Preliminary Construction and Environment Management Plan

ALTERATIONS AND ADDITIONS TO THE GLADESVILLE BRIDGE MARINA

Gladesville Bridge Marina Project Team

Revision 3 | 21/10/2019
SMC Marine Pty Ltd. | ABN 48 096 465 333

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Approved By:	Lindsay Bligh

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01	13/06/19	Initial document submission	SC/LB *Project Engineer* *Project Manager*	LB *Project Manager*
02	11/08/19	Updated including Ethos Urban and GHD review comments	SC Project Engineer	LB Project Manager
03	21/10/19	Updated including Ethos Urban and GHD review comments	SC Project Engineer	LB Project Manager

SMC Marine Pty Ltd
ABN 48 096 465 333
www.smcmarine.com.au
P: 02 9818 4007
Admin Building 3/4,
Sydney Ports Secure Area,
White Bay (End of Robert Street),
ROZELLE NSW 2039
PO Box 68, GLEBE NSW 2037

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1 Plan Context, Objectives and Interrelationships

This Construction Management Plan (CMP) describes how SMC would undertake the construction activities required for the Gladesville Bridge Marina upgrade. The CMP is the primary plan to demonstrate the adherence to and implementation of approved construction activities.

This plan should be read in conjunction with accompanying management plans and documentation:

- *Health and Safety Management Plan (WHS)*
- *Quality Management Plan (QMP)*
- *Project Safe Work Method Statement (SWMS)*

The CEMP has been prepared with reference to the following:

- *Gladesville Bridge Marina, Secretary's Environmental Assessment Requirements (SEARS) 1268*
- *GHD Gladesville Bridge Marina – Concept Layout 21-27558-K101 Rev F.*
- *GHD Gladesville Bridge Marina – Construction Sequence Seaside Elements Only (Floating Pontoons) 21-27-558-K210 Rev A.*
- *GHD – Land based Architectural Plans*

Figure 1: Gladesville Bridge Marina Location (source: Google)

2 Project Information

2.1 Location

Gladesville Bridge Marina includes a water-based structure and a land-based building, which is located at 380 Victoria Place, Drummoyne within the Canada Bay Local Government Area (LGA). The site is located on the eastern foreshore of the Parramatta River, to the south of the Gladesville Bridge. The site is approximately 19,740m^2 in area, comprising an approximate 1,740m^2 land-based component and an approximate 18,000m^2 of lease area, which accommodates the water-based component.

2.2 Scope of works

The following construction activities are a part of the scope of works:

1. Site Establishment
   - 1.1 Site survey and set out.
   - 1.2 Identification and protection of services.

2. Removal (Demolition) and Relocation
   - 2.1 Dismantle and remove mezzanine floor in the workshop room.
   - 2.2 Removal of the slipway and associated slipway infrastructure.
   - 2.3 Removal of 29 swing-moorings.

3. New Marina Construction
   - 3.1 Reconfiguration of the existing marina berth layout.
   - 3.2 Construction of 65 (from 50 to 115) new floating berths.

4. Upgrades to onshore facilities
   - 4.1 Installation of a car-stacker.
   - 4.2 Installation of onshore boat cradles.
   - 4.3 Improvements to waste storage.
   - 4.4 Improvement to marina amenities.

2.3 Stakeholders

Gladesville Bridge Marina

Phone: (02) 9181 2014

SMC Marine (SMC)

