con
Bollard Pull	25 tonne (est)
Length OA	26.0 mtrs
Breadth	8.00 mtrs
Depth	3.65 mtrs
Summer Draft	3.00 mtrs
Summer Displacement	362 tonnes
Light Ship	181 tonnes
Fuel Capacity	140,000 ltrs
Fuel Consumption	5 m^3 / day
F/water Capacity	39,000 ltrs

PROPULSION MACHINERY	
Main Engines	2 x Yanmar 6AYM - ETE
Power Rating	2 x 610 kW (1636 HP)
Gearboxes	R/R Reintjes WAF 364L. ratio 6.417:1
Propellers	70" 4 blade Manganese Bronze. Kort Nozzles
Steering Gear	Twin Rudder high lift – Electro Hydraulic

AUXILIARY EQUIPMENT	
Generator	2 x Mitsubishi S4K-T
Capacity	54 kW 415/230 volts
Fuel Transfer p/p	2 x Ebara Valoute1 1/2" 20m^3 / hr each
Hydraulic Power	John Deere 6068TFM50

DECK EQUIPMENT	
Towing Hook	20T capacity free range, emergency release
Towing Winch	40T Line pull. 100T Brake holding capacity. 40 mtr / min retrieval
Drum Capacity	40mm WRC x 600mtrs
Capstan	Nil
Stern Roller	20T (est) capacity
Anchor Handling Winch / Tugger	10T line pull, 40t Brake holding capacity. 24mm wire

6.1.5 Nautilus Tug

PRINCIPAL PARTICULARS	
Vessel Type	Twin screw tug / work boat
Year Built	1971
Flag	Australian
Operational Area	Australian Coastal, 200n.mile seaward
Class	NSW Maritime
GRT / NRT	37 / 23
Speed (free run)	8 knots
Accommodation	4 persons. All spaces air con
Bollard Pull	7.3 tonne (cert)
Length OA	14.20 mtrs
Breadth	5.27 mtrs
Depth	2.20 mtrs
Summer Draft	2.00 mtrs
Summer Displacement	74.0 tonnes
Light Ship	53.5 tonnes
Fuel Capacity	10,500 ltrs
Fuel Consumption	1,000 ltrs per day
F/water Capacity	9,000 ltrs

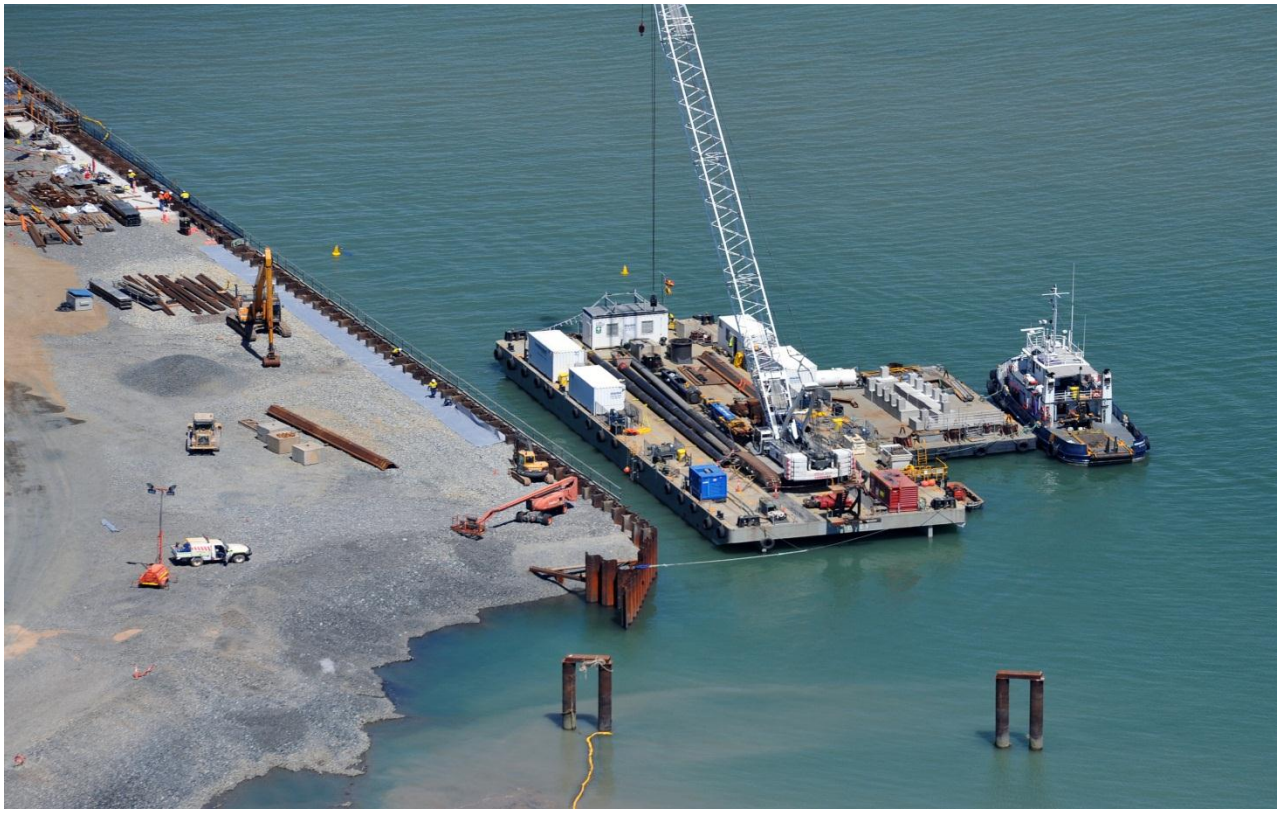
PROPULSION MACHINERY	
Main Engines	2 x Detroit Diesel 8V-71
Power Rating	2 x 182 kW (494 HP)
Gearboxes	Twin Disc 509 ratio 4.5:1
Propellers	48" 3 blade fixed pitch manganese bronze
Steering Gear	Independent steering nozzles – Electro Hydraulic

