



Marine Traffic Management Plan



One Sydney Harbour Waterfront Structures Works

Rev 8: 16/04/2019

Barangaroo, Darling Harbour, Sydney
Client: Lendlease

DOCUMENT CONTROL:

Document:	Marine Traffic Management Plan – One Sydney Harbour
Revision:	8
Approval Date:	16/04/2019
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Approved By:	Niall Magee 

DOCUMENT HISTORY:

Revision:	Date:	Summary:	Developed:
1	03/09/18	Initial draft for review	Mal Finnan HSE Coordinator
2	03/10/18	Draft for consultation with Harbour City Ferries and Roads & Maritime Services	Mal Finnan HSE Coordinator
3	26/10/2018	Draft for submission to Port Authority of NSW for Harbour Master's approval with changes arising from consultation.	Mal Finnan HSE Coordinator
4	05/11/2018	Minor amendments from Port Authority of NSW Harbour Master's review and approval.	Mal Finnan HSE Coordinator
5	14/11/22018	Minor change to include battery powered lights for exclusion zone markers, at request of Harbour Master (Section 10).	Mal Finnan HSE Coordinator
6	14/03/2019	Changes to mooring arrangement, and deployment procedure.	Mal Finnan HSE Coordinator
7	15/04/2019	Change to Barge Supervisor competency under Minimum Crew Qualifications.	Mal Finnan HSE Coordinator
8	16/04/2019	Change C6 to C1 for Barge Supervisor	Mal Finnan HSE Coordinator

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1. Purpose and Scope

The purpose of this plan is to manage marine traffic risks associated with demolition and construction works for the One Sydney Harbour development at Barangaroo South, Darling Harbour Sydney.

The scope of the plan includes the following:

- The work site at One Sydney Harbour, Barangaroo South, Darling Harbour (33.863465809 S / 151.200884146 E).
 - Northern boundary: Northern tip of the Popes Landing.
 - Southern boundary: 20 m to the north of Barangaroo Ferry Hub (BFH) Wharf 1.
- Barangaroo Delivery Authority.
- Lendlease Building: principal contractor to Barangaroo Delivery Authority.
- SMC Marine: sub-contractor to Lendlease for the marine demolition and construction works.
- Ausbarge Marine Services and Subsea Works: sub-contractors to SMC Marine.
- Key stakeholders: Port Authority of NSW, Roads and Maritime Services and Harbour City Ferries
- Tugs: Arana and HT Saipan (or similar).
- Barge LC 20.
- Barge SMC 2.
- Dumb barges.
- Dive vessel Trieste
- Tug and barge transport between White Bay 2, Glebe Island 1 and the work site.
- Aus chart 202.

The plan when approved by Port Authority of NSW becomes the primary document that SMC Marine will use to manage marine transport and mooring for the works.

2. Description of works

2.1 Development Consent

Development Consent for the project has been granted by the NSW Government Department of Planning & Environment Independent Planning Commission - Application no: SSD 7944. The project has been classified as State Significant Development as described in *State Significant Development Assessment Report Public Domain Works, Barangaroo South and Central (SSD 7944), July 2018*.

This Marine Traffic Management Plan is consistent with the following:

- *Barangaroo South Stage 1B Public Domain Navigation Impact Assessment: Royal Haskoning DHV, 24 January 2017.*
- *Barangaroo Jetty and Pontoon Development: Port Authority of NSW, 25 October 2016.*
- *Harbour Masters Directions - Sydney Harbour & Botany Bay: Port Authority of NSW, July 2016*
- *LC20 Crane Barge Mooring Arrangement Report at Barangaroo Darling Harbour for SMC Marine: ASO Marine Consultants, 17 October 2018.*
- Submissions from Roads and Maritime Services on the *Exhibition of EIS for Barangaroo Public Domain Works - SSD7944, 16 June 2016.*
- Submissions received from consultation between SMC Marine and Harbour City Ferries, 25 October 2018.



An Environment, Health & Safety (EHS) plan approved by Lendlease is in place for the project. Refer to *SMC Project EHS Plan - One Sydney Harbour Waterfront Structures Works*.

Work will be mostly marine based and will be conducted from barges moored alongside the work site at Barangaroo South.

The current aerial view of the site overlaid with the planned construction is shown below in Section 2.3. The Barangaroo Ferry Hub (BFH) Wharf 1 is approximately 25 m to the south-west of the proposed construction.

2.2 Demolition

Marine traffic for demolition is proposed to commence on Friday 18 January 2018 and finish on Friday 31 May 2019. Hours of work for marine traffic purposes are 06:00 to 18:00 Monday - Friday, and 06:00 - 13:00 Saturday. Demolition will generally involve the following:

- Removal of 1000 + tonnes of concrete slab, headstocks and girders in maximum sections of 20 tonnes, using the crane barge LC 20.
- Removal of 17 steel piles using the crane barge LC 20 with the assistance of divers using underwater broco cutters.
- Removal of demolished materials by dumb barge to White Bay 2.

The crane is a 2018 model Favell - Favco 8/10 K offshore rated crane compatible with the stability of the LC 20 barge and is designed for safely undertaking 20 tonne lifts that are required for the demolition, in a significant wave height of 0.5 m; the conditions expected from vessel wash and wind fetch at the site.

Refer to the crane particulars for more information.

2.3 Construction

Marine traffic for construction is proposed to commence in early April 2019 and is expected to continue until late October. Hours of work for marine traffic purposes are 06:00 to 18:00 Monday - Friday, and 06:00 - 15:00 Saturday. Construction will generally involve the following:

- Installation of 66 new steel piles with the SMC 2 barge.
- Installation of 320 tonnes of new steel wharf substructure with the SMC 2 barge.
- 3500 sq/m of decking and associated timber and finishing works.
- 100 tonnes of sandstone works at the landward edge of the site.
- Delivery of construction materials by dumb barge from White Bay 2 and White Bay 4.

The crane is a 2018 model Favell - Favco 5/10 K offshore rated crane compatible with the stability of the SMC 2 barge.

The current aerial view of the site overlaid with the planned construction is shown below.



Image courtesy of Royal Haskoning DHV.

3. Vessel Particulars

All tugs and barges have current certificates of survey. Tugs and crane barges will operate under their individual safety management systems (SMS). Dumb barges will operate under the towing tugs SMS.

3.1 Proposed Tugs

Note: this is subject to change based operational requirements at the time, however like for like tugs will be used.

3.1.1 Tug: Arana

Project role: Transport barge to and from site. Barge movements on site as required. Refer to *Ausbarge SMS Tug Arana* for SMS details.

	LOA	14.8 m
	Depth	3.0 m
	Breadth	6.5 m
	Tonnage	79 t
	Bollard Pull	10.38 t
	Fuel capacity	22 m ³
	Survey	2C
	Vessel ID	31366QC
	Propulsion	Twin Screw fixed nozzles design speed 10 knots
	Main Engines	2 x Yanmar 6HA2M - WDT
	Genset	2 x Yanmar
	Communication	VHF, HF, UHF
Navigation	GPS, Compass	

3.1.2 Tug: HT Saipan

Project role: Transport barge to and from site. Barge movements on site as required. Refer to *Ausbarge SMS HT Saipan* for SMS system details.

	LOA	16.0 m
	Depth	2.9 m
	Breadth	6.0 m
	Tonnage	70 t
	Bollard Pull	14 t
	Fuel capacity	20 m ³
	Survey	2C
	Vessel ID	31173QC
	Propulsion	Twin Screw fixed nozzles design speed 10 knots
	Main Engines	2 x Volvo D12-500
	Genset	Perkins 422T
	Communication	VHF, HF, UHF
Navigation	GPS, Compass	



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3.2 Proposed Barges

3.2.1 Crane Barge: LC 20

Project role: Lifting operations involved with the demolition, including pile and concrete removal.
Refer to *SMC Marine SMS Barge LC 20* for SMS details.

	Vessel Name	LC 20
	Previous Names	Big Boy
	Vessel Type	Barge
	Year Built	1981 Steelmains Pty Ltd, Hobart Tasmania
	Construction	Steel with water tight bulkheads: 1 x longitudinal / 4 x athwartships.
	Flag	Australia
	Port of Registry	Sydney
	Official no	855826
	IMO Number	NA
	Classification Society	American Bureau of Shipping (ABS)
	Class	A1 (ABS)
	Class Number	8123763 (ABS)
	Survey	2A
	LOA	33.3 m
	Max breadth	16.3 m
	Moulded depth amidships	2.4 m
	Load Line	1040 mm
	GRT	342 t
	Deadweight	308 t
	Displacement	713 t
	Deck Capacity	10 t / m ²
	Mooring System	4 point: 12 t hydraulic winches with 1.5 t anchors and 28 mm FSWR
	Crane	Favelle/ Favco 50 t SWL with 41. 2 m lattice boom. Vessel mounted on pedestal. 400 kW diesel hydraulic powerpack. Weight 68 t
Generator	78 kW Caterpillar diesel	
Fuel Capacity	4700 L (3.9 t at 0.83 SG)	
Electrical	240 / 415 V	
Fresh Water	4700 L (4.7 t at 1.0 SG)	
Ballast	2 x 5690 L tanks aft P & S (56.9 t FW / 58.32 t SW)	

3.2.2 Piling and Crane Barge: SMC 2

Role: Piling and lifting operations involved with construction. Refer to *SMC Marine SMS Barges* for SMS details.