Lindsay Bligh – Project Manager

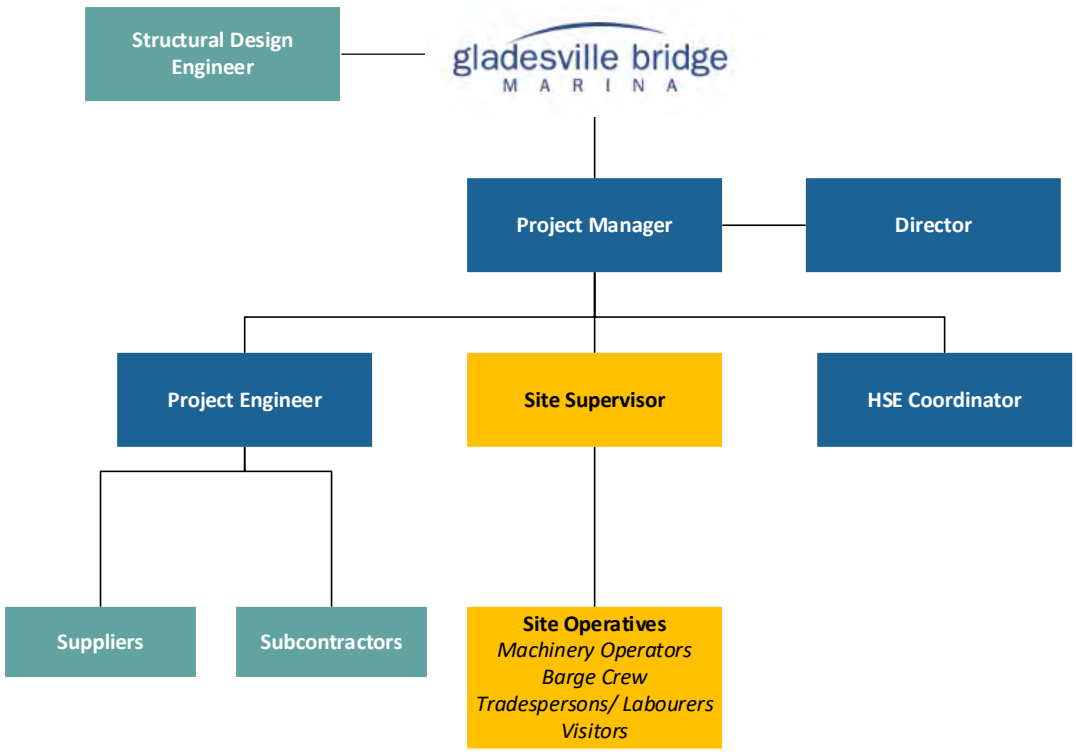
Email: lindsay.b@smcmarine.com.au

Phone: 0419 968 736

3 Project Organisation Chart

Below represents an indicative organisation chart for a project of similar scope, to be updated prior to works commencing.

Project: Gladesville Bridge Marina Upgrades



3.1 Emergency Contacts

Project Manager		
HSE Coordinator		
Site Supervisor		
GBM Manager		(02) 9181 2014
Port Authority NSW		9296 4003
VTS Sydney		VHF Channel 13
Harbour City Ferries		VHF Channel 01
SafeWork NSW	Health Safety Incident Reporting	131 050
EPA NSW	Environment Incidents Reporting	131 555
Aboriginal/ Cultural Heritage	Find Reporting	
NSW Water Police	Assistance	9320 7499
Emergency Services	Fire/ Police/ Ambulance	000

3.2 Training

Project induction training for staff and sub-contractors will include the contents of this CEMP and take place prior to work commencing. The following will be covered. A record of induction must be maintained on-site.

- Relevant legislation.
- General environmental duty and duty to notify.
- Conditions of licences, approval and permits.
- Environmental management and implementation of this CEMP.
- Identified site specific areas such as environmentally sensitive areas, limits of construction, heritage, etc.
- Definition and management of environmental incidents.
- Refuelling, waste disposal, litter collection, location of spill kits, etc.
- Emergency response procedures.

4 Approvals, Notification and Permits

4.1 Environmental Protection Authority (EPA)

Approval prior to the commencement of any works on site.

4.2 Dial Before You Dig

A Dial Before You Dig assessment will be conducted prior to works commencing on site, pending the extent of the approved site boundary.

Appropriate measures will be taken to ensure the protection of any services that may be located within the site boundary.

4.3 Harbour Master Approval

A Marine Traffic Management Plan will be submitted to the Harbour Master for approval, outlining any requirements for public marine safety on site.

5 Regulations, Standards and Codes of Practice

- Relevant Australian Standards
- Coastal Management Act 2016

6 Reporting

6.1 Environmental Incidents

All environmental incidents shall be reported immediately to the SMC Site Supervisor or as soon as they become known. The Site Supervisor will coordinate appropriate responses with a Gladesville Bridge Marina representative and emergency contacts.

The report must include the following:

- The nature of the incident and the circumstances in which it occurred.

- The measures taken to mitigate the impact of the incident.
- The initial corrective actions to be taken.
- Any other details requested by the client or relevant authorities.

All incidents are to be recorded in the SMC Incident Register, which is maintained by the HSE Coordinator.

- Minor incidents: to be recorded in the site incident register.
- Major incidents: to be reported to the Gladesville Bridge Marina representative within 24 hours.

6.2 Dumps of Noxious, Toxic, or Hazardous Substances

No major dumps of noxious, toxic or hazardous substances have been identified nor are any included in the scope of works documentation.

Should SMC encounter an unexpected find of noxious, toxic or hazardous material the procedure will be as follows:

1) Stop work. SMC Site Supervisor to remove personnel from immediate area.
2) SMC Site Supervisor to contact Site Representative.
3) SMC to await further instruction from Site Representative.

Note that removal of all hazardous substances, including asbestos, will be undertaken by a suitably licenced contractor, if required.

6.3 Heritage/ Aboriginal Culture

6.3.1 Findings

Workers must cease activities immediately upon the discovery of any Aboriginal cultural materials and the Site Supervisor is to report the findings immediately to:

- NSW Office of Environment & Heritage (02 9995 5000)

6.4 Complaints

The Site Supervisor will report any complaints to the Project Manager who will report to the client within 24 hours.

7 Construction Methodology

7.1 Risk Assessment

A project Safe Work Method Statement (SWMS) will be developed for approval prior to the commencement of activities. The SWMS will be developed to comply with the Construction Work Code of Practice 2014.

7.2 Work Hours and Restrictions

Construction activities will only be conducted during the DA approved working hours. The following are proposed construction hours:

- Monday to Friday: 07:00 to 17:00

- Saturday: 08:00 to 12:00 (where required)
- No construction work will be permitted on Sundays or Public Holidays.

Periods of high noise activities may be subject to periods of respite.