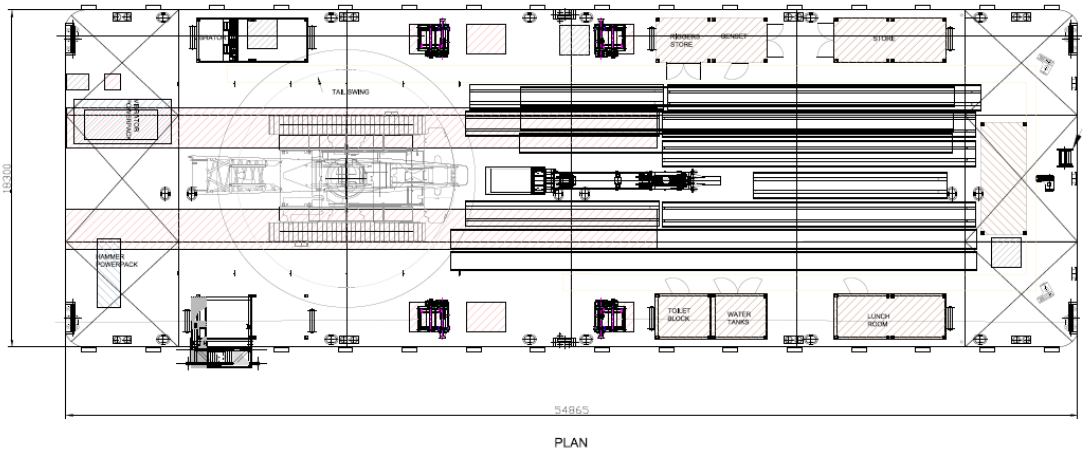
AUXILIARY EQUIPMENT	
Generator	1 x Isuzu
Capacity	15 kW

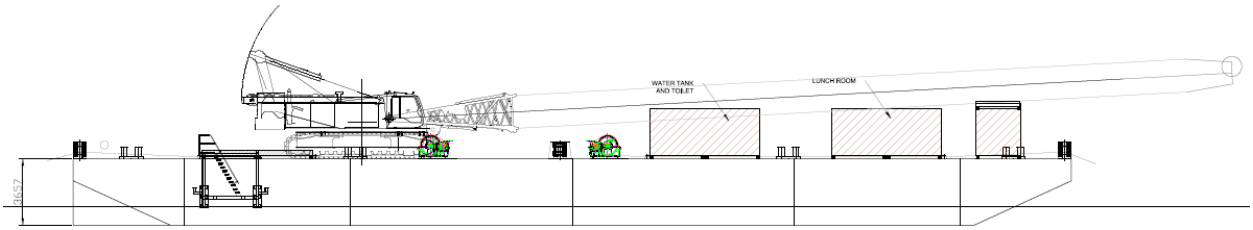
DECK EQUIPMENT	
Towing Hook	10T (est) capacity free range, emergency release
Towing Winch	3T (est) line pull breasting hydraulic winch
Anchor Handling Winch	6T (est) hydraulic winch, 22mm wire
Stern Roller	Centre line anchor handling roller

6.2 Sheet Pile Wall and Rock Revetment (Waterway Construction)

6.2.1 Calliope I Barge







STARBOARD SIDE ELEVATION

Classification : ABS A1 DECK CARGO AND BALLAST TANK BARGE / AMSA 2A

Flag : AUSTRALIAN

Port of Registry : SYDNEY

Built : 2011 **Official No.** :860169

Length : 54.8 mtrs.

Beam : 18.29 mtrs.

Depth : 3.66 mtrs.

GRT : 924 tonnes

Deck Winch : 4 No. 14.3 Tonnes (first layer) Anchor Winches

Crane size :160 tonne Liebherr up to maximum 250 tonne crawler crane

Deck Capacity : 15 T/m^2

6.2.2 Blue Bula

AusBarge
Marine Services Pty Ltd

Specification

BLUE BULLA

Principal Particulars	
Port of Registry	Freemantle
Builder	Elder Prince Marine
Official Number	
Year Built	1984
Survey	2B
Survey Authority	WA Dept. of Transport
Length Overall	16.07m
Length Water Line	15.5m
Breadth Mould	5.5m
Depth Mould	2.05m
Draft	1.8m
Dead Weight	64T
Gross Tonnage	36T
Fuel	8t
Domestic FW Capacity	1.8T
Ballast Capacity	NA
Designed Bollard Pull	12T
Clear Deck Space	20m2
Twin Screw Fixed Nozzles	
Designed Speed	10 Knots
Navigational Aids	
Radar	JMA2143 JRC
VHF Radios	Sailor RT144
Echo Sounder	JFV8010 JRC
UHF Radios	
GPS	Samsung
Machinery & Equipment	
Main Engines	2
Manufacturer	Detroit Diesel
Model Number	12V 71ti
Continuous Rating	394KW
Auxiliary Engines	1
Manufacturer	Izuzu
Model Number	FC 31
Continuous Rating	26KVA
AFT Towing Winch	10T EPMS

6.3 Berth and Mooring Equipment Upgrade (Ausbarge)

6.3.1 Mt Morpeth

AusBarge Marine Services Pty Ltd

MT MORPETH

Specifications

MT MORPETH
Principal Particulars

Port of Registry	
Builder	Stannard Bros. Slipway & Engineering
Official Number	17881
Year Built	1982
Survey	Waterways 2C/1E
Survey Authority	
Length Overall	15.80m
Length Water Line	14.95m
Beam Max	2.20m
Depth Moulded	
Gross Tonnage	70 Tonne
Fuel Oil	2 x 3.61 Tonne
Draft FWD (max)	1.41m
Draft AFT (max)	2.38m
Designed Bollard Pull	7 Tonne
Displacement	67.19 Tonne