	<table border="1"> <tr><td>LOA</td><td>24.2 m</td></tr> <tr><td>Breadth</td><td>12.3</td></tr> <tr><td>Depth</td><td>2.10</td></tr> <tr><td>Survey</td><td>2E</td></tr> <tr><td>Vessel ID</td><td>24282</td></tr> <tr><td>Deck capacity</td><td>10 t m²</td></tr> <tr><td>Crane</td><td>Favell Favco 20 t with 27.4 m boom</td></tr> <tr><td>Mooring System</td><td>4 x spuds (deployed by crane) 4 point anchor / winch system</td></tr> </table>	LOA	24.2 m	Breadth	12.3	Depth	2.10	Survey	2E	Vessel ID	24282	Deck capacity	10 t m ²	Crane	Favell Favco 20 t with 27.4 m boom	Mooring System	4 x spuds (deployed by crane) 4 point anchor / winch system
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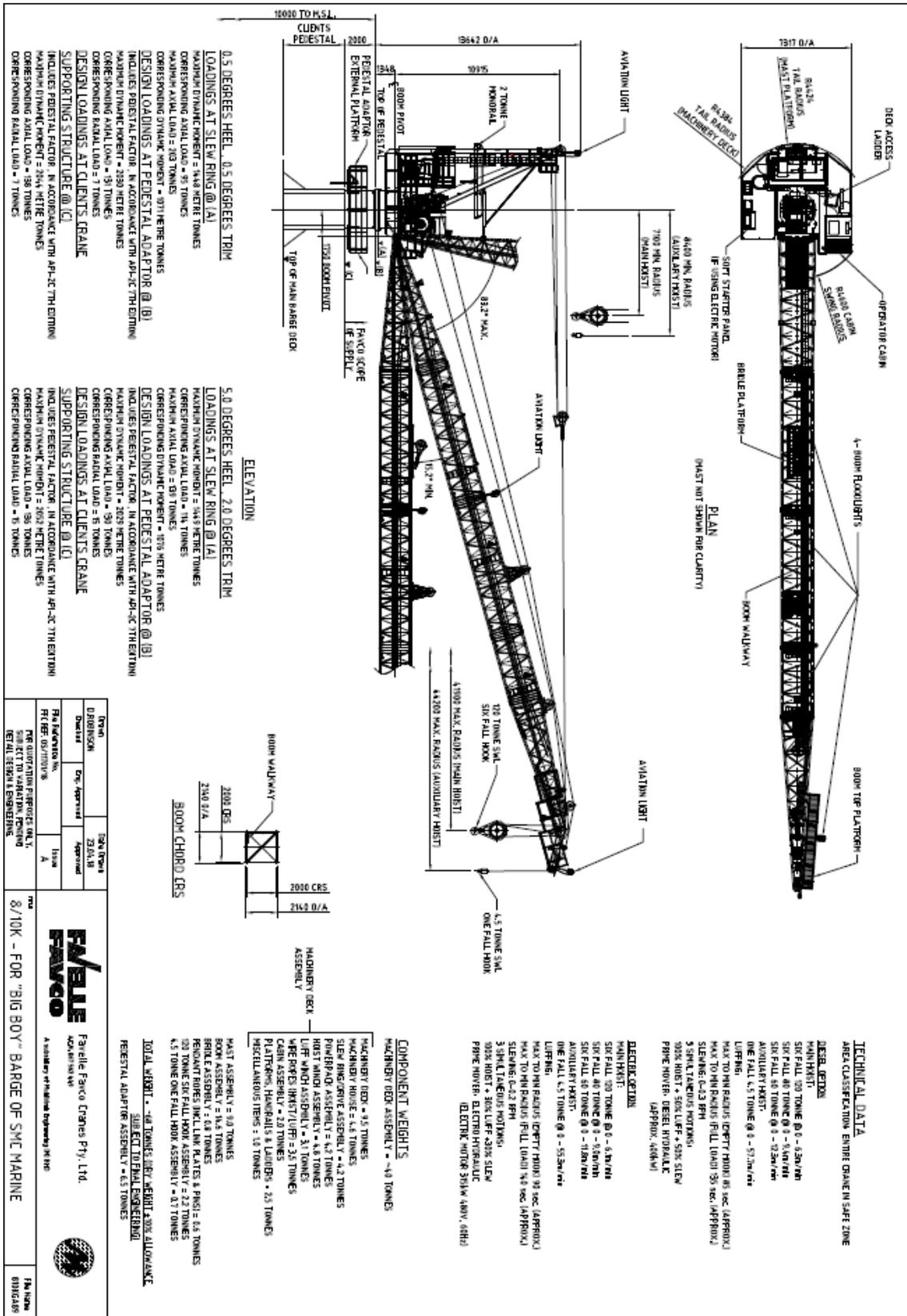
3.2.3 Dumb Barge (Example)

Role: Transport of demolished material to White Bay 2. Delivery of new materials and equipment to the site.

	<table border="1"> <tr><td>LOA</td><td>27 m</td></tr> <tr><td>Breadth</td><td>12.0 m</td></tr> <tr><td>Depth</td><td>2.10 m</td></tr> <tr><td>Survey</td><td>2D</td></tr> <tr><td>Vessel ID</td><td>Various</td></tr> <tr><td>Deck capacity</td><td>10 t sq/m</td></tr> </table>	LOA	27 m	Breadth	12.0 m	Depth	2.10 m	Survey	2D	Vessel ID	Various	Deck capacity	10 t sq/m
LOA	27 m												
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Deck capacity	10 t sq/m												

4. Crane Particulars

4.1 Favell Favco 8/10 K with 41.2 m boom mounted on LC20





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8/10K LOAD CHART
4.12m BOOM
MAIN HOIST: SIX FALLS
0.5 DEGREES HEEL, 0.5 DEGREES TRIM

RANKS HEIGHT (METRES)	SAFE WORKING LOAD IN TONNES			
	ONBOARD	OFFBOARD	ONBOARD	OFFBOARD
7.1	63.2	102.0	81.0	118.7
8.0	81.9	108.7	81.0	118.7
10.0	115.1	101.8	79.1	101.8
12.0	116.3	82.1	66.1	82.1
14.0	134.6	66.5	51.5	66.5
16.0	116.5	58.9	58.9	58.9
18.0	67.5	51.6	45.1	51.6
20.0	64.4	43.9	40.8	43.9
22.0	61.3	41.1	36.8	41.1
24.0	56.1	36.9	33.5	36.9
26.0	54.7	33.1	30.3	33.1
28.0	51.2	29.9	27.5	29.9
30.0	47.6	27.2	25.1	27.2
32.0	43.7	24.8	23.1	24.8
34.0	39.4	22.8	21.5	22.8
36.0	34.8	20.7	19.5	20.7
38.0	29.6	18.4	17.5	18.4
40.0	23.3	16.3	15.3	16.3
41.9	15.2	13.8	13.2	13.1

AUXILIARY HOIST: ONE FALL
4.5 TONNES @ ALL RANKS AND ALL CONDITIONS

8/10K LOAD CHART
4.12m BOOM
MAIN HOIST: SIX FALLS
5.0 DEGREES HEEL, 2.0 DEGREES TRIM

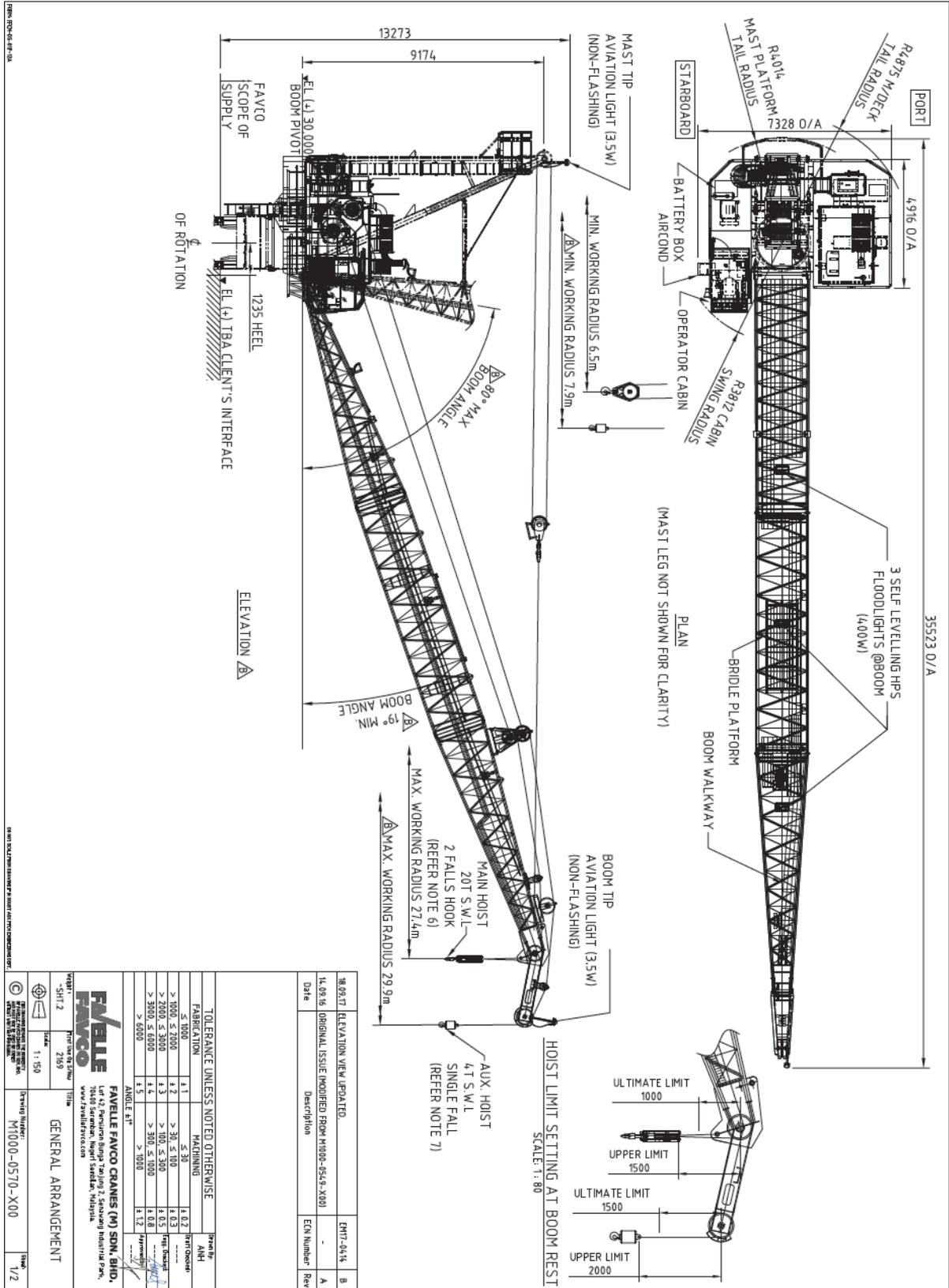
RANKS HEIGHT (METRES)	SAFE WORKING LOAD IN TONNES			
	ONBOARD	OFFBOARD	ONBOARD	OFFBOARD
7.1	63.2	58.0	47.8	58.0
8.0	81.9	58.0	47.8	58.0
10.0	115.1	58.0	47.8	58.0
12.0	116.3	58.0	47.8	58.0
14.0	134.6	57.1	47.0	57.1
16.0	116.5	55.8	45.8	55.8
18.0	67.5	51.6	45.0	51.6
20.0	64.4	45.8	43.8	45.8
22.0	61.3	43.7	40.7	43.7
24.0	56.1	36.5	37.0	36.5
26.0	54.7	32.8	34.8	32.8
28.0	51.2	28.7	27.2	28.7
30.0	47.6	27.0	24.9	27.0
32.0	43.7	24.7	22.9	24.7
34.0	39.4	22.7	21.1	22.7
36.0	34.8	20.7	19.4	20.7
38.0	29.6	18.5	17.5	18.5
40.0	23.3	16.3	15.3	16.3
41.9	15.2	13.8	13.2	13.1

AUXILIARY HOIST: ONE FALL
4.5 TONNES @ ALL RANKS AND ALL CONDITIONS

- NOTES**
1. THE CRANE WILL BE INSTALLED ON THE "BIG BOY" BARGE AND IN COMPLIANCE WITH SHIPBOARD CRANE OF ABS QUIDE FOR CERTIFICATION OF LIFTING APPLIANCES OR AISC 7TH EDITION - OFFSHORE PECTORY MOUNTED CRANES, WHICH EVER IS DEPEND SUITABLE BY ABS CERTIFIED BODY AND FAVOLE FAVO CRANES
 2. OPERATIONS IN AIR
 3. RATED LOAD IS IN TONNES AND IS THE LOAD BELOW THE HOIK.
 4. MAIN HOIST IS REEVED IN SIX FALLS.
 5. AUXILIARY HOISTS IS REEVED IN ONE FALL.
 6. MAX. W. SERVICE HEEL 0.5° TRIM 0.5° OR HEEL 5.0° TRIM 2.0°
 7. IN SERVICE WHO SPEED 20KNOTS
 8. ALL LIFTS ARE OPERATED ABOVE SEA LEVEL.