7.3 Preliminaries and Mobilisation

- Development and approval of management plans in accordance with all relevant legislative requirements. Plans will include:
  - Quality Management Plan (QMP),
  - Safety Management Plan (SMP),
  - Vessel Safety Management Plan (SMP) and
  - Construction and Environmental Management Plan (CEMP).
- Development and approval of an Inspection and Test Plan.
- Pre-start construction meeting with all relevant stakeholders.
- A Temporary Notice to Mariners (TNTM) will be completed and submitted to the marine authorities to notify all recreational and commercial operators of the exclusion zone to be enforced around the works area.
- Submit an enquiry to Dial Before You Dig to be fully informed of all services located within and around the works area.

7.4 Site Establishment and Communications

Gladesville Bridge Marina will adopt a Construction and Engagement Plan (CCEP) for the construction phase. In addition to any requirements identified in the CCEP, the following will be implemented:

- Construction workers, subcontractors and client personnel are to be inducted into the safety system on site. Site folders, with appropriated paperwork, as outlined in the SMP, will be prepared prior to site establishment.
- Install secure exclusion fencing/barriers and safety signage around the site.
- Install exclusion buoys as detailed in TNTM, with navigational flashing lights to mark the exclusion area.
- Pending site access requirements and further definition of the extent of works involved, a secure site compound with clear ingress and egress routes for deliveries will be established, together with a site office containing all relevant site folders and appropriate paperwork. A container for secure storage of tools and equipment will also be established on site or on the construction barge.

7.5 Removal (Demolition) and Relocation

- A structural engineer will define and detail the extent of the removal (or demolition) works.
- A commercial electrician will disconnect and sign off on the power services to the mezzanine structure.
- Dismantle the mezzanine floor structure, ensuring that working at height live edges are always protected for workers. A forklift or similar mobile plant with a rated lifted arm will be required to remove the steel-framed structure.

- A structural engineer will define and detail the extent of the slipway removal works and the concrete repair process.
- Dismantle and store the slipway assembly.

7.6 Piling Methodology

A structural engineer will define and detail the scope of piling activities.

7.6.1 Plant and Equipment

- Piling crane barge
- Supply barge
- Work boat
- Pile driving equipment
- Hydraulic power pack

Plant inspections of the piling equipment will be carried out prior to work commencing on site. If any hydraulic hoses are found to be damaged, they must be repaired or replaced prior to works commencement. Only 100 % biodegradable hydraulic oil is to be used in the piling equipment.

Plant and equipment shall be maintained to good standards and in accordance with manufacturer's requirements. Any plant that shows signs of any leakage, i.e. fuels/oils, which cannot be contained by use of drip trays etc., shall be removed from site. Oil spill kits shall be kept on hand at all times.

7.6.2 Lifting Gear/ Arrangement

A qualified piling dogman/rigger or crane operator will confirm that all lifting equipment is suitable for the required lift by inspecting for defects or faults prior to use. Lifts should never exceed the load chart of the crane.

Under no circumstance shall the crane operator lift loads over people. No person is permitted to stand under a suspended load or in a lift shadow. It is the operator's and the nominated dogman's responsibility that this is strictly enforced.

7.6.3 Quality Control

An ITP shall be completed for each test pile and production pile during the installation process. This includes observations, measurements and/or tests, all of which will be recorded on the ITP. Other specific information will be recorded on the Pile Penetration Report which will be completed by the Surveyor, Site Engineer and Piling Supervisor for each pile.

All information will be regularly collated and submitted to the client for sign-off.

7.6.4 Pile Installation

Following development of pile specifics, set requirements, geotechnical data and quantities, a detailed methodology will be prepared. The following presents an indicative methodology for a typical project scope:

1. Pending DA requirements, noise and vibration monitoring established on-site.

2. Mobilise piling barge to site, via tug assist.
- Ensure that the scope of works is within the vessel's trim and stability capabilities with reference to the stability book. Seek naval architect's advice if outside of capabilities.
- Adhere to the approved Marine Traffic Management Plan, highlighting areas of mooring locations and types and any further Harbour Master requirements.

3. Piles and sleeves (pending design) delivered to site on a dumb barge via tug assist, either stored on a temporary dumb barge or on site pending definition of access.
- Dumb barge will be moored alongside the piling barge.
- Piles and sleeves will be secured to the barge deck using lashing straps, chocks and bolsters.

4. Surveyor to set up a site control and sight in each pile for accurate installation.

5. Pile pitched into position into hydraulic gates.
- Ground release shackles used to release the pile-to-crane connection from the barge deck.
- Surveyor to check pile position and instruct adjustments to hydraulic gates.

6. Driving Method: pending design definition, a detailed pile installation methodology will be developed.

7. Piles will be cut off at the required level, using oxy acetylene, from the work boat/barge while the crane is connected to the section to be cut off.

8. HDPE sleeves will be installed to a minimum embedment of 1 metre into the seabed (subject to designer's detail). The sleeves will be installed with a vibrating hammer, impact hammer and/or by jetting.

9. HDPE sleeves for the pontoon piles will be capped to seal the steel pile. White bird cones will then be installed after the HDPE sleeve has been capped.

10. As-constructed pile locations will be forwarded to pontoon fabricators for accurate sizing of the pontoons' pile guide bracing.

7.7 Marina Construction

A structural engineer will detail the extent of the marina construction activities.

- Pending site access definition, new pontoon modules will be delivered to site on a dumb barge.
- A barge mounted crane will unload the pontoon floats and place them into the water.
- The pontoon floats will be assembled whilst floating in the water and manoeuvred into position between the pontoon piles.
- Pile barriers/guides will then be installed.
- The gangway (pending design) will then be lifted into position and secured between the finger jetty and the pontoon.