TWIN SCREW FIXED NOZZELS

Designed Speed	10 Knots

Navigational Aids

Radar
VHF Radios
Icom GMDSS radio
UHF Radios
GPS

Machinery & Equipment

Main Engines	2XCummins NT855M
Gearbox Type	2XCapital HYH
Propellers	4 Blade

6.3.2 Nambucca

NAMBUCCA

Specifications

Nambucca

Principal Particulars

Port of Registry	Rockhampton	**TWIN SCREW FIXED NOZZLES**	
Builder	Palm Beach Marine NSW	Designed Speed	8 knots
		Navigational Aids	
Official Number	15796	Echo Sounder	Lowrance
Year Built	1983	Auto Pilot	TMQ
Survey		HF Radios	

Survey Authority	QLD Transport 2C	UHF Radios	
Length Overall	15.40m	GPS	
Length Water Line			
Breadth Moulded	5.03m	**Machinery & Equipment**	
Depth Moulded	2.49m	Main Engines	Gardner LxCT
Gross Tonnage	52.7T	Clutch/Gearbox Type	
Fuel Capacity	4,400L	Propellers	Single
Domestic FW Capacity		Alternators	Onan 240 volt
Ballast Capacity			
Designed Bollard Pull	5T		

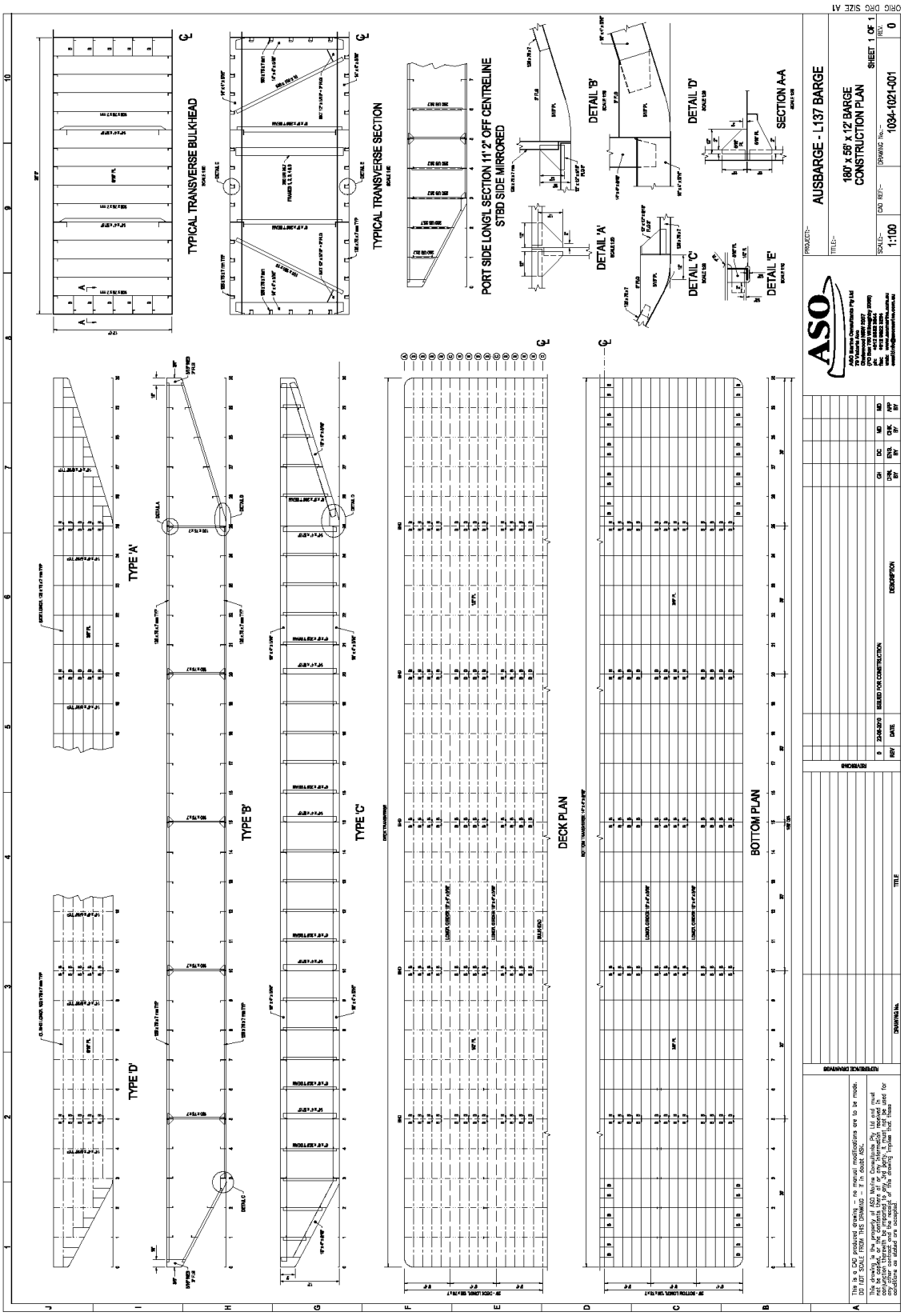
All Specifications are listed in good faith, but without guarantee.

Ausbarge Marine Services Pty Ltd.

3 Ward Street, Kurnell NSW 2231

Ph: (02) 9668 8630 Fax (02) 9668 8760

6.3.3 Ausbarge 137



Specifications

AUSBARGE 137 DUMB BARGE

Principal Particulars

Port of Registry	Adelaide
Builder	Labroy Indonesia
Official Number	15796
Year Built	1997
Survey	
Survey Authority	NSW Maritime
Length Overall	52.67m
Length Water Line	
Breadth Moulded	17.07m
Depth Moulded	3.66m

All Specifications are listed in good faith, but without guarantee.

Ausbarge Marine Services Pty Ltd.

3 Ward Street, Kurnell NSW 2231

7.0 Crew qualifications and training

7.1 Training

The Contractor in consultation with employees will identify training needs in relation to performing work activities competently and safely.

A Training Needs Matrix shall be in place to ensure that Health & Safety competencies are developed and maintained. Personnel shall be assessed as competent by The Contractor, on the basis of skills achieved through education, training or experience, to perform assigned tasks taking into account the Health & Safety obligations, hazards and risks associated with the work activities.