DESIGNED BY ZELAK	DATE 2024.10	ISSUE NO. 1	FOR THE USE OF FAVOLE FAVO CRANES
CHECKED BY Approved	DATE 2024.10	ISSUE NO. 1	FOR THE USE OF FAVOLE FAVO CRANES
		FAVOLE FAVO A subsidiary of Farnell Engineering Pty. Ltd.	
TITLE: 8/10K - FOR "BIG BOY" BARGE OF SMC MARINE		FILE NO: 6101GAS8	

4.2 Favelle Favco 5/10 K Crane with 27.4 m boom - SMC 2 Barge



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S/N 15/10K - 27.4m BOOM
MAIN HOIST 2 FALLS / AUX. HOIST 1 FALL
/BOOM HOIST 6 FALLS
STOCK CRANE

BOOM ANGLE (°)	RADIUS (m)	S.W.L (IN TONNES)	
		ON BOARD	OFFBOARD
80.0	6.5	20.0	20.0
76.8	8.0	20.0	17.5
72.5	10.0	20.0	13.8
68.0	12.0	20.0	11.3
63.4	14.0	16.9	9.4
58.5	16.0	13.9	8.0
53.5	18.0	11.6	6.9
48.0	20.0	9.7	5.9
42.0	22.0	8.2	5.3
35.2	24.0	6.9	4.8
26.8	26.0	5.7	4.7
19.0	27.4	5.0	4.6

AUXILIARY HOIST S.W.L 4.0T : PERSONNEL LIFT 1.0T @ ALL RADII (MIN. 7.9m - MAX. 29.9m)
API 2C MINIMUM RECOMMENDED HOOK SPEED: 12.1m/min
MAXIMUM OPERATING WIND SPEED: 18.0m/sec
RATING METHOD: LEGACY DYNAMIC METHOD & GENERAL METHOD
≤0.5° LIST ANGLE CONDITION

TECHNICAL DATA

AREA CLASSIFICATION: WHOLE CRANE IN SAFE ZONE EXCEPT BOOM IN ZONE 2
MAIN HOIST: 20.0 TONNE S.W.L - 2 FALLS
SPEED: 0-18.0m/min @ 1st LAYER
AUX HOIST: 4.0 TONNE - SINGLE FALL
SPEED: 0-62.5 m/min (LAYERAGE)
LUFF: MAX. 70 MIN. RADII IN 79.6 SEC APPROX. (THEORETICAL)
SLEW: 0-1.61 RPM
POWERPACK: DETROIT S50
410kW @ 2100 RPM
OPERATING WIND SPEED: 18.0 m/sec
STOWED WIND SPEED: 63.0 m/sec

COMPONENT WEIGHTS

MACHINERY DECK ASSEMBLY	26.6 T
MAST ASSEMBLY	4.4 T
SLEW MOUNT	4.2 T
BOOM ASSEMBLY	6.7 T
BRIDLE ASSEMBLY	0.7 T
MAIN HOOK ASSEMBLY	0.6 T
FLY HOOK ASSEMBLY	0.2 T
RIGGING WEIGHTS	2.2 T
TOTAL CRANE WEIGHTS (GPRV)	45.6 T

NOTES

- THIS CRANE IS BUILT IN ACCORDANCE WITH API-2C 7TH EDITION.
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SPECIFIED OTHERWISE.
- RATED LOAD IS IN METRIC TONNES AND REFER TO LOAD BELOW THE HOOK.
- MAIN HOIST IS REVEED IN 2 FALLS.
- AUXILIARY HOIST IS REVEED IN SINGLE FALL.
- S.W.L OF MAIN HOIST HOOK IS 25.0T HOWEVER, THE LIFTING CAPACITY IS AS PER MAX. SWL OF LOAD CHART.
- THE LIFTING CAPACITY IS AS PER MAX. SWL OF LOAD CHART.
- S.W.L OF AUX. HOIST HOOK IS 2.0T HOWEVER, THE LIFTING CAPACITY IS AS PER MAX. SWL OF LOAD CHART.
- AXIAL LOADING AT PEDESTAL INTERFACE IS INCLUDED AT LEVEL (A), (B) & (C). COMPONENTS WEIGHT, SHOULD HAVE ± 5% VARIANCE.

LOADING @ SLEW RING (A)

MAX DYNAMIC MOMENT 454.6 Tm
CORRESPONDING AXIAL LOAD 48.4 T
MAX AXIAL LOAD 79.1T
CORRESPONDING DYNAMIC MOMENT 449.9 Tm

LOADING @ PEDESTAL ADAPTOR (B)

DESIGN LOADS INCLUDES PEDESTAL FACTOR (IN ACCORDANCE WITH API-2C)
MAX DYNAMIC MOMENT 656.2 Tm
CORRESPONDING AXIAL LOAD 99.7 T
MAX AXIAL LOAD 99.7 T
CORRESPONDING DYNAMIC MOMENT 656.2 Tm

LOADING @ PEDESTAL INTERFACE (C)

DESIGN LOADS INCLUDES PEDESTAL FACTOR (IN ACCORDANCE WITH API-2C)
MAX DYNAMIC MOMENT 659.1 Tm
CORRESPONDING AXIAL LOAD 103.9 Tm
MAX AXIAL LOAD 103.9 Tm
CORRESPONDING DYNAMIC MOMENT 659.1 Tm

LOAD CHART COMPONENTS & TOTAL WEIGHT	EMT -0.1%	B	
18,000 T UPGRADED	-	A	
14,000 T ORIGINAL ISSUE (MODIFIED FROM M1000-0519-X100)	-	A	
Date	Description	ECN Number	Rev

TOLERANCE UNLESS NOTED OTHERWISE	FINISH
FABRICATION	MAINTENANCE
± 1	± 0.2
≤ 1000	± 0.1
> 1000 ≤ 3000	± 0.2
> 3000 ≤ 10000	± 0.3
> 10000 ≤ 40000	± 0.4
> 40000 ≤ 60000	± 0.5
> 60000	± 0.6
ANGLE ±1°	± 0.2

FAVELLE FAVCO
Let 42, Puchong Jaya, Teluk 2, 47100 Puchong, Selangor, Malaysia
www.favellerecranes.com

Weight: 14,500 kg
Type: Stock
Size: 289
Title: GENERAL ARRANGEMENT

Serial Number: M1000-0519-X100
Date: 2/2

5. Mobilisation and Demobilisation

Refer to Appendix 1 for the Route Plan to and from the One Sydney Harbour Site.

The SMC Yard at White Bay 2 will be the primary offsite load out and set down area for the barges as well as for berthing when not required.

Piles and other steel members for the construction stage will be delivered by ship to White Bay 4. A permit from PANSW has been obtained to use the berth.

A crane barge will remain at One Sydney Harbour for the majority of the demolition and construction stages.

One dumb barge is proposed to be in operation intermittently to and from the site. Other dumb barges may be required on occasion; however, it is not envisaged that more than one dumb barge will be at the One Sydney Harbour site at the same time.

SMC will implement any conditions detailed in the Harbour Masters Permit.

5.1 Indicative Schedule of Vessel Movements (Demolition Stage)

Note: dates and times are subject to change based on site conditions, weather conditions, the White Bay Cruise Terminal shipping schedule and Lendlease requirements.

Mobilisation and site establishment for the demolition phase is proposed to take place on Friday 18 January 2019. Barge movements will be timed to avoid shipping at White Bay.

A tug will transport the barge LC 20 and deliver and collect dumb barges or the LC20 containing demolished materials as required. This is likely to be once a week, possibly Fridays, at some time between 15:00 -18:00.

Friday 18 January (approx)	
07:30	HT Saipan and barge LC20 depart White Bay 2 for One Sydney Harbour.
07:45	HT Saipan and LC20 arrive One Sydney Harbour.
08:00	Site establishment, including: <ul style="list-style-type: none"> • deployment of barge mooring anchors • deployment of sediment containment boom around worksite (by work punt) <i>Refer to Mooring Plan for details</i>
09:00	HT Saipan Departs One Sydney Harbour for White Bay 2.
Dumb barge transport (once a week)	
07:00	Arana and dumb barge depart White Bay 2 for One Sydney Harbour.
07:15	Arana and dumb barge arrive One Sydney Harbour.
07:30	Arana departs One Sydney Harbour for White Bay 2.
07:45	Arana arrives White Bay 2.
Dumb barge and / or LC20 collection when ready (once a week)	
16:45	Arana departs White Bay 2 for One Sydney Harbour.
17:00	Arana arrives One Sydney Harbour.
17:15	Arana and dumb barge depart One Sydney Harbour for White Bay 2
17:30	Arana and dumb barge arrive White Bay 2.
Friday 31 May (approx)	
14:30	HT Saipan departs White Bay 2 for One Sydney Harbour
14:45	HT Saipan arrive One Sydney Harbour
15:00	Site disestablishment, including: <ul style="list-style-type: none"> • retrieval of barge mooring anchors • retrieval of sediment containment boom (by work punt)
16:00	HT Saipan and LC20 departs One Sydney Harbour.
17:15	HT Saipan and barge LC20 arrive White Bay 2.

5.2 Indicative Schedule of Vessel Movements (Construction Stage)

Note: dates and times are subject to change based on site conditions, weather conditions, the White Bay Cruise Terminal shipping schedule and Lendlease requirements.

A ship delivering the steel piles and modules for the project will berth at White Bay 4 at some time between 1 and 15 February 2019. Piles and steel modules will be unloaded from the ship to the wharf to stand by for mobilisation to One Sydney Harbour as required.

Mobilisation and site establishment for the construction phase is proposed to take place in early April 2019. Times will be chosen to avoid the ship movements at White Bay. Demobilisation is proposed for a date to be advised in late October 2018.

Tugs will transport the barge SMC 2 and construction dumb barges to and from White Bay 2.

Delivery of piles and other materials on dumb barges will take place at a frequency of once or twice a week on any week day between 07:00 and 10:00, at a time to avoid ship movements at White Bay.

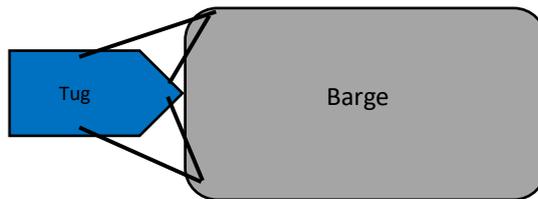
Mobilisation to site Monday 8 April, 2019 (TBC)	
07:30	Arana and barge SMC 2 depart White Bay 2 for One Sydney Harbour.
07:45	Arana and SMC 2 arrive One Sydney Harbour.
08:00	Site establishment, including: <ul style="list-style-type: none"> • deployment of barge spuds • deployment of sediment containment boom around worksite (by work punt). <i>Refer to Mooring Plan for details</i>
09:00	Arana Departs One Sydney Harbour for White Bay 2.
Dumb barge delivery once or twice a week.	
07:00	Arana and dumb barge depart White Bay 2 for One Sydney Harbour.
07:15	Arana and dumb barge arrive One Sydney Harbour.
07:30	Arana departs One Sydney Harbour for White Bay 2.
07:45	Arana arrives White Bay 2.
Dumb barge collection when ready	
16:45	Arana departs White Bay 2 for One Sydney Harbour.
17:00	Arana arrives One Sydney Harbour.
17:15	Arana and dumb barge depart One Sydney Harbour for White Bay 2.
17:30	Arana and dumb barge arrive White Bay 2.
Late October 2018	
14:30	Arana departs White Bay 2 for One Sydney Harbour.
14:45	Arana arrive One Sydney Harbour.
15:00	Site disestablishment, including: <ul style="list-style-type: none"> • retrieval of barge mooring anchors • retrieval of hydrocarbon / sediment containment (by work punt).
16:00	Arana and LC20 departs One Sydney Harbour
17:15	Arana and barge LC20 arrive White Bay 2.