7.8 Clean-up and Demobilisation

- The site will be tidied, removing all rubbish, unused materials, etc. and a practical completion meeting will be scheduled with Gladesville Bridge Marina.
- Transport the site office, container and plant and equipment from site.
- Remove all fences and marker floats. The facility will be reopened to the public.

8 Plant and Equipment

Details of all plant and equipment, such as name, maintenance records, registration, survey certificates and stability assessments will be made available at the time of defined project planning. Typical examples are presented here.

8.1 SMC2 Piling Barge

Hull:	Steel – Catamaran Barge	LOA / Draft:	23.9m / 2.1m
Vessel Type/ Survey Class:	Barge / 2E	Beam:	11.97m
Vessel Name:	SMC2	Max Deck Cargo Capacity:	420T
Vessel ID:	24282	Crane Size Capacity:	Refer Trim & Stability
Anchor:	4no. Drop Spud (16m)	Piling:	22m Piling Leaders
Crane			
Make:	Manitowoc	Model:	M8500-1
Serial No.	8501867	Year:	
Lift Capacity:	80T	Type:	Mobile Crawler

9 Programme

A detailed installation programme will be produced as project definition and design information develops.

The project has been developed in stages to mitigate impact on existing operations, see Appendix B: GBM Construction Sequence.

Appendix A: Marine Traffic Management Plan

This Marine Traffic Management Plan presents an indicative plan to allow preliminary planning to occur. Greater detail will be added when project progression permits.

Site:

The work zone at Gladesville Bridge Marine, Drummoyne NSW (-33.843928, 151.145590)

Site Boundary (out into the harbour) Coordinates Proposed:

Corner 1:	
Corner 2:	
Corner 3:	
Corner 4:	

Development Consent

Pending.

Project Scope

The proposed development constitutes alterations and additions to the marina berth layout to provide overall storage for 130 vessels comprising 15 swing moorings and 115 floating berths. The works include:

- *removal of 29 existing swing moorings and retention of 15 existing swing moorings;*
- *construction of 65 new floating berth spaces of varying sizes, that increases the number of floating berths from 50 to 115;*
- *cessation of the shipwright workshops and slipway activities;*
- *demolition of the slipway rails and demolition of the internal office mezzanine structure within the shipwright workshop area; and*
- *provision of 8 new valet car parking spaces within the existing work shop to bring the total parking provision on-site to 19.*

Vessel Particulars

SMC2 piling barge, or similar, will be used to conduct all piling works on-site, with the aid of a supply barge transporting piles and pontoon float modules to site from SMC Marine's yard space in White Bay. A number of small work punts will be used to assist operations.

Piling Barge

See 8.1 SMC2 Piling Barge.

Tug Transport

Note: subject to changed or pending availability/operational requirements. However, can expect a typical tug to be as follows:

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

Work Punt

LOA	6.0m
Depth	0.9m
Breadth	2.0m
Survey	AMSA Ex 40
Main Engines	90 HP Yamaha Outboard

Programme

A vessel traffic movement schedule will be developed in order to show the expected harbour movements, indicating hours of movement and vessel types.

Vessel Route

The SMC Marine's yard at White Bay 2 will be the primary offsite loadout and set down area for the barges, as well as for berthing when not required on site.

SMC will implement any conditions detailed in the Harbour Master's Permit.

Figure 2: Indicative vessel route

Berthing Arrangements

The proposed mooring arrangements will be determined by the following factors:

- The barges and cranes designed to safely undertake the required demolition and construction tasks at the site under the varying marine conditions present at Gladesville Bridge.
- Harbour Master's directives.

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

Piling works

SMC 2 barge, or similar, will be used during construction and will be moored with steel spuds (600 mm x 24 m).

1. The crane will position the spuds while the vessel holds the barge steady. The spuds will be locked off when in position.
2. The exclusion zone special markers will be deployed.
3. The dumb barge will berth alongside and secure to SMC 2.

Vessel Communication Plan

- Exact communication lines will comply with the Harbour Master's directives.
- Exact dates and times of onsite barge manoeuvring involving any anchor deployment and retrieval will be detailed in a Notice to Mariners.
- Site communication between the tugs and barges will be verbal, when within vocal range or by two-way radio when out of vocal range. The Site Supervisor will also have the mobile phone number of the tug master 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 2, Glebe Island 1 and Site.
- Harbour City Ferries Operational Control will notify ferry masters via VHF radio and the weekly bulletin, if required.

Marine Traffic Controls

Exclusion Zones

Pending Harbour Master consultation.

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 tonne biscuit moorings:

No Wash Zone

Pending Harbour Master consultation.

Collision Prevention

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.

Impact on Recreational Activities (Rowing)

Sequencing of construction will be considered to ensure safety to all harbour users. Construction activities will not occur within the highlighted rowing zone, see Appendix C – GBM Concept Layout. If access is required to this area, special permission will be requested.

Impact on Ferry Operations

Gladesville Bridge Marina is adjacent to the Huntleys Point Ferry Wharf, with the Chiswick Ferry Wharf to the southwest.