7.2 Job Specific Training

Different roles require specialised training and certification. Examples may include:

- Confined Space
- Fire Fighting
- Working at height
- Dogging/Rigging
- Senior First Aid
- Crane operation verification of competency
- Marine deckhand training
- Recreational boat licence
- Vessel operations in emergency situations

Training of this nature may be conducted by an independent registered training organisation (RTO) to ensure the appropriate education and regulatory requirements are complied with.

7.3 Marine Competency

All vessel crews shall be trained and deemed competent in accordance with regulatory bodies being Workcover NSW, Roads & Maritime or AMSA. The applicable employees may comply with the training requirements as stipulated under STCW95.

Tug Masters will be expected to hold a Certificate of Local Knowledge or Marine Pilotage Exemption Certificate or complete the requirements and examination for the issue of these certificates.

All training evidence shall be documented and be made available to interested parties upon request.

The Contractor shall ensure that all personnel (including contractors and visitors) have undertaken training appropriate to the identified needs.

Training shall be carried out by persons with appropriate knowledge, skills, and experience in OHS and training, preferably an accredited training provider.

Each vessel's SSM manual details the induction, briefing, and training requirements for that vessel, including vessel operation, radio procedures and emergency drills.

All personnel on the vessel should make themselves familiar with the SSM requirements.

7.4 Induction

The Contractor shall ensure that all employees and sub-contractors are inducted prior to the commencement of works. The induction programme requirements shall be as follows:

- NSW Construction Induction white card

In conjunction with above minimum requirements The Contractor shall cover the following within the Company induction:

- Project scope
- Policy Statements
- HSE Manual overview
- PPE Requirements
- Roles & Responsibilities
- HSE Leadership
- Environmental awareness
- Manual Handling
- Risk Management
- Hazards identification
- Incident Management Process
- Emergency Management
- Employee Assistance

8.0 Environmental Protection

8.1 Bunkering

If necessary, fuel will be bunkered onto the Project Tugs. This bunkering operation will coincide with a Marine Bunkering Plan (see appendix 12.2).

All bunkering shall be conducted in accordance with Sydney Port Corporation directions and applicable permits.

All vessels have specific bunkering procedures and a checklist that must be followed at all times.

COMPLETE BUNKERING CHECKLIST

a. Dip the tanks to confirm the quantity of diesel to be taken on; confirm with the tanker driver the expected amount.
b. Ensure that crossover valves between all tanks are closed.
c. Put all the freeing ports in the deck scuppers into the 'Closed' position.
d. Place absorbent booms/pads around the filling manifolds to catch any small spills when the hoses are connected and disconnected. Close the drip tank valves.
e. Secure the Cam-lock hose fitting latches with cable ties to prevent accidental opening.
f. Hoist flag 'Bravo' for the duration of the refuelling.
g. Advise the VTS that refuelling is about to take place. VTS will send a port corporation rep to approve the operation.
h. Complete and sign the VTS form, countersigned by the supplier rep (tanker driver) and SPC rep; complete and sign the fuel company "Pre-bunker check list", countersigned by the supplier rep.
i. At the commencement of refuelling draw off a small sample for a visual check; annotate with date and fuel details and retain until next bunkering.
j. During the transfer operation the fuel truck driver is not to leave the pump controls and the duty engineer is to supervise the filling operation on the dredge/tug. The engineer will regularly dip the tanks during fuel transfer to prevent overfilling.

- Cell phones are not to be used in the vicinity of the refuelling operation and any 'hot works' are to cease for the duration. Fire extinguishers are to be at hand during refuelling.
- On completion of refuelling the engineer is to:

k. Drain the refuelling hose to the vessels tanks before disconnecting.
l. Note the start and completion times and the total fuel received; get the tanker driver to countersign. Enter into the vessel's log, together with the new total of fuel on-board. Advise the dredge-master at the earliest opportunity.
m. Fill in the oil records book and the fuel book; detail the quantities received to each tank.

See appendix for Kurutai (12.3) and Machiavelli (12.4) Bunker Pre-Delivery Checklist

8.2 Chemicals & Dangerous Goods

The definition of a hazardous substance in the workplace under the WHS Regulations, a hazardous chemical is any substance, mixture or article that satisfies the criteria of one or more Globally Harmonised System of Classification and Labelling of Chemicals hazard classes, including a classification in Schedule 6 of the WHS Regulations.

All Contractors shall ensure that all risks associated with the handling, storage and use of hazardous materials are managed as per the SDS and in accordance with Safework Australia 'Managing Hazardous Chemicals in the Workplace June 2012'. No hazardous chemicals used by Contractors should pose any health or safety risk if instructions for storage, handling and use are followed.

8.3 Hazardous Chemicals Storage

All hazardous materials must be stored in accordance with manufactures specifications and legislative requirements.

Following these instructions may require segregation of some materials from others. Flammable materials must be stored in areas that have adequate fire fighting or fire suppressions systems in place. Access to these areas should be restricted.

Bulk storage (e.g. drums of oils, etc.,) must be in areas that offer containment in case of spillage.

If an unmarked or blank container is identified, it must be reported to the HSE Manager immediately and not used.

8.4 SDS Application

The Safety Data Sheet contains information on the identity of the product and any hazardous ingredients, potential health effects, toxicological properties, physical hazards, safe use, handling and storage, emergency procedures, and disposal requirements specific to the chemical.

SDS sheets shall be available in all areas of the operation. All Contractors shall keep records of all SDS for products used and stored. These records must be updated and maintained and easily accessible to all persons who may use or come into contact with such substances as part of their work.

The SDS should be kept in a location near the work area where the substance is used. Contractors shall ensure that all workers likely to be exposed to the hazardous chemical know how to find the SDS. In some cases it may be practicable to provide workers with access to SDS via an electronic database stored or handled at the site. The electronic database should be readily available to workers, workers know how to use it, and a backup means of providing the SDS should also be provided, for example as hard copies in a filing system.

Specific attention shall be given to the first aid requirements identified by the SDS to ensure the availability of treatment measures and equipment.