6. Tow Arrangement

The preferred tow arrangement will be at the Master's discretion and will be determined by factors such as sight lines from the wheelhouse, manoeuvring characteristics of a particular barge, wind and tide conditions, and the desired angle of approach to the mooring site. Generally, there are two options as shown below.

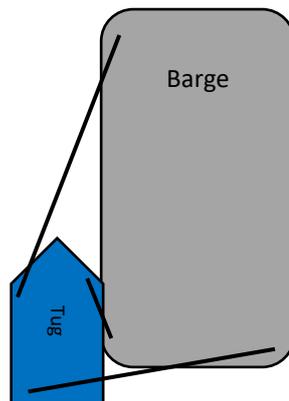
Option 1

Pushing from stern.



Option 2

Hipped up on either the port or starboard side.



7. Mooring Arrangements

The proposed mooring arrangements have been determined by the following:

- The barges and cranes designed to safely undertake the required demolition and construction tasks at the site under the varying marine conditions present at Barangaroo.
- The desire to keep the anchor scope as short as possible to minimise the impact on passing vessels, the Barangaroo Ferry Hub, and White Bay cruise ships while ensuring adequate holding power for the barges.
- Harbour Masters Directions.

The likely arrangements are described below. Minor adjustments to the mooring arrangement are to be expected as conditions on site change through the evolution of demolition and construction.

7.1 Demolition Stage

It is envisaged that two barge positions will be required for the LC 20 to complete the demolition, requiring the barge to be moved approximately 42 m North from position one to position two at approximately two weeks from the commencement date.

7.1.1 Mooring specifications

Refer to Appendix 2 and 3 for the mooring arrangements proposed for the two barge positions at the site.

Naval Architects from ASO Marine Consultants have designed the mooring arrangements to provide more than sufficient holding power to withstand the conditions expected on site.

The following parameters were taken into account in the design:

- Estimated position of mooring 1:
 - 33.863541878 S /151.200776942 E
 - 74 m north of BFH Wharf 1A.
 - 82 m south of corner between wharf face and Popes Landing.
- Estimated position of mooring 2:
 - 33.863168818 S /151.200741402 E
 - 116 m north of BFH Wharf 1 A.
 - 40 m south of corner between wharf face and Popes Landing.
- Mooring design life: 6 months.
- Current: 2 knots along the quay line.
- Wind: 40 knots.
- Maximum vessel wake wash: 0.5 m significant wave height.
- Cruise ship propeller wash: 1.5 m/s from the North and North West (*Royal Haskoning DHV, 2017*)
- Water depth: 14 m.
- Harbour bed: soft sediment.

Two x 2 t Flipper Delta anchors will be deployed with a scope of 5:1 and will be on the harbour bed at a maximum of 70 m out from the wharf. The anchors will sit within the exclusion zone described in Section 10, providing sufficient clearance for passing vessels to navigate into Barangaroo Ferry Hub, Darling Harbour and White Bay.

In comparing the mooring arrangement to the Perceived Concerns and Mitigating Controls described in Section 6 of *Barangaroo Jetty and Pontoon Development, Port Authority of NSW 2016*, the anchor on the harbour bed for the Northern most mooring position will be more than 30 m from the closest point of approach for cruise ships using the swing basin, and the barge on the surface will be more than 80 m.

The mooring design has taken into account prop wash from cruise ships using the swing basin based on data provided in *Barangaroo South Stage 1B Public Domain Navigation Impact Assessment: Royal Haskoning DHV, 24 January 2017, as well as Barangaroo Jetty and Pontoon Development, Port Authority of NSW 2016*.

The mooring system components to be used in order to satisfy the design are described below. Refer to Appendix 4 for the mooring profile showing these components on the harbour bed. The system will be assembled on the barge at White Bay 2 prior to mobilisation.

Component	Description	Capacity
Winches x 4	Hydraulic 12 t	12 t SWL (min 3.5 t required for mooring)
Anchors	2 t Flipper Delta	29.9 t (293 kN) holding capacity
Anchor wire	28 mm FSWR with hard eye and thimble	350 kN MBL
Shackles	Bow shackle with safety pin and nut (moused) 12.5 t WLL	12.5 t WLL / 695 kN MBL
Berthing lines	6 X 40 mm eight strand polypropylene rope to 20 mm chain with sleeve around pile, linked by 12.5 t shackle.	255 kN MBL

MBL = Minimum Breaking Load, SWL = Safe Working Load, WLL = Working Load Limit

The amount of wire to pay out in order to satisfy the design is as follows:

Anchor scope	5:1 at 14 m depth
Rhode to pay out on winch from fairlead	70 m
Distance of anchor across ground from wharf	70 m

7.1.2 Indicative Mooring Procedure

The Barge Supervisor will direct and supervise all barge and mooring operations and will lead a Tool Box Meeting with all tug and barge participants before commencing, ensuring that all participants understand their roles and that clear communication is maintained throughout the procedure. The likely mooring procedure is as follows:

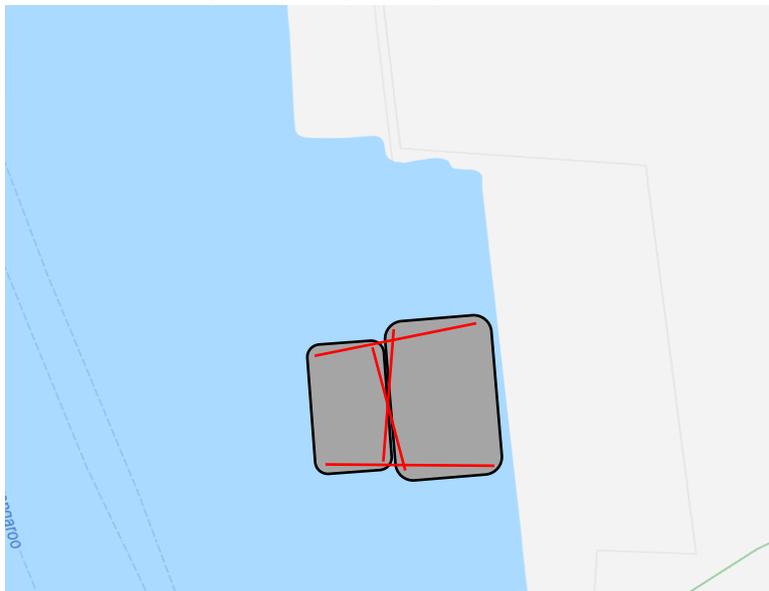
Deployment

1. Tug takes barge to Northern anchor position and anchor is deployed by barge winch.
2. Tug takes barge to Southern anchor position while Northern anchor line is paid out. Southern anchor is deployed by barge winch.
3. Tug pushes barge into wharf as both anchor lines are paid out.
4. Tug holds barge in position off wharf while berthing lines are made off to wharf.
5. Tug holds barge in position while remaining two winch wires are attached to wharf fittings (if available).
6. Tug hold barge while anchor wires are tensioned.
7. Tug departs.

Retrieval

1. Tug holds barge while winch wires attached wharf to are unattached and brought in.
2. Tug holds barge while berthing lines are let go.
3. Tug takes barge to Southern anchor position as Southern winch wire is brought in.
4. Winch weighs Southern anchor.
5. Tug takes barge to Northern anchor position as Northern winch wire is brought in.
6. Winch weighs Northern Anchor.
7. Tug and barge depart.

7.1.3 Dumb barge berthing arrangement



7.2 Construction Stage

The SMC 2 barge will be used during construction and will be moored with steel spuds (600 mm x 24 m). Refer to Appendix 5 for the various positions the barge is likely to be moored. Work will generally take place from the southern site boundary, working towards the north.

7.2.1 Mooring procedure

1. The crane will position the spuds while the tug holds the barge steady. The spuds will be locked off when in position.
2. The sediment containment boom and exclusion zone special markers will be deployed.
3. Dumb barges will berth alongside the SMC 2, with berthing lines made off in the same arrangement as shown for the LC 20.

8. Communication

A *Harbour Masters Instruction* will be published on the NSW Port Authority Website and broadcast by Vessel Traffic Services (VTS) Sydney. Exact dates and times for the VTS including onsite barge manoeuvring involving anchor deployment and retrieval will be confirmed as per *Notice to Mariners No. 19 of 2017*.

Communication between the tug and barge on site will be verbal when in vocal range and by two way radio when out of vocal range. The Site Supervisor will also have the mobile phone number of the tug Master and Dive Supervisor for communication at other times.

Communication and radio watch between Sydney Ports VTS and the tug will take place on VHF Channel 13, with all switching over to the working channel specified by VTS at the required time.

Distress watch will also take place on VHF Channel 16.

Radio watch will be maintained at all times during towing and tug operations.

The tug Master will report to VTS Channel 13 before departure from White Bay and Barangaroo.

Harbour City Ferries Operational Control will notify ferry Master's via VHF radio and the weekly bulletin.

8.1 Project Contact List:

Name	Role	Phone	Email
Chien Choong	Senior Project Engineer: Lendlease = One Sydney Harbour	0429 963 185	chien.choong@lendlease.com
Murray Graham	Senior Site Manager: Lendlease - One Sydney Harbour	0438 839 444	murray.graham@lendlease.com
Farrell Knox	Site Foreman: Lendlease - One Sydney Harbour	0405 445 405	farrell.knox@lendlease.com
Niall Magee	SMC General Manager	0451 512 974	niall@smcmarine.com.au
Jack Atkinson	SMC Project Manager	0431 598 758	jacka@smcmarine.com.au
Sam Webb	SMC Barge Supervisor	0401377267	sam@smcmarine.com.au
Mal Finnan	SMC Marine HSE Coordinator	0407 942 011	mal@smcmarine.com.au
Scott Mitchell	Subsea Works Dive Supervisor	0447 782 732	scott@subseaworks.com.au
Sharad Bhasin	Manager, Compliance and Planning, Port Authority of NSW	0409 811 810	sbhasin@portauthoritiesnsw.com.au
Dan Dummer	RMS Manager Operations	02 9563 8504	daniel.dummer@rms.nsw.gov.au
Harbour City Ferries	Operations Control	VHF CH 1	opscontroller@harbourcityferries.com.au
Ray Windle	Harbour City Ferries Operations Manager	0404 473 925	raymond.windle@harbourcityferries.com.au
VTS Sydney	Vessel Traffic Service	VHF Ch 13 9296 4999	vts@portauthoritiesnsw.com.au
Greg Hall	Director – Ausbarge Marine Services	0438 091 286	greghall@ausbarge.com

8.2 Emergency Contacts:

Emergencies on Harbour	000
Port Authority of NSW	9296 4003
VTS Sydney	VHF Channel 13
NSW Water Police	9320 7499
Harbour City Ferries	VHF Channel 1

9. Risk Assessment

A detailed risk assessment covering all aspects of the project is contained in *SMC Project EHS Plan - One Sydney Harbour Waterfront Structures Works*.

Risk assessments for operations on board each tug and barge are included as part of the respective vessel safety management system.

10. Marine Traffic Controls

10.1 Exclusion Zone

SMC Marine requests a *Harbour Masters Instruction* (Exclusion Zone) is published on the NSW Port Authority Website and broadcast daily by Vessel Traffic Services (VTS) Sydney. Exact dates and times for the VTS including onsite barge manoeuvring involving anchor deployment and retrieval will be confirmed as per *Notice to Mariners No. 19 of 2017*. Aus 202 is the chart affected by the works.