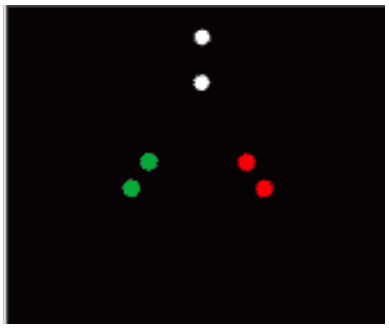
All barge movements will be timed to avoid ferry arrivals and departures at the adjacent Ferry Hub. However, given the proximity of the site, minimal impact may be possible.

There may be noise audible to ferry passengers. However, noise generation will be limited to the hours defined in the development consent, with SMC Marine employing all technology available to ensure that noise is kept to a minimum.

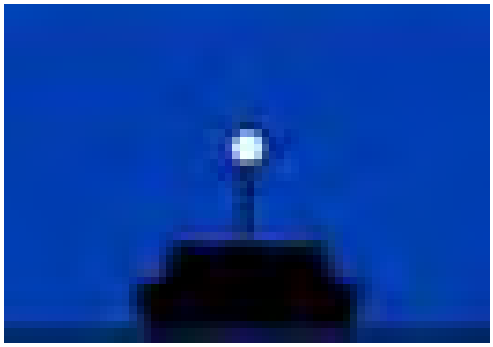
Should sediment containment booms be required, they will be secured to piles such that they will not present a hazard to ferries.

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, whist at anchor.



Master Certificate of Local Knowledge – 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 with barges.

Anchor Watch

Anchor watch is not expected to be required while the barge is unattended at night as the barge will be secured on spuds or with anchors. Additional berthing lines may be attached if severe storms or winds greater than 70 knots are forecast.

Vessel Safety Management Systems

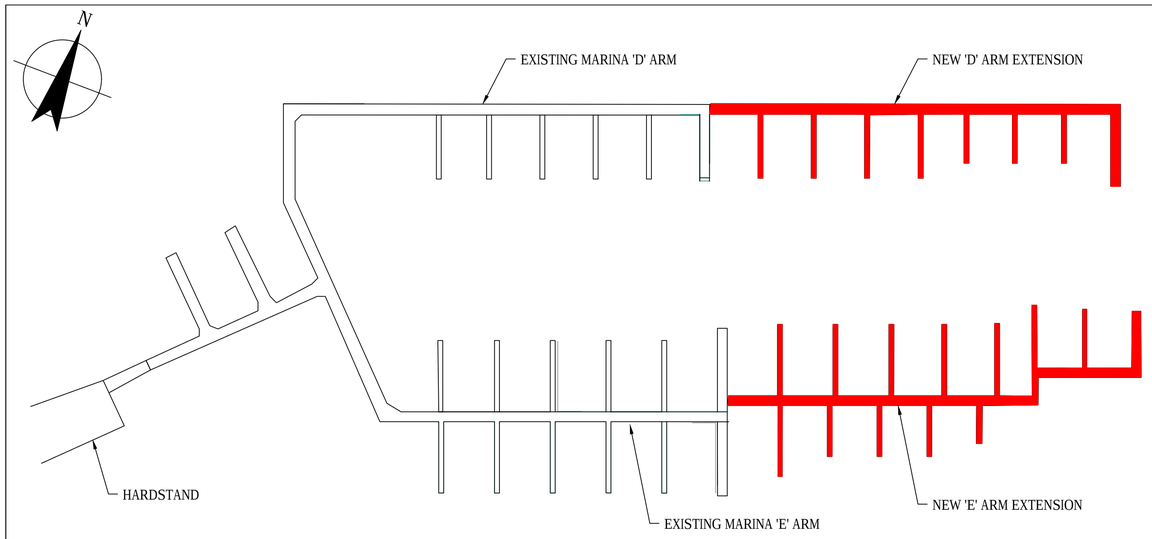
All operational and emergency procedures described in the tug and barge Safety Management System will be followed.

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.

All lifting operations will take place within the crane's wind operating limits.

Appendix B: GBM – Construction Sequence (GHD)