8.5 Waste Management

All Contractors recognise statutory requirements must be adhered to and are well aware that any disposal of garbage into the environment constitutes an offence and suitable approved means of storage will have to be used. All garbage will be safely handled and stored on board in appropriate containers/wheelie bins. The storage bins on the vessel shall be properly sea fastened, easily accessible and kept clear from any air intake to the vessels accommodation.

The Dredge Superintendent or vessel Master and the crew must ensure the protection of the marine environment by reporting pollution incidents to VTS.

Masters are responsible for all handling of waste on board and shall manage the use and disposal of all garbage/waste generated on board correctly, which includes but is not limited to:

- food/galley waste
- paper/cardboard/recyclable products
- paints / oil products / oily rags
- glass / bottles
- metal products
- plastics

When vessels are alongside they will ensure correct disposal of any waste to an approved and certified waste transport company bringing all waste to the correct treatment facilities onshore.

All waste disposals shall be recorded in the vessels garbage record book.

8.5.1 Sewage and Grey Water

Vessels that produce this waste will be fitted with a holding tank. Before the commencement of this operation, crew will don gloves and check that the hose and fittings are sound.

On board plastic bunded cubes that shall be filled and transported ashore by a tug and offloaded onto a truck for management at a dedicated onshore facility.

When the tank is empty, the amount of discharged material will be recorded in the log.

Sydney Port Corporation shall be contacted prior to the commencement of disposal and records kept.

8.5.2 Waste Oil

Vessels that produce this waste will be fitted with a holding tank for waste oil. No waste oil will be discharged into the Harbour or Bay areas. All waste oil will be collected and pumped ashore to either 200 litre drums of or a waste oil truck. The Engineer will record the amount discharged in the oil log.

On board plastic bunded cubes that shall be filled and transported ashore by a tug and offloaded onto a truck for management at a dedicated onshore facility.

Sydney Port Corporation shall be contacted prior to the commencement of disposal and records kept.

The drums shall be placed onto the deck of the tugs and transported ashore.

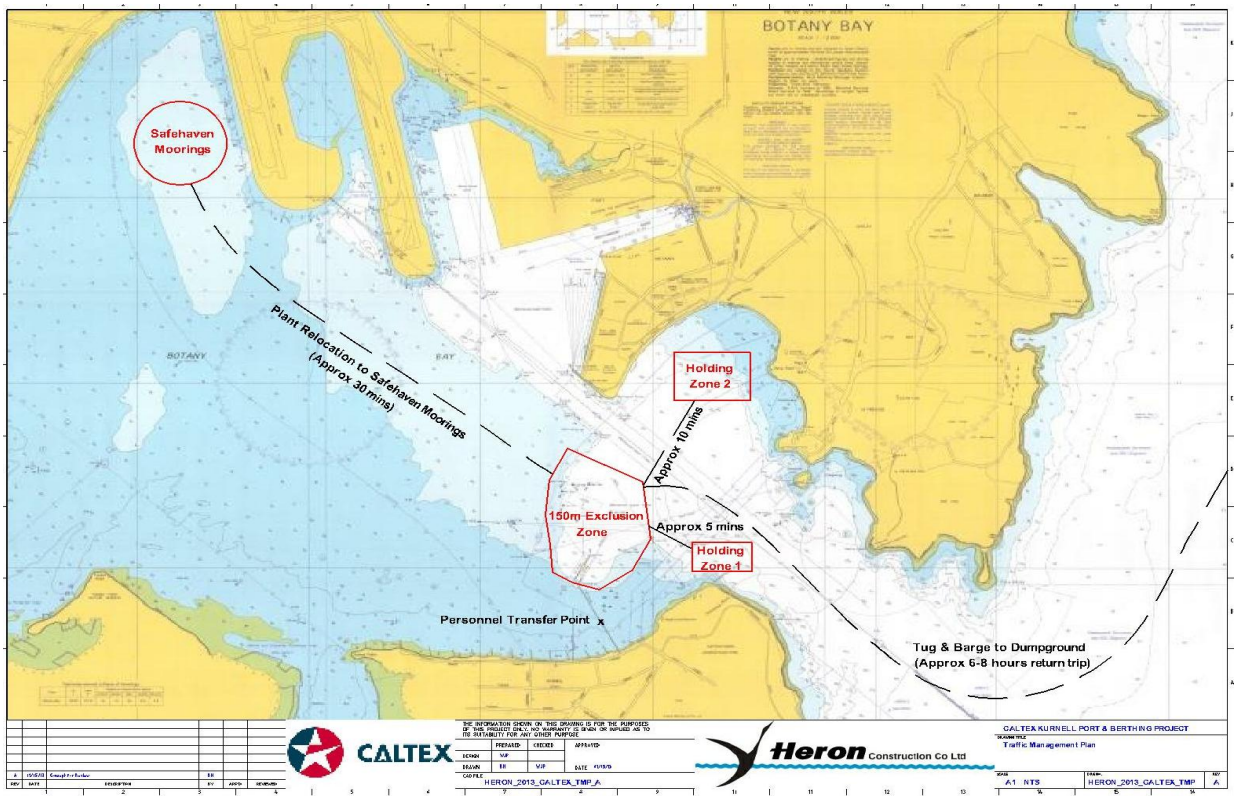
8.5.3 Job Safety Environment Analysis (JSEA)

Each operation will be analysed separately and responsibilities will be attributed to the various qualified personnel on site. On board the vessels, the responsibility for the refuelling operations will lie with the Engineer/Mechanic/Dredge Master or the equipment operator.

A JSEA shall be developed for bunkering procedures and shall be utilised in conjunction with this SOP. All personnel are expected to understand this SOP and JSEA and sign on to both forms.

c. Fill in the oil records book and the fuel book; detail the quantities received to each tank.

9.0 TRAFFIC MANAGEMENT PLAN



Moorings shall be located on the western side of the 3LR runway and shall be deemed a 'Safehaven' in inclement weather. The approximate timing for the Backhoe Dredge to relocate from the dredging area to the Safehaven is 40 minutes.

The Dredge Superintendent shall be aware of the weather forecast, well in advance and prepare an approximate time for relocation in accordance with SPC.