The boundary of the exclusion zone will be confirmed after deployment. A distance of 70 from the wharf has been chosen to be consistent with the mooring arrangement, minimise the impact on vessels navigating into the Barangaroo Ferry Hub, Darling Harbour and White Bay, and to minimise confusion with backscatter from Barangaroo with the special marker lights at night.

10.1.1 Exclusion Zone Demolition Stage Barge Position 1

Refer to Appendix 5 for an overview of the exclusion zone.

The southern exclusion zone boundary will run at right angles with the wharf approximately 59 m north of the BFH 1 north west corner. The boundary running south to north along the site will be parallel with and approximately 70 m from the wharf before tapering in at the north to finish at the Popes Landing south west corner.

10.1.2 Exclusion Zone Demolition Stage Barge Position 2

Refer to Appendix 6 for an overview of the exclusion zone

The southern exclusion zone boundary will run at right angles with the wharf approximately 74 m north of the BFH 1 north west corner. The boundary running south to north along the site will be parallel with and approximately 70 m from the wharf before tapering in at the north to finish at the Popes Landing north west corner.

10.1.3 Exclusion Zone Construction Stage

Refer to Appendix 7 for an overview of the exclusion zone

The southern exclusion zone boundary will run parallel with and 20 m to the north east of BFH 1, with markers 5 m off the construction boundary line. The boundary running south to north along the site will be parallel with and approximately 70 m from the wharf before tapering in at the north to finish at the Popes Landing north west corner.

10.1.4 Exclusion Zone Special Markers

Yellow special marker buoys with 2 NM battery powered yellow flashing lights will be deployed to mark the exclusion zone boundary, as shown below. These will be spaced at approximately 30 m intervals and held in place with 1 t biscuit moorings:



10.1.5 No Wash Zone

A no wash zone will be required as part of the *Harbour Masters Instruction* for both stages of the works. SMC request this is also broadcast on VHF Channel 13 as per the VTS broadcast schedule. The 'RY' No Wash flag combination will be displayed from the barge during the day time, as shown below.

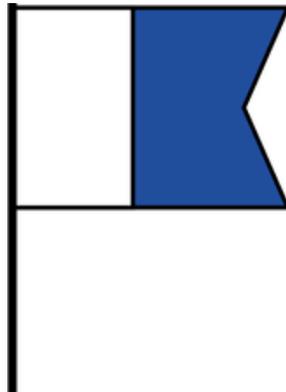


10.1.6 Diving Operations

The dive vessel Trieste (7.5 x 2.5 m) and dive team will be engaged to assist with pile removal during the demolition phase and as required during construction. The vessel is in 2D Survey and will be navigated by a Coxswain. All divers have ADAS Diver qualifications with the Dive Supervisor qualified as an ADAS Dive Supervisor.

The Dive Supervisor will notify VTS of intended diving operations each day and upon completion. All diving will comply with *AS/NZS 2299: Occupational Diving Operations* and will be contained within the exclusion zone.

The Alpha flag (Diver Below) as shown below will be displayed for all diving operations where it can best be seen by vessel traffic.



10.2 Collision Prevention

10.2.1 Collision Regulations

All tug and barge operations will comply with all relevant controls in the *International Regulations for the Prevention of Collisions at Sea*, Harbour Masters Directions and the practice of good seamanship.

10.2.2 Impact on Ferry Operations

All barge movements will be timed to avoid ferry arrivals and departures at the adjacent Barangaroo Ferry Hub, however given the proximity of the site and exclusion zone to the ferry hub, ferry masters are requested to use caution, minimise wash and to navigate their approach and departure from the wharf well clear of the exclusion zone marked by yellow special marker buoys with flashing lights.

The southern boundary of the exclusion zone during the demolition stage for barge position 1 is approximately 59 m from the BFH 1, and 74 m for barge position 2.

The southern boundary of the exclusion zone during the construction phase is 20 m from BFH 1.

Barge operations at the southern extremity of the site during the construction stage are planned to commence from the southern boundary working towards the north west, with the barge oriented as shown in Appendix 7. This will not impact on ferry operations at the BFH 1A

There will be audible noise for passengers however this will be kept to within the hours allowed by the development consent, with SMC Marine employing all technology available to ensure noise is kept to a minimum. Noise monitoring will also take place adjacent to the Ferry Hub.

The sediment containment boom will be secured to piles in such a fashion that it does not present a hazard to ferries.

10.2.3 Impact on White Bay Shipping Operations

All barge movements and lifting operations at the One Sydney Harbour site will be timed to avoid ship movements in the swing basin. Appendix 8 has the cruise ship arrival and departure schedule for the project. The schedule will be monitored to ensure shipping is avoided.

The anchors on the harbour bed for the northern most mooring position will be more than 30 m from the closest point of approach for cruise ships using the swing basin, and the barge on the surface will be more than 80 m.

The mooring design has taken into account prop wash from cruise ships using the swing basin based on data provided in *Barangaroo South Stage 1B Public Domain Navigation Impact Assessment: Royal Haskoning DHV, 24 January 2017*, as well as *Barangaroo Jetty and Pontoon Development, Port Authority of NSW 2016*.

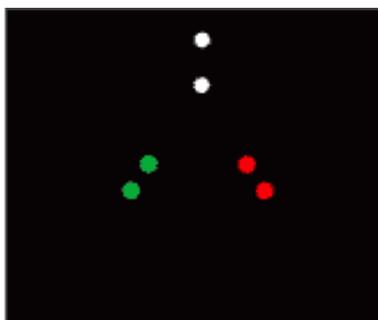
10.2.4 Impact on Sydney Metro Barge Operations

The route plan for the project will not impact on the route plan for barge works between the Sydney Metro barging facility at Barangaroo and Clyde or Blues Point as the facility is approximately 250 m to the north of the most Northern OSH site boundary.

The scope of this *Marine Traffic Management Plan* includes Ausbarge Marine Services who are the same company engaged for both projects. All scheduling for OSH barge operations will be coordinated through the Ausbarge Operations Manager responsible for the Sydney Metro barge operations.

10.2.5 Navigation Lights and Day Shapes

If barge movement is required at night or in restricted visibility, the tug will display port and starboard steaming lights, a stern light, a masthead light and an additional towing light for a tow < 50 m, with the barge displaying port and starboard lights, as shown below (head on view).



The barge will display a black ball in daylight hours and an all round white light between dusk and dawn, as shown below.



10.2.6 Masters Certificate of Local Knowledge for Sydney Harbour

The tug Master will have a Certificate of Local Knowledge for Sydney Harbour and will report to VTS Channel 13 when departing White Bay and One Sydney Harbour with barges.

10.2.7 Anchor Watch

Anchor watch is not expected to be required while the barge is unattended at night as the barge will be made off to the wharf with four berthing lines in addition to the mooring arrangement. The barge will either be demobilised back to White Bay or Additional berthing lines will be attached if severe storms or wind greater than 40 knots are forecast.

10.3 Vessel Safety Management Systems

All operational and emergency procedures described in the tug and barge Safety Management System are to be followed.

10.4 Weather Forecasting

BOM weather forecasts will be monitored throughout the works via the internet and VHF Channel 16. Site establishment and barge movements on site will be postponed if severe storms are forecast for the scheduled times. The barge will either be demobilised back to White Bay or Additional berthing lines will be attached if severe storms or wind greater than 40 knots are forecast.

All lifting operations will take place within the cranes wind operating limits.

10.5 Bathymetric Channel Survey

SMC Marine can arrange for a bathymetric survey of the channel area affected by anchoring at the completion of the works, if directed by the Port Authority of NSW.

11. Minimum Crew Qualifications

Role	Qualification
Tug Master	Master < 24 m, MED Grade 3, Certificate of Local Knowledge for Port Jackson
Tug Deck Hand	General Purpose Hand
Barge Supervisor	SMC Internal Verification of Competency, C1 HRW Licence, DG HRW Licence.
Crane Operator	C6 HRW Licence (LC 20) C1 HRW Licence (SMC 2)
Dogmen	DG HRW Licence
Dive Boat Master	Coxswain
Dive Supervisor	ADAS Dive Supervisor
Divers	ADAS Diver
Work punt operator	Exemption 38.

12. Operational and Emergency Procedures

All tugs and the barge SMC 2 have NSCV compliant Safety Management Systems, featuring procedures for all onboard operations, as well as emergency procedures for the following:

- Man Overboard
- Fire
- Collision / Grounding
- Flooding
- Abandon Ship
- Fuel / Oil Spill
- Injury on board

The barge LC 20 has an International Safety Management (ISM) Code Safety Management System.

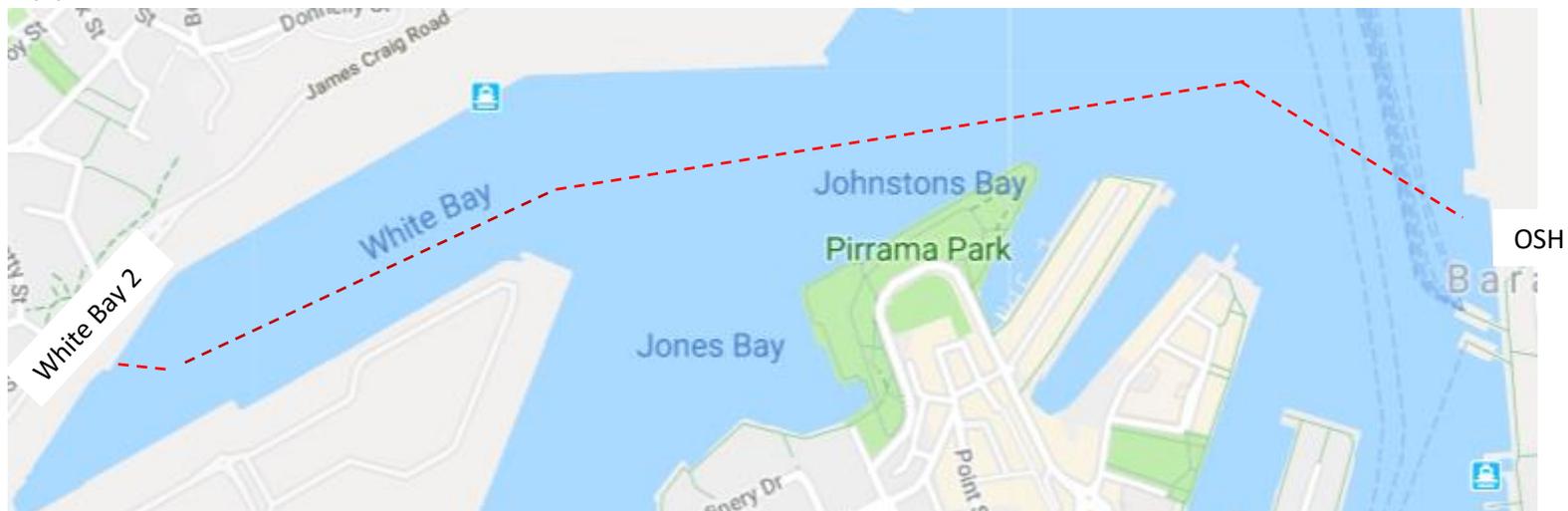
All tugs and barges have fire fighting equipment, first aid equipment and emergency spill kits applicable to the relevant survey requirements.

Emergency response for the project is detailed *SMC Project EHS Plan - One Sydney Harbour Waterfront Structures Works* and includes procedures for site evacuation.