LEGEND

NEW CONSTRUCTION

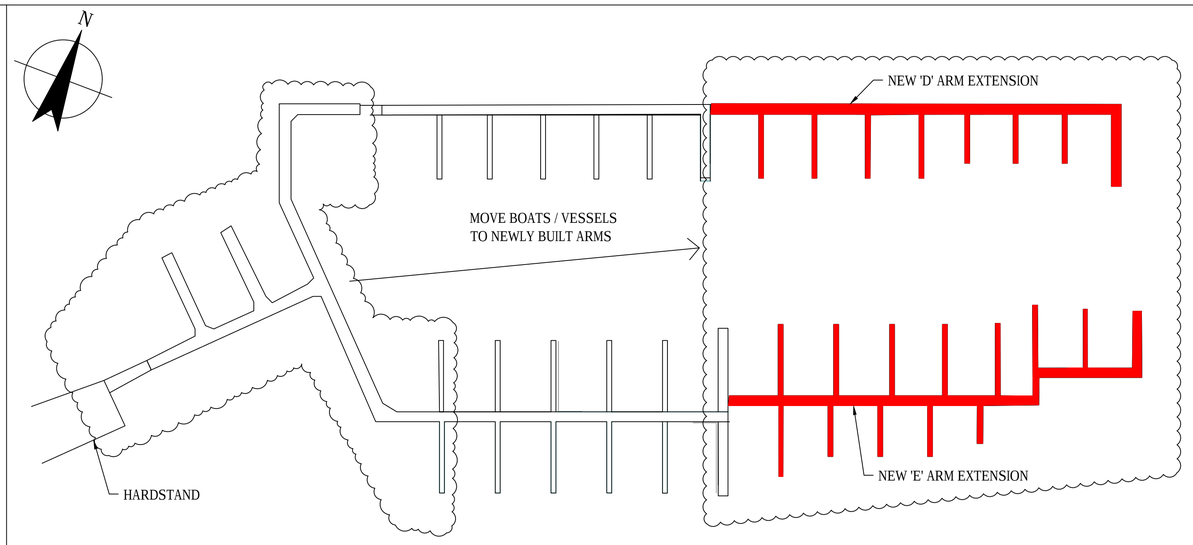
REMOVAL / DEMOLITION

TRANSITION

BUILD 'D' ARM AND 'E' ARM EXTENSIONS - CONNECT TO EXISTING MARINA ARMS

CONSTRUCTION STAGE 1

SCALE 1:750



LEGEND

NEW CONSTRUCTION

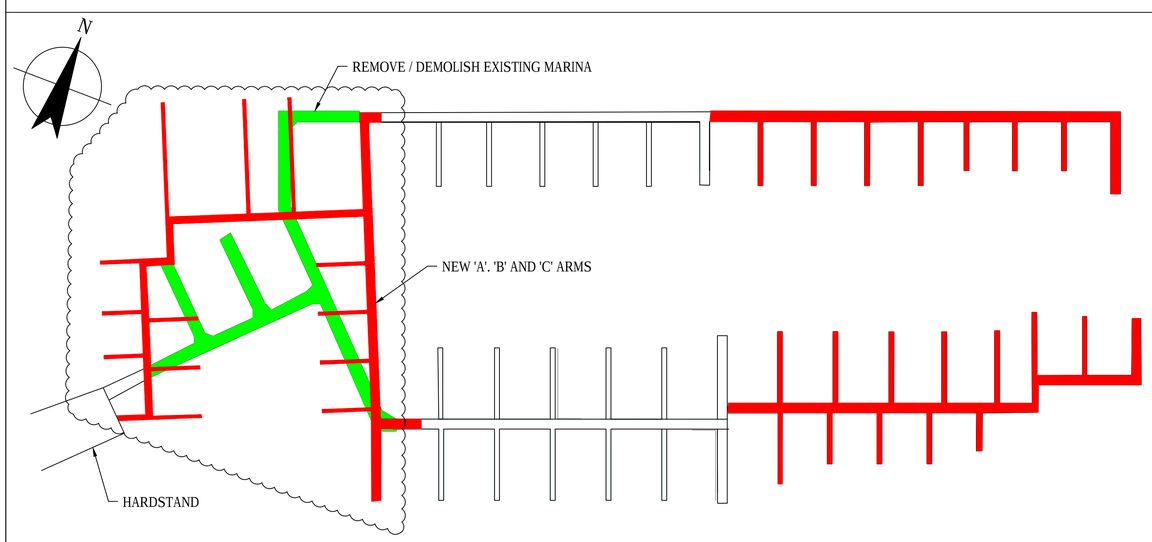
REMOVAL / DEMOLITION

TRANSITION

RELOCATE VESSELS FROM EXISTING MARINA AREA TO NEW 'D' OR 'E' ARM

CONSTRUCTION STAGE 2

SCALE 1:750



- REMOVE / DEMOLISH EXISTING MARINA
- STAGED CONSTRUCTION SEQUENCE TO MAINTAIN SAFE ACCESS TO MARINA DURING WORKS
- STAGED CONSTRUCTION TO CONSIDER PILING WORK AND PILE BARGE ACCESS