9.1 Personnel Transfer Point

Personnel shall be transferred to the vessels and dredge via the Caltex wharf.

Transfer of Personnel SOP must be adhered to at all times.

9.2 Holding Zones

Holding zones have been designated in the following areas to allow for tugs to hold during heavy traffic periods.

- Frenchman's Bay
- Sutherland Point

9.3 Exclusion Zone

A 150m exclusion zone is in effect around the dredging areas.

10.0 INCIDENTS

10.1 Incident Reporting

The contractor must acknowledge that guidelines on incident management are an essential component of the HSE management system. The provision of timely and efficient first aid and environmental response is crucial in caring for employees and the environment. Additionally, timely and efficient reporting on hazards, incidents and other occurrences with an adverse risk to HSE is required to be in place so that appropriate corrective actions can be taken.

Vessel masters must be aware of the need to report all incidents immediately to emergency services (if required) and then to port authorities.

When an employee of Polaris Marine becomes aware of an actual or potential incident, that employee is to notify their immediate supervisor and the company management.

It is a legal requirement to report incidents to AMSA under *Section 268 of the Navigational Act for the following events:*

- an accident occasioning loss of life or serious injury to a person occurs;
- damage or defect in the ship, its boilers, machinery or equipment has been discovered which has or may affect the seaworthiness or safety of the ship, efficient operation or safety of the boilers, machinery or fixed equipment of the ship;
- the ship has been in a position of peril from the action of some other ship or from danger of wreck or collision;
- the ship has been stranded or wrecked, has fouled or damaged a pipeline or submarine cable, lighthouse, lightship, beacon, buoy or other marine mark, or where a ship having left a port in Australia has put back to that port or another port in Australia.

Application: All ships in Australian waters, Australian ships anywhere.

Section 107 of Occupational Health & Safety (Maritime Industry) Act:

Requires the notification and reporting of:

- any accident that results in the death of, or serious personal injury to any person;
- any accident that results in an employee being incapacitated from performing work for a period of five successive days or more;
- a dangerous occurrence (i.e.: a near miss) which occurs at or near a workplace at which an
- undertaking is being conducted by the operator.
- Application: Australian ships only, Australian ships anywhere, offshore industry mobile units

Environmental incidents must be immediately contained if safe to do so, to prevent further damage. Environmental incidents must be reported immediately to port authority.

All incidents / near misses and hazards are to be reported in a timely manner, with detailed information collected via the Polaris Marine Incident Record Form and entered into the online

system by the designated individual and provided to company Management team. All hazards are to be reported via Hazard Report Form.

REFER to HMD incidents must be reported to RMS Maritime (State Waters) and Harbour Master(Port Waters)

10.2 Immediate Action

Depending on the risk of the hazard or incident involved immediate action must be taken to prevent further persons from being injured. This may involve the activation of emergency procedures or other actions to control the immediate risk to persons in the area, e.g. barricading the area, alerting adjacent areas.

If an injury has been sustained, first aid treatment should be given from a suitably qualified first aider promptly.

In some circumstances, a hazard, incident or injury may mean that the scene cannot be disturbed. These are termed significant incidents and include any work related occurrence that:

- Results in the amputation of a limb
- Results in the person being placed on a life support system
- Presents an immediate threat to life, for example:
  - the loss of consciousness of a person due to an impact of a physical force
  - exposure to toxic substances, electric shock or lack of oxygen
  - major damage to any plant, equipment, building or structure
  - an uncontrolled explosion, fire or escape of gas, steam or dangerous goods
  - an imminent risk of explosion, fire or escape of gas, steam or dangerous goods
  - entrapment in a confined space
  - collapse of an excavation
  - entrapment in machinery
  - serious burns
  - actual or potential exposure of a person to a prohibited or notifiable carcinogenic or other hazardous substance.

10.3 Incident Investigation

Significant incidents shall be investigated and the causes determined and reported. The HSE Manager will liaise with the Management to ensure that resources are available to conduct any investigation required. The detail of a report can vary dependant of the severity of the incident but fundamentally the following areas should be addressed:

- *Who? Record the names of everyone involved.*
- *What? Look at the work area and equipment involved, check for defects, get an exact description of chemicals involved, etc. Gather documented information, Risk Assessments; JSEA s and work instructions or procedures.*
- *Where? Describe the exact location, note all relevant facts, i.e. lighting, weather, sea conditions. Take photographs where possible.*
- *When? Note exact time, date and other factors, i.e. shift change, work cycle, break period, etc.*
- *How? Describe usual sequence of events and actual sequence of events before, during and after the incident.*
- *Why? Find all possible immediate and root causes AND how to keep it from happening again.*

All incidents shall be recorded on Incident Record Form and managed by the HSE Manager.