Marine Traffic Management Plan - One Sydney Harbour

Appendix 1: Route Plan

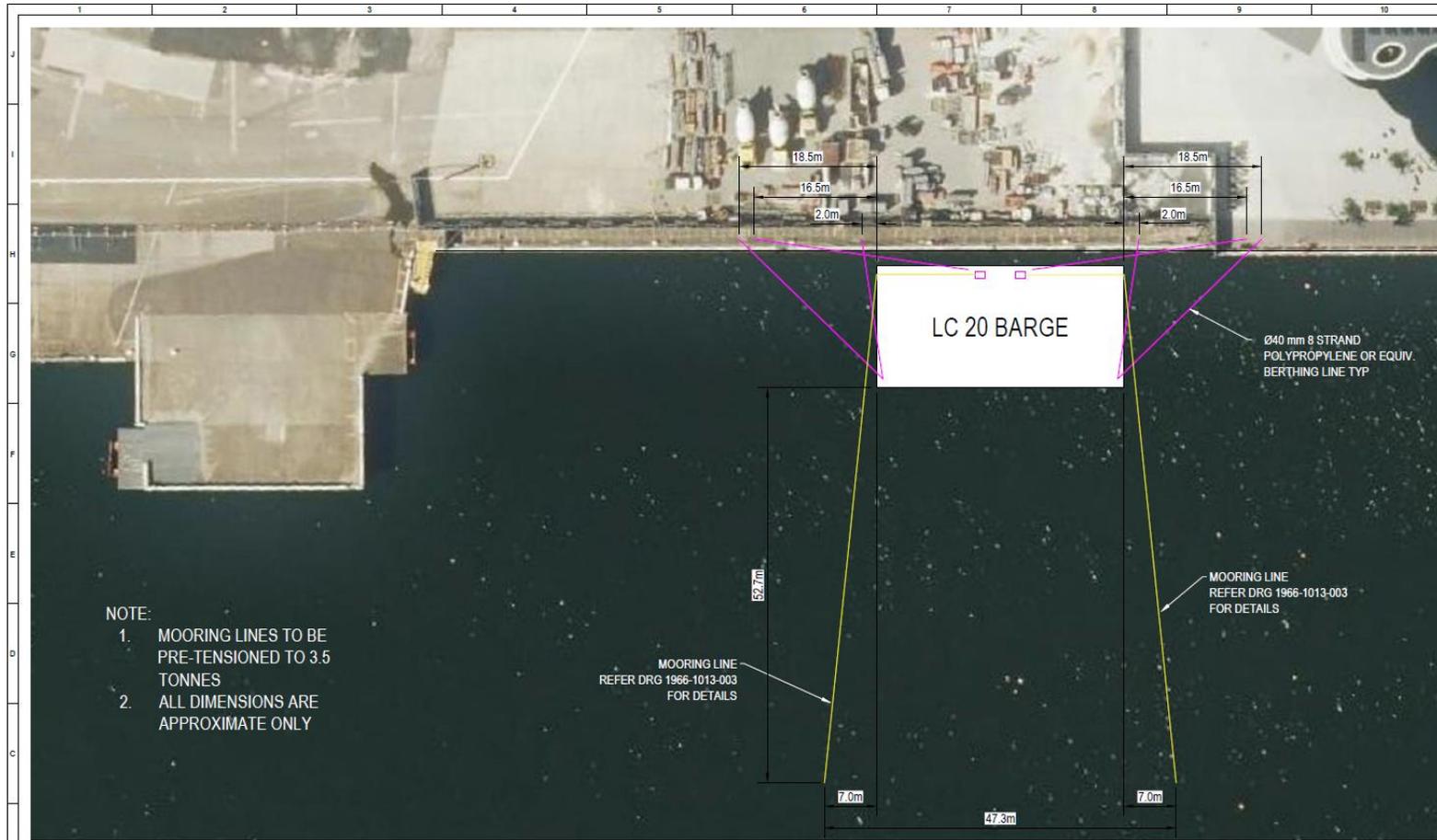


----- Tug and barge routes between White Bay 2 and One Sydney Harbour Barangaroo.



Marine Traffic Management Plan - One Sydney Harbour

Appendix 2: LC 20 Mooring Arrangement Position 1 (Demolition Stage)



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REV	DATE	DESCRIPTION	BY	APP	APPROVED	DATE
3	07-03-2019	GENERAL UPDATES	GH	MD	DATE: 15-10-2018	
2	06-03-2019	ARRANGEMENT UPDATED	GH	MD	ENGINEERED: DC DATE: 15-10-2018	
1	15-10-2018	ISSUED FOR COMMENT FOR INCLUSION OF CRUISE SHIP PROPP WASH AND UPDATED CLIP WEIGHT	GH	MD	CHECKED: MD DATE: 15-10-2018	
0	15-10-2018	ISSUED FOR COMMENT	GH	MD	APPROVED: MD DATE: 15-10-2018	

CLIENT:-
SMC MARINE

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email: info@aso-marine.com.au

PROJECT:-
ONE SYDNEY HARBOUR WATERFRONT

TITLE:-
**LC 20 BARGE AT BARRANGAROO
MOORING ARRANGEMENT 1**

SCALE:-
1:500

DRAWING No.:-
1966-1013-001

SHEET:-
1 OF 1

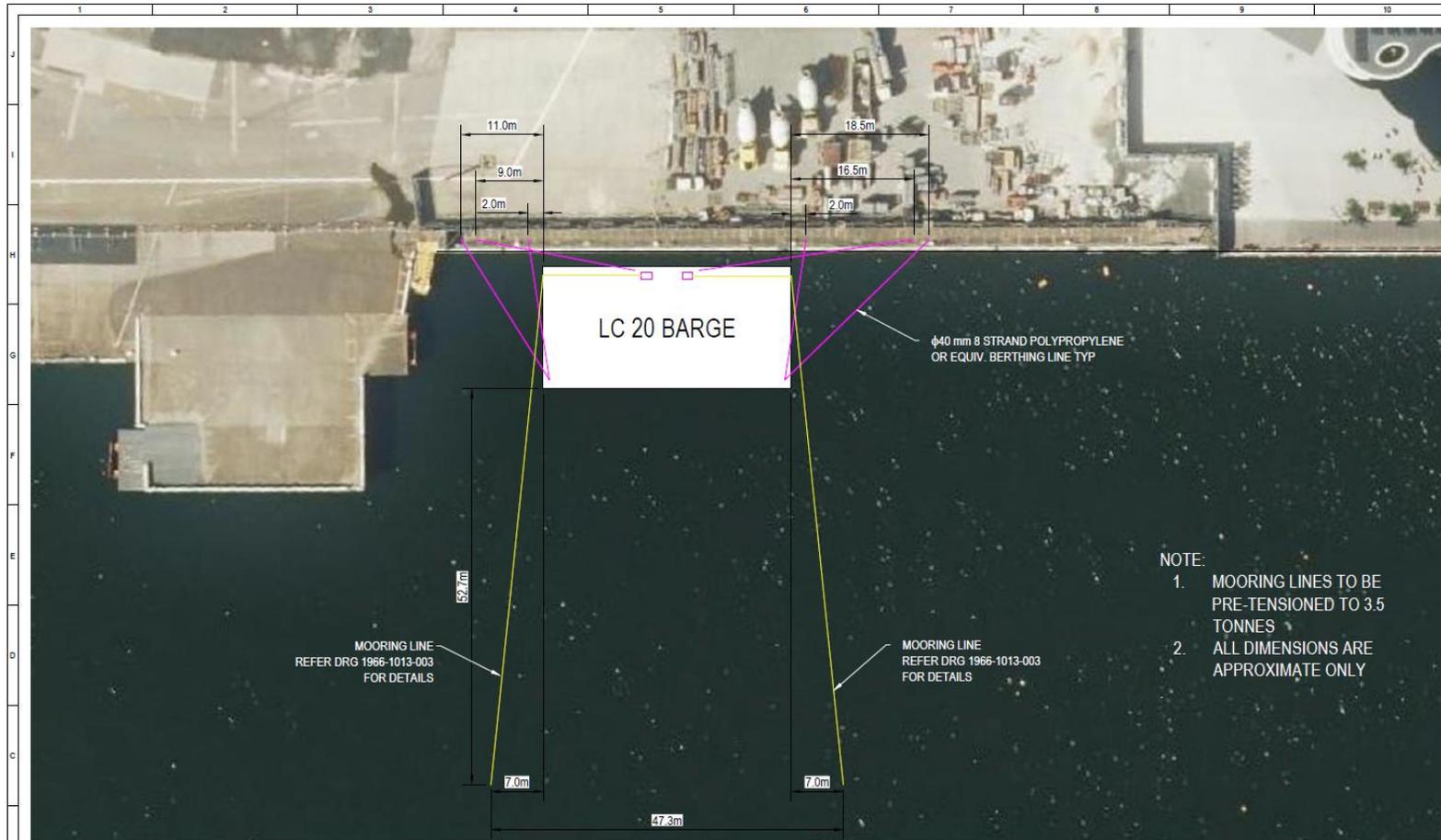
REV.:-
3

ORIG. DRG. SHIP A3



Marine Traffic Management Plan - One Sydney Harbour

Appendix 3: LC 20 Mooring Arrangement Position 2 (Demolition Stage)



- NOTE:
1. MOORING LINES TO BE PRE-TENSIONED TO 3.5 TONNES
 2. ALL DIMENSIONS ARE APPROXIMATE ONLY

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REV	DATE	DESCRIPTION	BY	APP	APPROVED	DATE
3	07-03-2019	GENERAL UPDATES	GH	MD		15-10-2018
2	06-03-2019	ARRANGEMENT UPDATED	GH	MD		15-10-2018
1	15-10-2018	ISSUED FOR COMMENT FOR INCLUSION OF CRUISE SHIP PROSP WASH AND UPDATED CLIP WEIGHT	GH	CB		15-10-2018
0	15-10-2018	ISSUED FOR COMMENT	GH	CB		15-10-2018

CLIENT:-
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79 Victoria Ave
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(PO Box 780 Miloughby 2068)
Ph: +612 9882 3844
fax: +612 9882 3284
web: www.asomarine.com.au
email: info@asomarine.com.au