LEGEND

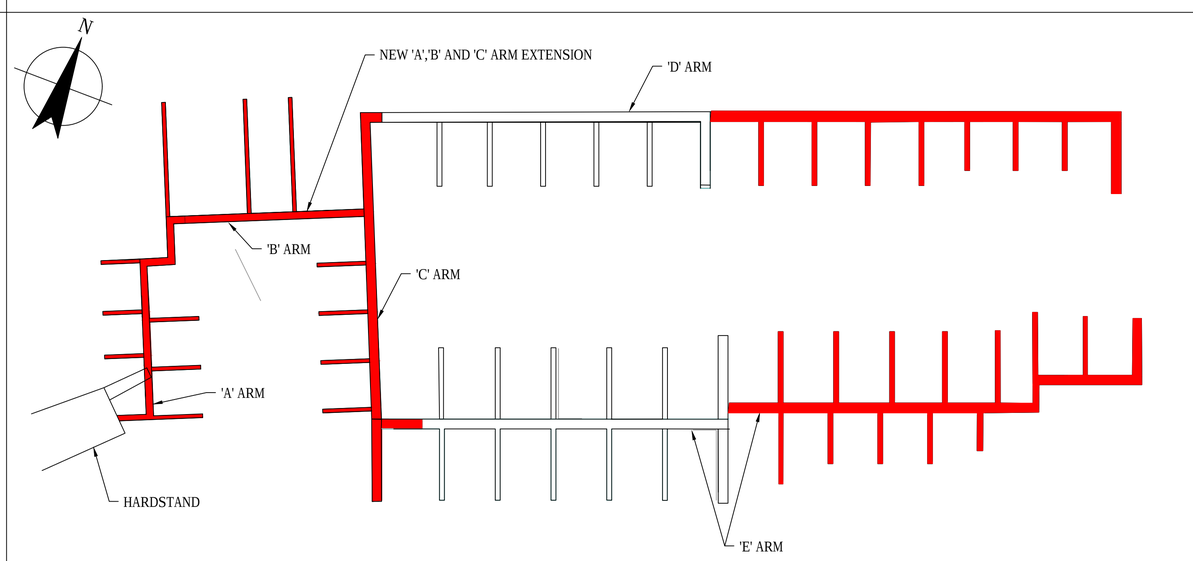
NEW CONSTRUCTION

REMOVAL / DEMOLITION

TRANSITION

CONSTRUCTION STAGE 3

SCALE 1:750



LEGEND

NEW CONSTRUCTION

REMOVAL / DEMOLITION

TRANSITION

FINISHED MARINA

SCALE 1:750

PRELIMINARY - NOT FOR CONSTRUCTION

No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date
A	PRELIMINARY - NOT FOR CONSTRUCTION					

0 7.5 15 22.5 30 37.5m

SCALE 1:750 AT ORIGINAL SIZE

gladesville bridge MARINA

GHD

Level 15, 133 Castlereagh Street, Sydney NSW 2000 Australia
T 61 2 9239 7100 **F** 61 2 9239 7199
E sydmail@ghd.com **W** www.ghd.com

DO NOT SCALE

Drawn	M.ROBERTSON	Designer	C.ALFRED
Drafting Check		Design Check	
Approved (Project Director)			
Date			
Scale	1:750	This Drawing must not be used for Construction unless signed as Approved	

Client GLADESVILLE BRIDGE MARINA

Project MARINA EXPANSION

Title CONSTRUCTION SEQUENCE
SEASIDE ELEMENTS ONLY (FLOATING PONTOONS)