11.0 Sunken Construction Vessel or Materials

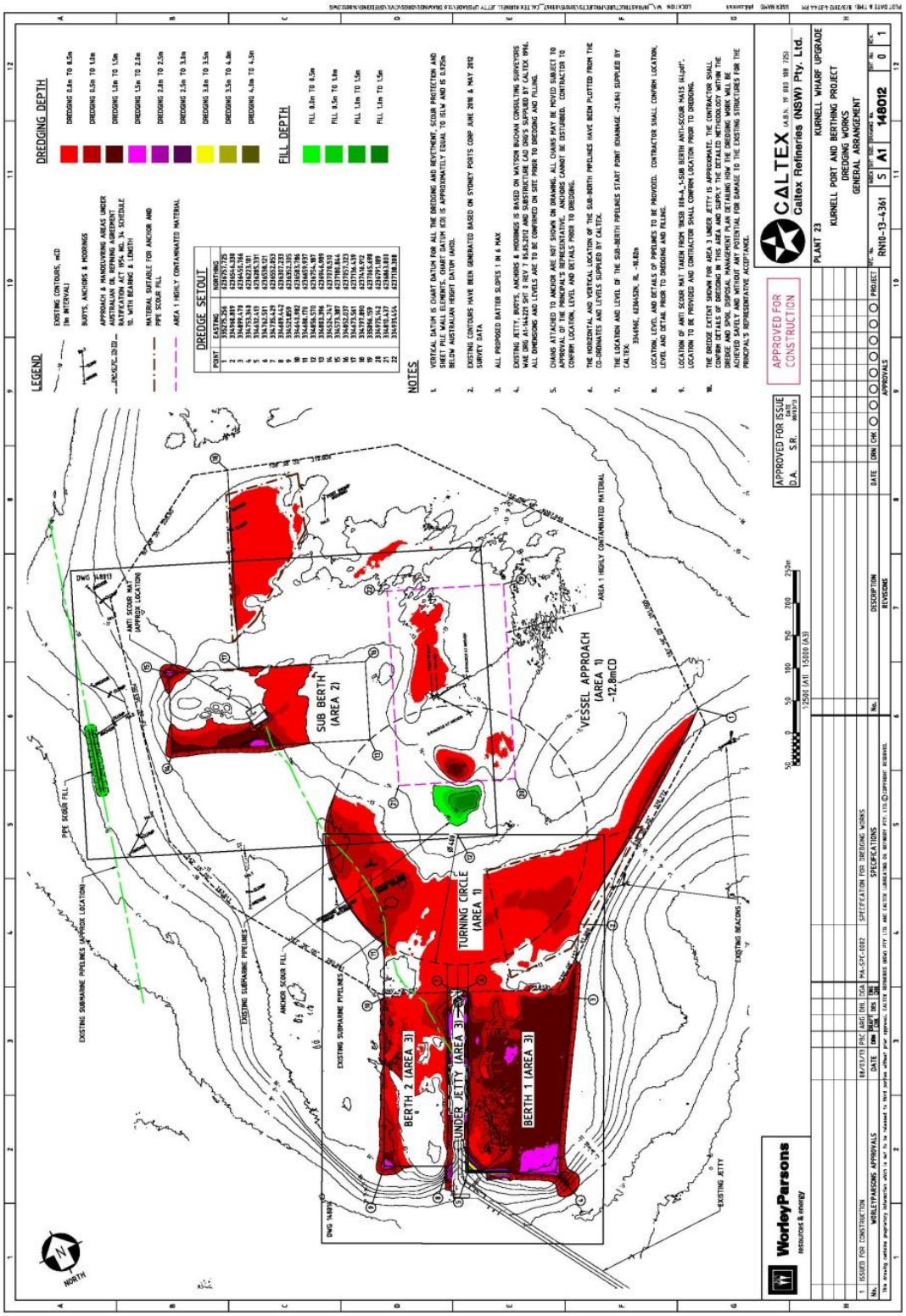
Although the likelihood is of a sunken construction vessel is extremely remote The Contractor Marine will expeditiously re-float, raise, remove and make safe the vessel. The Contractor has the appropriate levels of insurance cover as well as the plant and equipment to deal with nay such event. In regard to materials all old or unused chain or other items will be removed from the sea bed and transported to the Caltex Wharf for removal.

12.0 Evacuation Procedure

Ausbarge Safety Management System includes regular emergency drills. These include vessel evacuation. If the barge needs to be evacuated for any reason it will be evacuated to the tug if in transit and to the shore if alongside

13.0 Appendix

13.1 Drawing 148012



13.2 Marine Bunkering Plan

1	Objectives	Zero spills to land or marine environment; All spills reported; Zero accidents;
2	Legislation	International Convention for the Prevention of Pollution from Ships AS 3846-2005: The handling and transport of dangerous cargoes in port areas AS 1940-2004: storage and handling of flammable and combustible liquids AS 1216-1995: Class labels for dangerous goods AS 3833-2007: Storage and handling of mixed classes of dangerous goods International Maritime Dangerous Goods Code
3	PPE	The following PPE must be worn during refuelling activities: Long trousers or jeans Hi-vis long sleeve shirt Safety boots Chemical gloves Goggles Personal Floatation Device
4	Environment	Appropriate spill kits must be on hand Marine mammal spotter
5	Documentation	Current MSDS received and approved by Caltex before delivery Dangerous Cargo report completed, submitted to regulators and current Cargo report
6	Procedure	The following procedure is to be used by Masters in charge of vessels. Master to obtain weather forecast to check whether sea conditions, and brief crew in regard to bunkering operation to be carried out. Master to discuss forecast or any other factors including passing vessels that may affect bunkering operations and

		agree that conditions are suitable. If either the Tug Master or Barge Supervisor are not satisfied with the current conditions or any other factors then bunker operations are not to commence. Once Tug and Barge Supervisor agree to proceed, the Barge Supervisor will provide the Tug with request for diesel bunkers indicating, amount required and available volume in barge Fuel Oil Tank. Tug Master to muster crew and carry out briefing on intended bunkering operations and any requirements. Tug crew to ensure that adequate oil spillage equipment is in position on deck and scuppers to be plugged prior to bunkering to contain any spillage immediately. Ensure suitable fire extinguishers are standing by, all personnel involved in the operation to be trained in the correct use of fire extinguishers. If fire hoses are used ensure they are primed and of sufficient length to reach all out board areas of the vessels. Note: fire hoses are to be used as last resort because of potential pollution. Use of mobile phones and naked flames (including cigarettes) is prohibited within the designated fuelling area which will be delineated with appropriate signage and barriers. Provide bunkering party with protective clothing, As a minimum Goggles Hard hat Overalls Boots Gloves Ullage tug fuel/ oil tanks and calculate current fuel onboard and fuel to remaining on board and noted in vessel log. Tugmaster to confirm with Barge Supervisor that barge crew are on station to receive bunkers. Advise crew which tanks are to be open. Prepare and fit fuelling adaptors if applicable. Connect fuel hose (check for closed seal). Isolate tanks on tug which are not to be used to draw bunkers and ensure valve opened from tank to be used. Ensure international code flag ‘B’ BRAVO is flying on lay dent vessel and during bunkering. Tug Master to confirm with Barge Supervisor that hose connections are complete, valve on barge fuel oil tanks is open to receive bunkers and hose has sufficient slack to avoid

		being placed under tension from vessel movements during bunkering. Tug and barge to test communications. When all previous checks above have been completed and are conforming, tug master to direct Engineer to start fuel transfer pump. Tug and barge crews check for leaks in hoses and fitting and ensure fuel is flowing freely, in the event of a leak procedures outlined in Spill Prevention and Contingency Plan to be followed. During pumping Master to ensure engine room is manned to monitor fuelling and operate valves as required. A crew member is to be on deck checking flow rates, tank soundings and stop dips and provide appropriate signals to the Master. Engineer to stop pumping immediately when notified by the Master. Tug and barge deck crew continually monitor fuel hose and fittings for any leakage throughout process. Engineer to stop fuel transfer pump when required amount has been transferred. Close deck valves on barge. Disconnect fuel hose on barge. Drain any fuel oil residue back to tug. Bunker line outlet contains a two valve setup, once the pump and first in-line valve is closed the residual fuel is drained into a small container using the second valve.