PROJECT:-
ONE SYDNEY HARBOUR WATERFRONT

TITLE:-
**LC 20 BARGE AT BARRANGAROO
MOORING ARRANGEMENT 2**

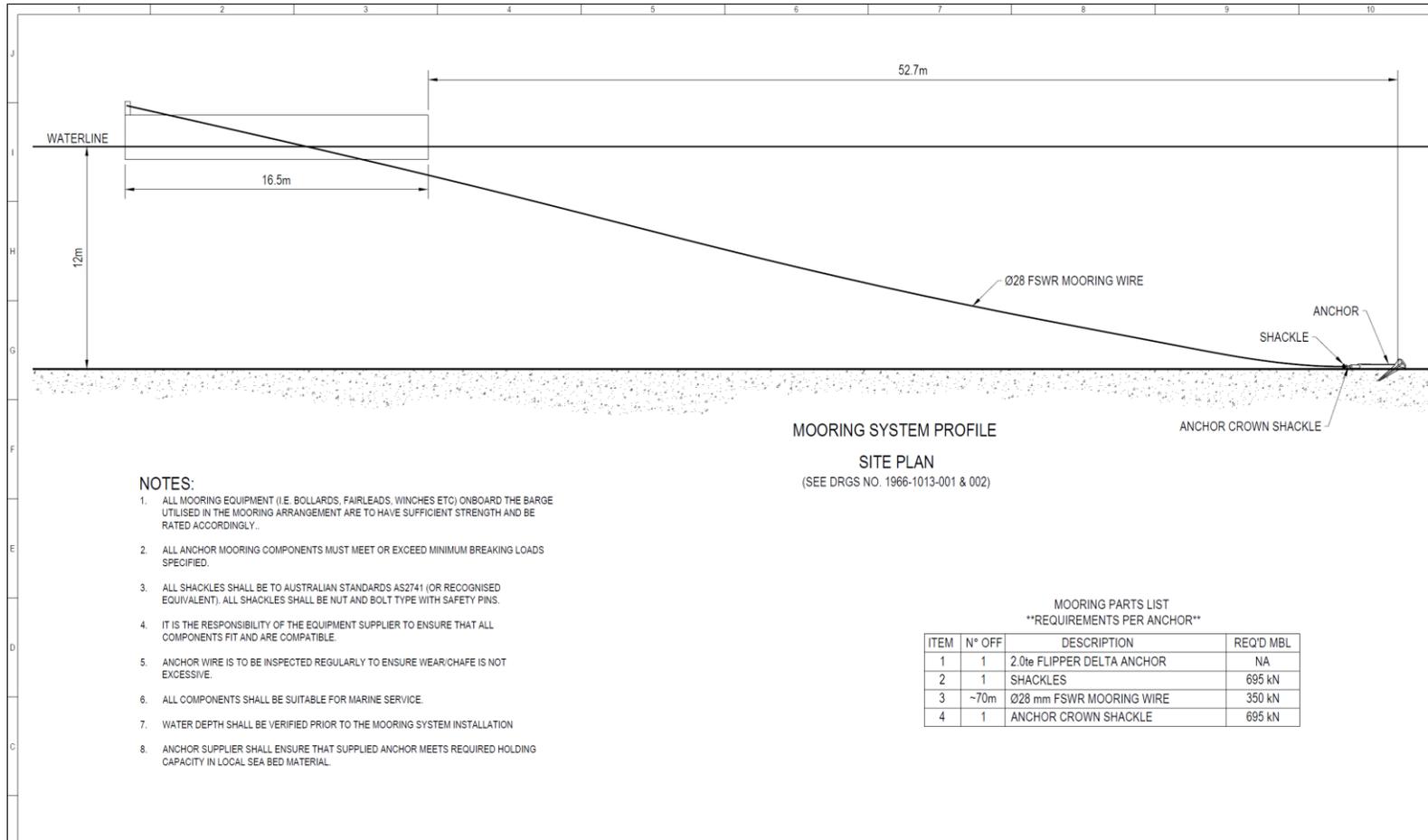
SCALE:- 1:500	DRAWING No.:- 1966-1013-002	SHEET:- 1 OF 1	REV: 3
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CRIP: DRG: STFF: A3



Marine Traffic Management Plan - One Sydney Harbour

Appendix 4: LC 20 Mooring System Profile



NOTES:

1. ALL MOORING EQUIPMENT (I.E. BOLLARDS, FAIRLEADS, WINCHES ETC) ONBOARD THE BARGE UTILISED IN THE MOORING ARRANGEMENT ARE TO HAVE SUFFICIENT STRENGTH AND BE RATED ACCORDINGLY.
2. ALL ANCHOR MOORING COMPONENTS MUST MEET OR EXCEED MINIMUM BREAKING LOADS SPECIFIED.
3. ALL SHACKLES SHALL BE TO AUSTRALIAN STANDARDS AS2741 (OR RECOGNISED EQUIVALENT). ALL SHACKLES SHALL BE NUT AND BOLT TYPE WITH SAFETY PINS.
4. IT IS THE RESPONSIBILITY OF THE EQUIPMENT SUPPLIER TO ENSURE THAT ALL COMPONENTS FIT AND ARE COMPATIBLE.
5. ANCHOR WIRE IS TO BE INSPECTED REGULARLY TO ENSURE WEAR/CHAFE IS NOT EXCESSIVE.
6. ALL COMPONENTS SHALL BE SUITABLE FOR MARINE SERVICE.
7. WATER DEPTH SHALL BE VERIFIED PRIOR TO THE MOORING SYSTEM INSTALLATION
8. ANCHOR SUPPLIER SHALL ENSURE THAT SUPPLIED ANCHOR MEETS REQUIRED HOLDING CAPACITY IN LOCAL SEA BED MATERIAL.

MOORING PARTS LIST
****REQUIREMENTS PER ANCHOR****

ITEM	N° OFF	DESCRIPTION	REQ'D MBL
1	1	2.0t FLIPPER DELTA ANCHOR	NA
2	1	SHACKLES	695 kN
3	~70m	Ø28 mm FSWR MOORING WIRE	350 kN
4	1	ANCHOR CROWN SHACKLE	695 kN

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REV	DATE	ISSUED FOR COMMENT	DESCRIPTION	BY	APP	APPROVED	MD	DATE
3	07-03-2019	ANCHORS CHANGED FROM 3.0 t to 2.0 t FLIPPER DELTA		GH	MD			29-08-2012
2	06-03-2019	ARRANGEMENT UPDATED		GH	MD			15-10-2018
1	16-10-2018	UPDATED CLUMP WEIGHT		DC	MD			15-10-2018
0	15-10-2018	ISSUED FOR COMMENT		DC	MD			15-10-2018

CLIENT:-
SMC MARINE

ASO Marine Consultants Pty Ltd
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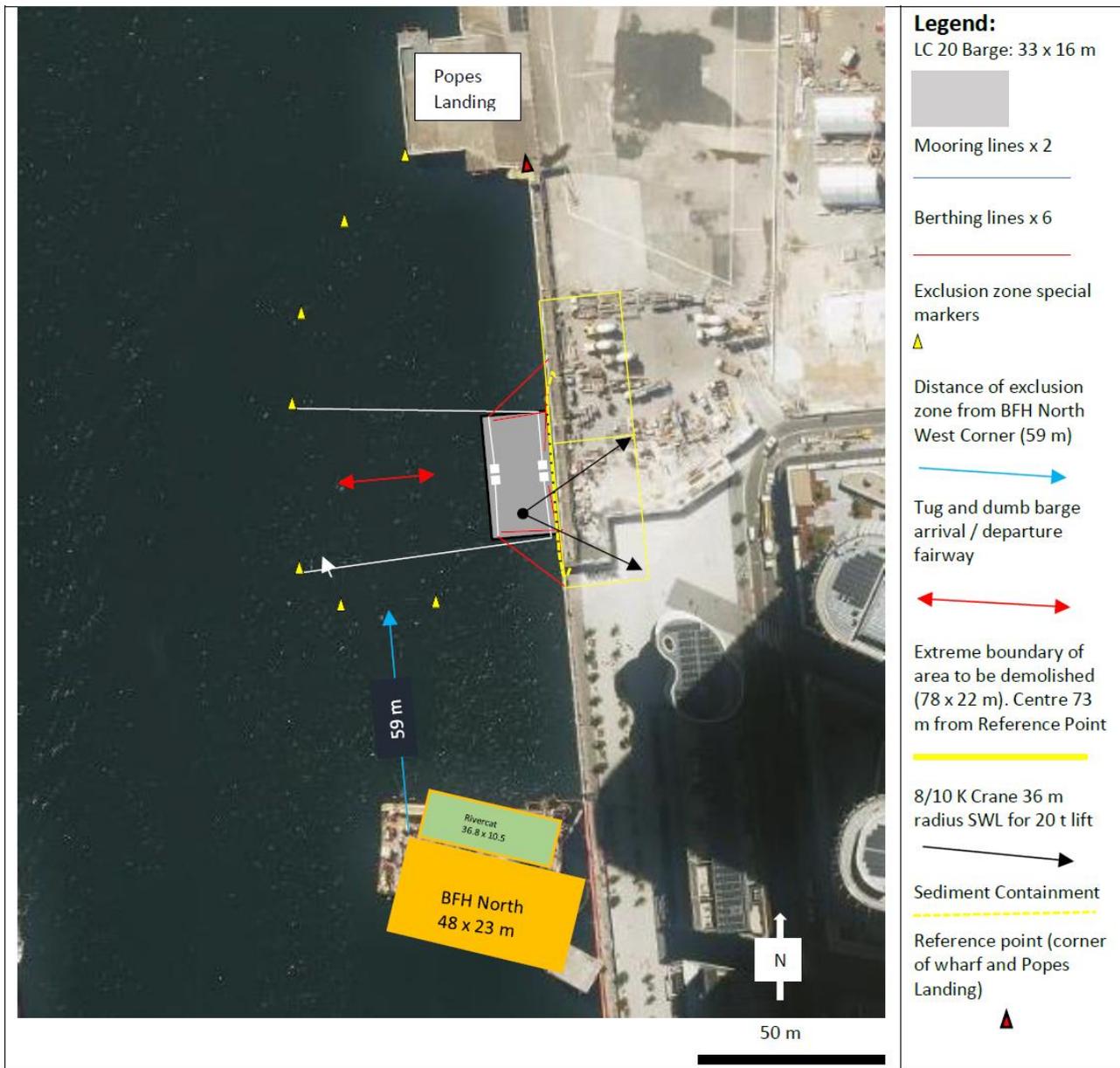
PROJECT:-
ONE SYDNEY HARBOUR WATERFRONT

TITLE:-
**LC 20 BARGE AT BARRANGAROO
BARGE ANCHOR MOORING DETAIL**

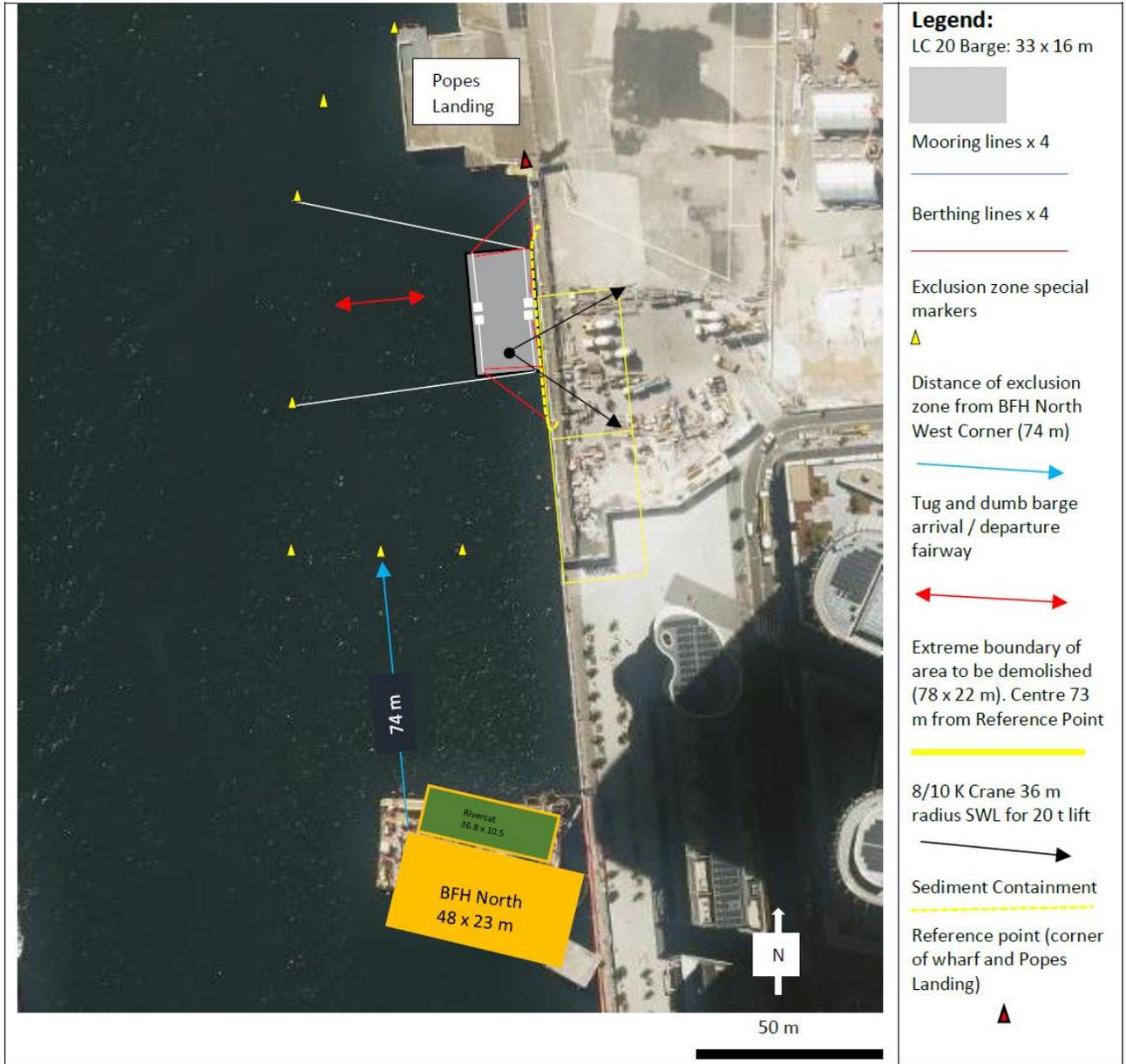
SCALE:- NTS	DRAWING No.:- 1966-1013-003	SHEET:- 1 OF 1	REV. 3
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ORIG. DRG. SIZE: A3

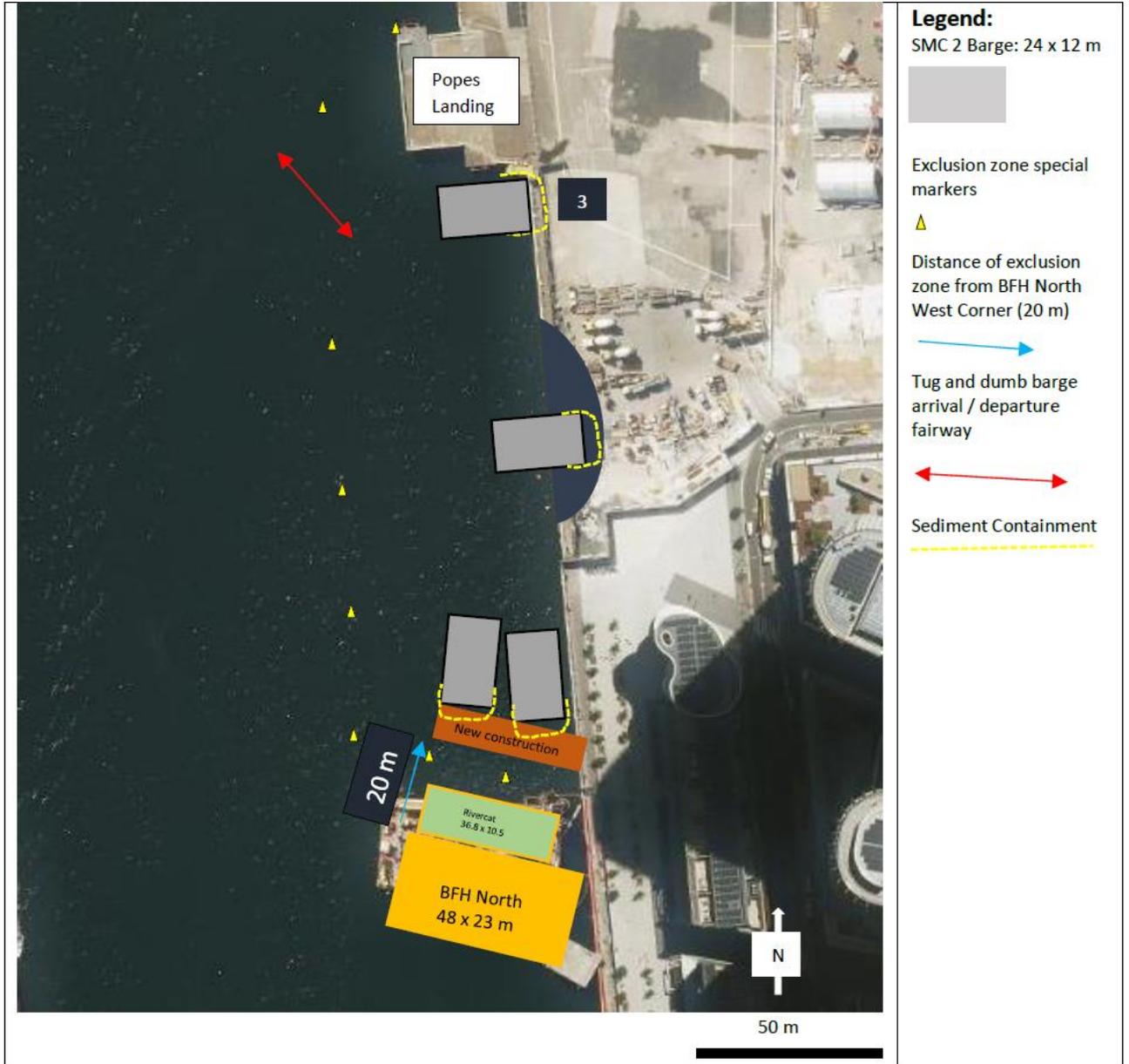
Appendix 5: Exclusion Zone LC 20 Position 1 (Demolition Stage)



Appendix 6: Exclusion Zone LC 20 Position 2 (Demolition Stage)



Appendix 7: Barge Positions and Exclusion Zone (Construction Stage)



Appendix 8: Cruise Ship Schedule for White Bay

Vessel	Arrival Time	Departure Time	Berth
Pacific Explorer	01/02/2019 09:00	01/02/2019 17:00	White Bay Cruise Terminal
Silver Whisper	02/02/2019 08:00	03/02/2019 18:00	White Bay 4
Silver Muse	02/02/2019 08:00	02/02/2019 18:00	White Bay Cruise Terminal
Regatta	03/02/2019 08:00	04/02/2019 18:00	White Bay Cruise Terminal
Azamara Quest	06/02/2019 11:00	07/02/2019 17:00	White Bay Cruise Terminal
Pacific Explorer	08/02/2019 09:00	08/02/2019 17:00	White Bay Cruise Terminal
Viking Orion	09/02/2019 06:30	10/02/2019 23:59	White Bay Cruise Terminal
Viking Orion	11/02/2019 00:30	11/02/2019 20:00	White Bay 4
Pacific Explorer	11/02/2019 07:00	11/02/2019 16:00	White Bay Cruise Terminal
Albatros	17/02/2019 08:00	18/02/2019 18:00	White Bay Cruise Terminal
Pacific Explorer	21/02/2019 07:00	21/02/2019 16:00	White Bay Cruise Terminal
Amadea	21/02/2019 09:00	23/02/2019 18:00	White Bay 4
Sun Princess	23/02/2019 07:00	23/02/2019 16:00	White Bay Cruise Terminal
Columbus	24/02/2019 07:00	24/02/2019 21:00	White Bay Cruise Terminal
Pacific Explorer	25/02/2019 08:00	25/02/2019 16:00	White Bay Cruise Terminal
Regatta	01/03/2019 06:30	01/03/2019 18:30	White Bay Cruise Terminal
Azamara Quest	01/03/2019 09:00	01/03/2019 23:00	White Bay 4
Insignia	04/03/2019 06:30	04/03/2019 18:30	White Bay Cruise Terminal
Pacific Explorer	04/03/2019 08:00	04/03/2019 16:00	White Bay 4
Amsterdam	05/03/2019 06:30	05/03/2019 23:30	White Bay 4
Sun Princess	05/03/2019 07:00	05/03/2019 16:00	White Bay Cruise Terminal
Amsterdam	06/03/2019 00:30	06/03/2019 18:30	White Bay Cruise Terminal
Pacific Explorer	08/03/2019 08:00	08/03/2019 16:00	White Bay Cruise Terminal
Viking Orion	09/03/2019 07:00	10/03/2019 23:00	White Bay Cruise Terminal
Sea Princess	12/03/2019 07:00	12/03/2019 16:00	White Bay Cruise Terminal
Viking Sun	15/03/2019 07:00	17/03/2019 18:00	White Bay Cruise Terminal
Pacific Explorer	21/03/2019 07:00	21/03/2019 16:00	White Bay Cruise Terminal
Europa 2	24/03/2019 06:00	25/03/2019 18:00	White Bay 4
Pacific Explorer	25/03/2019 09:00	25/03/2019 17:00	White Bay Cruise Terminal
Seabourn Encore	27/03/2019 07:00	27/03/2019 19:00	White Bay Cruise Terminal
Pacific Explorer	29/03/2019 08:00	29/03/2019 16:00	White Bay Cruise Terminal
Pacific Explorer	01/04/2019 07:00	01/04/2019 16:00	White Bay Cruise Terminal
Pacific Explorer	05/04/2019 08:00	05/04/2019 16:00	White Bay Cruise Terminal
Noordam	07/04/2019 06:00	07/04/2019 18:00	White Bay Cruise Terminal
Crystal Symphony	07/04/2019 08:00	07/04/2019 23:59	White Bay 4
Crystal Symphony	08/04/2019 00:30	08/04/2019 23:59	White Bay Cruise Terminal
Sea Princess	09/04/2019 07:00	09/04/2019 16:00	White Bay Cruise Terminal
Pacific Explorer	30/04/2019 07:00	30/04/2019 16:00	White Bay Cruise Terminal
Pacific Explorer	13/05/2019 07:00	13/05/2019 16:00	White Bay Cruise Terminal
Refer PANSW	19/06/2019 00:00	21/06/2019 23:59	White Bay Cruise Terminal
Pacific Explorer	06/07/2019 08:00	06/07/2019 16:00	White Bay Cruise Terminal
Pacific Explorer	22/07/2019 07:00	22/07/2019 16:00	White Bay Cruise Terminal
Pacific Explorer	08/08/2019 08:00	08/08/2019 16:00	White Bay Cruise Terminal
Pacific Explorer	17/09/2019 07:00	17/09/2019 16:00	White Bay Cruise Terminal
Pacific Explorer	27/09/2019 07:00	27/09/2019 16:00	White Bay Cruise Terminal
Pacific Explorer	30/09/2019 07:00	30/09/2019 16:00	White Bay Cruise Terminal
Pacific Explorer	04/10/2019 08:00	04/10/2019 16:00	White Bay Cruise Terminal
Sun Princess	15/10/2019 07:00	15/10/2019 16:00	White Bay Cruise Terminal
Maasdam	17/10/2019 07:00	17/10/2019 18:00	White Bay Cruise Terminal
Superstar Virgo	27/10/2019 07:00	27/10/2019 19:00	White Bay Cruise Terminal
Sea Princess	31/10/2019 07:00	31/10/2019 16:00	White Bay Cruise Terminal