Original Size **A1**

Drawing No: **21-27558-K210**

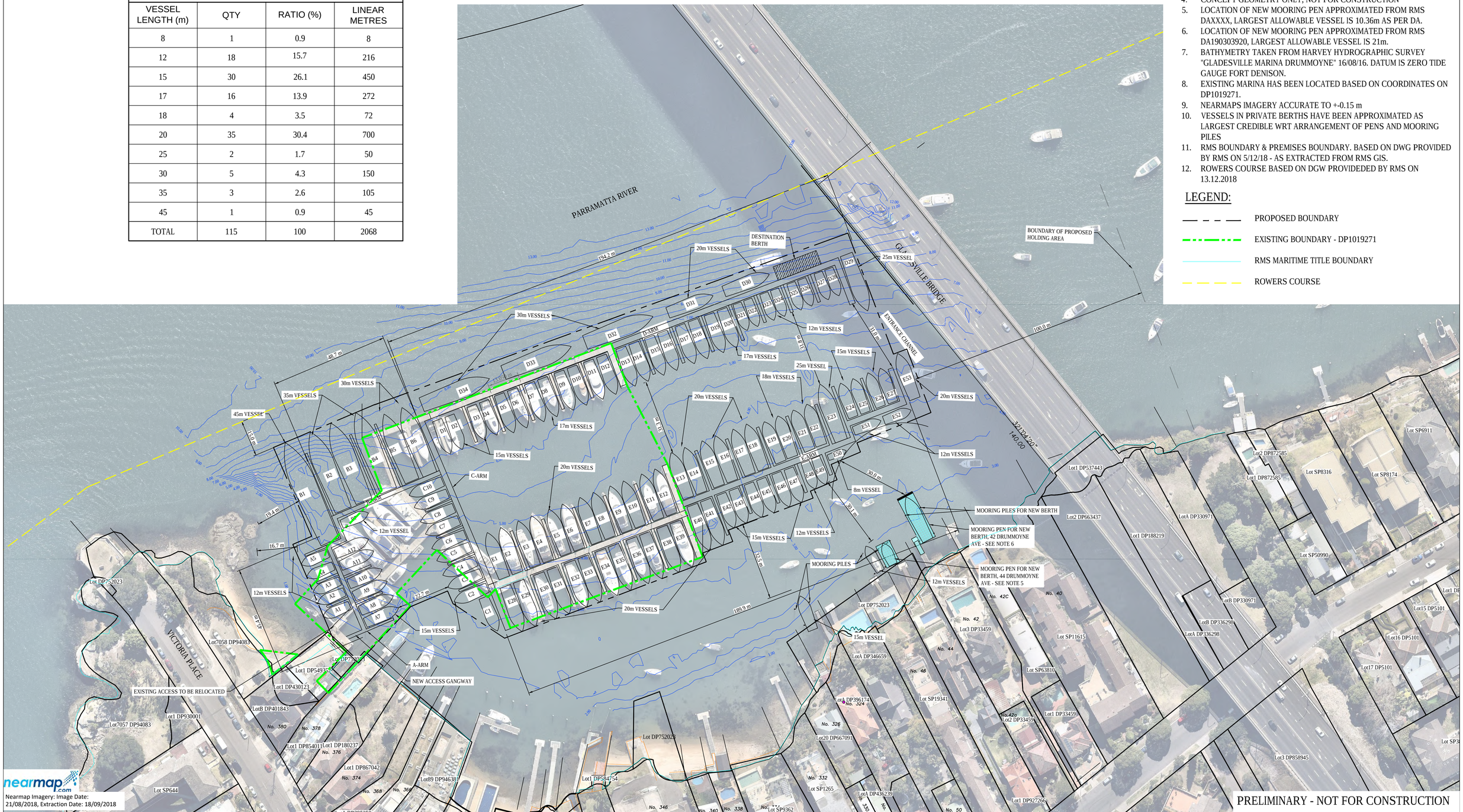
Rev: **A**

Plot Date: 2 August 2019 - 4:04 PM Plotted by: Michael Robertson Cad File No: N:\AU\Sydney\Projects\21\27558\CADD\Drawings\21-27558-K210.dwg

Appendix C: GBM – Concept Layout (GHD)

N

BERTH SCHEDULE			
VESSEL LENGTH (m)	QTY	RATIO (%)	LINEAR METRES
8	1	0.9	8
12	18	15.7	216
15	30	26.1	450
17	16	13.9	272
18	4	3.5	72
20	35	30.4	700
25	2	1.7	50
30	5	4.3	150
35	3	2.6	105
45	1	0.9	45
TOTAL	115	100	2068



nearmap.com
Nearmap Imagery: Image Date: 21/08/2018, Extraction Date: 18/09/2018

PRELIMINARY - NOT FOR CONSTRUCTION

NOTES:

1. CADASTRAL INFORMATION FROM NSW DEPARTMENT OF LANDS, DCDB, 2012
2. ALL BERTH WIDTHS, FINGER LENGTHS, FAIRWAYS & CHANNEL WIDTHS AS PER AS 3962.
3. THE BERTH SCHEDULE IDENTIFIES PROPOSED VESSEL SIZES. THE MARINA STRUCTURE (ARMS AND FINGERS) DIMENSIONS ARE AS PER AUSTRALIAN STANDARD AS 3962.
4. CONCEPT GEOMETRY ONLY, NOT FOR CONSTRUCTION
5. LOCATION OF NEW MOORING PEN APPROXIMATED FROM RMS DAXXXX, LARGEST ALLOWABLE VESSEL IS 10.36m AS PER DA.
6. LOCATION OF NEW MOORING PEN APPROXIMATED FROM RMS DA190303920, LARGEST ALLOWABLE VESSEL IS 21m.
7. BATHYMETRY TAKEN FROM HARVEY HYDROGRAPHIC SURVEY "GLADESVILLE MARINA DRUMMOYNE" 16/08/16. DATUM IS ZERO TIDE GAUGE FORT DENISON.
8. EXISTING MARINA HAS BEEN LOCATED BASED ON COORDINATES ON DP1019271.
9. NEARMAPS IMAGERY ACCURATE TO +-0.15 m
10. VESSELS IN PRIVATE BERTHS HAVE BEEN APPROXIMATED AS LARGEST CREDIBLE WRT ARRANGEMENT OF PENS AND MOORING PILES
11. RMS BOUNDARY & PREMISES BOUNDARY. BASED ON DWG PROVIDED BY RMS ON 5/12/18 - AS EXTRACTED FROM RMS GIS.
12. ROWERS COURSE BASED ON DGW PROVIDEDED BY RMS ON 13.12.2018

LEGEND:

- PROPOSED BOUNDARY
- EXISTING BOUNDARY - DP1019271
- RMS MARITIME TITLE BOUNDARY
- ROWERS COURSE

No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date
F	REVISED DRAWING NOTES		MR	SG	JN	03.09.19
E	PRELIMINARY - NOT FOR CONSTRUCTION - REVISED MOORING PEN 42 DRUMMOYNE AVE		MR	SG	JN	01.05.19
D	PRELIMINARY - NOT FOR CONSTRUCTION		MR	SG	JN	20.12.18
C	PRELIMINARY - NOT FOR CONSTRUCTION		MR	SG	JN	14.12.18
B	PRELIMINARY - NOT FOR CONSTRUCTION		MR	SG	JN	05.12.18

0 7.5 15 22.5 30 37.5m
SCALE 1:750 AT ORIGINAL SIZE

gladesville bridge MARINA

GHD
Level 15, 133 Castlereagh Street, Sydney NSW 2000 Australia
T 61 2 9239 7100 **F** 61 2 9239 7199
E sydmail@ghd.com **W** www.ghd.com

DO NOT SCALE

Drawn	M.ROBERTSON	Designer	A.CHAN
Drafting Check		Design Check	C.ALFRED
Approved (Project Director)			
Date			
Scale	1:750	This Drawing must not be used for Construction unless signed as Approved	

Client GLADESVILLE BRIDGE MARINA
Project MARINA EXPANSION
Title CONCEPT LAYOUT

Original Size **A1** Drawing No: **21-27558-K101** Rev: **F**

Plot Date: 3 September 2019 - 4:48 PM Plotted by: Michael Robertson Cad File No: N:\AU\Sydney\Projects\21\27558\CADD\Drawings\21-27558-K001.dwg