13.3 Kurutai Bunker Pre-Delivery Checklist

Kurutai Bunker Pre-Delivery Checklist – (ENGINEER & PUMP OPERATOR TO COMPLETE)

Vessel: **Date:**

Berth: **Start Time:**

Product Delivery Volumes and Sequence									
Vessel Compartments/tanks to be filled (circle)	**2 - PORT**	**2-STB**	**3 - PORT**	**3 - STB**	**5 - PORT**	**5 - STB**	**6 - PORT**	**6 - STB**	**4 - CTR**
Ullage space available									
Safe Fill Levels *(Litres)*									
Agreed Volume to be delivered to compartment/tank *(Litres)*									
Agreed Discharge Rate *Litres/mins)*									
Type of Fuel									

Safety Checklist	**Vessel**	**Shore**	**Comments**	**Conditions**
Have the individuals involved in the bunkering process signed onto the SOP and JSEA?				If 'NO' do not proceed
Is the Ship Securely Moored?				If 'NO' do not proceed
Is there safe access between ship & Shore?				If 'NO' do not proceed
Is there visual and verbal communication between vessel and shore?				If 'NO' do not proceed
Is the Bravo Flag Raised?				If 'NO' do not proceed
Has the Port/Authorities been contacted?				If 'NO' do not proceed
Is spill response equipment available on vessel and shore?				If 'NO' do not proceed
Are tank vents and hose connections secured? Are all joints wired/zip tied shut?				If 'NO' do not proceed
Are unused bunker connections blanked?				If 'NO' do not proceed

Have maximum hose pressures been agreed?				If 'NO' do not proceed
Safety Checklist	**Vessel**	**Shore**	**Comments**	**Conditions**
Have Emergency Shut-downs been agreed by vessel engineer and shore?				If 'NO' do not proceed
Has a watch been agreed? (if applicable)				If 'NO' do not proceed
Is sufficient Ullage available in receiving tanks to accept delivery amount?				If 'NO' do not proceed
Is delivery to be interrupted?				All received loads metered
Process Checklist	**Vessel**	**Shore**	**Comments**	**Conditions**
Has the Port/Authority permit been completed?				If 'NO' do not proceed
Have the Scuppers been blocked?				If 'NO' do not proceed
Is the Foam Fire Extinguisher placed on deck?				If 'NO' do not proceed
No smoking or Naked Flame sign displayed?				If 'NO' do not proceed
Have the sausages been deployed and are they covering the gaps?				If 'NO' do not proceed

FILL IN OIL RECORDS BOOK AND FUEL BOOK (SHOW QUANTITIES RECEIVED TO WHICH TANK.

Finish Time:	Final Amount taken on:
Engineer Name:	Engineer Signature:
Supplier Name:	Supplier Signature:

13.4 Machiavelli Bunker Pre-Delivery Checklist

Machiavelli - Bunker Pre-Delivery Checklist – (ENGINEER & PUMP OPERATOR TO COMPLETE)

Vessel: **Date:**

Berth: **Start Time:**

Product Delivery Volumes and Sequence			
Vessel Compartments/tanks to be filled (circle)	**PORT**	**MID**	**STARBOARD**
Safe Fill Levels *(Litres)*	**56250**	**31500**	**56250**
Ullage space available			
Agreed Volume to be delivered to compartment/tank *(Litres)*			
Agreed Discharge Rate *Litres/mins)*			

Safety Checklist	**Vessel**	**Shore**	**Comments**	**Conditions**
Has the Port/Authorities been contacted?				If 'NO' do not proceed
Have the individuals involved in the bunkering process signed onto the SOP and JSEA?				If 'NO' do not proceed
Is the barge securely moored?				If 'NO' do not proceed
Is there safe access between ship & Shore?				If 'NO' do not proceed
Is there visual and verbal communication between vessel and shore?				If 'NO' do not proceed
Is the Bravo Flag Raised?				If 'NO' do not proceed
Is spill response equipment available on vessel and shore?				If 'NO' do not proceed
Are hose connections secured? Are all joints wired (moused)				If 'NO' do not

shut?				proceed
Place bag/bucket over breather pipe				If 'NO' do not proceed
Safety Checklist	**Vessel**	**Shore**	**Comments**	**Conditions**
Have Emergency Shut-downs been agreed by vessel engineer and shore?				If 'NO' do not proceed
Has a watch been agreed? (if applicable)				If 'NO' do not proceed
Is delivery to be interrupted?				All received loads metered
Process Checklist	**Vessel**	**Shore**	**Comments**	**Conditions**
Has the Port/Authority permit been completed?				If 'NO' do not proceed
Is the Foam Fire Extinguisher placed on deck?				If 'NO' do not proceed
No smoking or Naked Flame sign displayed?				If 'NO' do not proceed
Have the sausages been deployed and are they covering the gaps?				If 'NO' do not proceed

FILL IN OIL RECORDS BOOK AND FUEL BOOK (SHOW QUANTITIES RECEIVED TO WHICH TANK.

Finish Time:	Final Amount taken on:
Engineer 1 Name:	Engineer 1 Signature:
Engineer 2 Name:	Engineer 2 Signature:
Supplier Name:	Supplier Signature: